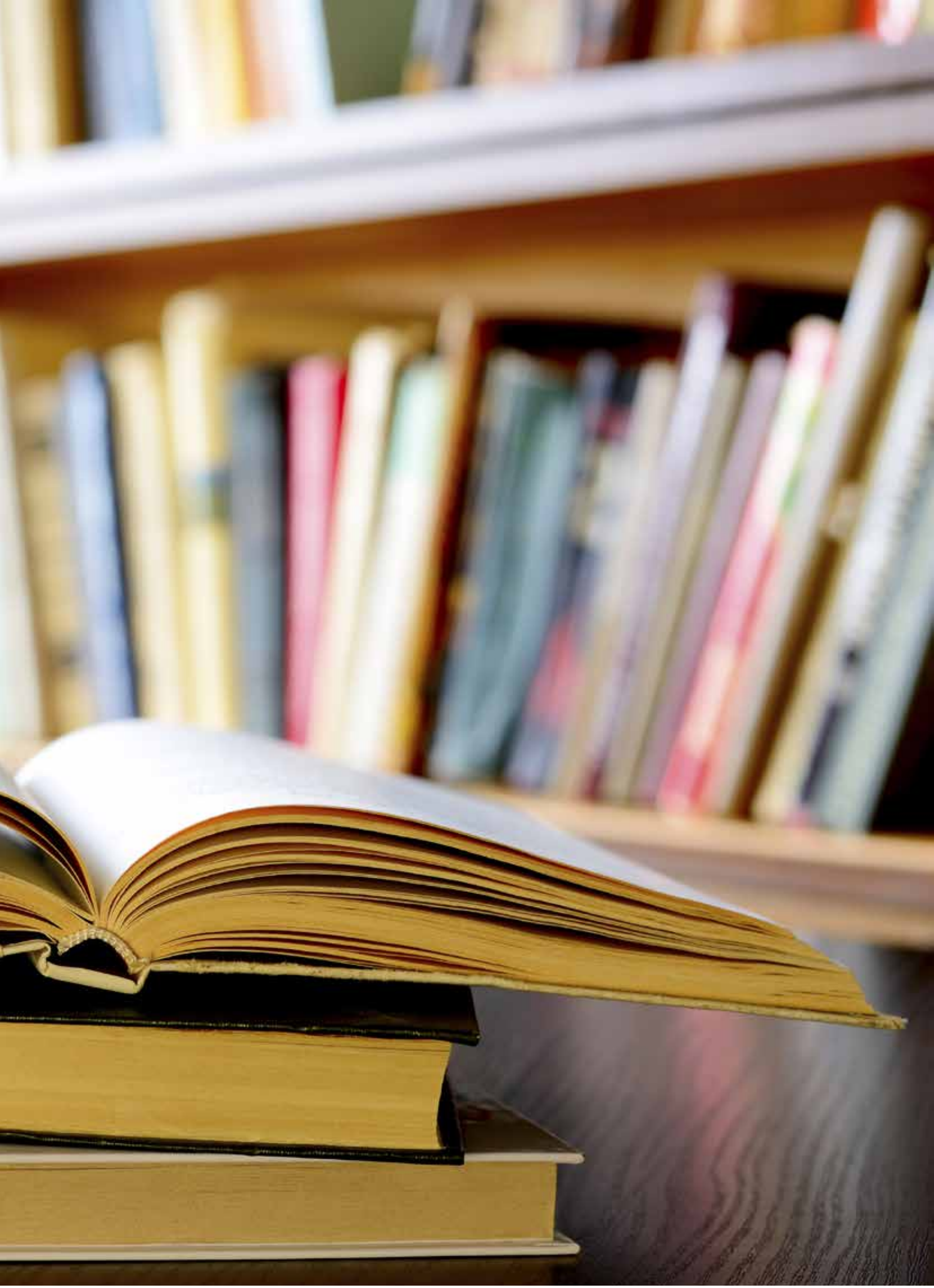
KPMG

Confederation of Indian Industry

India and Africa - Collaboration for Growth



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Foreword

KPMG in India

It is the people who build a nation, a continent, and a world. Needless to say, the people perspective has always remained a critical force in driving an economy to help build a self-sufficient nation. However, in reality, it is achievable only through a collaborative approach. Fortunately, India and Africa have one major factor in common that could allow them to collaborate smoothly their people. The two regions share a historical connect, which has played a strong role in their strengthening trade relationship over the years. Investments across African nations, in key sectors, by the Indian government and the private sector, has supported the relationship further.

Today, when we assess their recent accomplishments, a lot more remains to be achieved. The need for quality healthcare access and physical infrastructure in Africa, among many other areas, demands concerted efforts where India could play the role of a guiding light. Having overcome many issues Africa is still grappling while, the Indian industry is on the brink of becoming a potential global economic player. Therefore, the country is well-placed to be Africa's knowledge partner as it continues to establish its presence in the continent across several economic, cultural, sporting and political spheres. In addition, India can augment its support towards the development of key sectors in African countries, such as IT, automobiles and telecom.

Africa is also becoming a strategic partner for India, as it can help fulfil the latter's vision of global economic expansion by offering vital resources, including metals and minerals. In the context of the evolving relationship between India and Africa, in terms of both trade exchanges and mutual economic development, the third India Africa Business Forum happening on 28 October 2015 is a significant platform for discussion on potential growth avenues.

The increasing economic and social importance of both regions has led to a strategic collaboration, which covers a gamut of matters ranging from infrastructure development to energy strategy. I am quite optimistic about the opportunities for Indian industries in Africa, which could allow the latter to achieve its economic potential, and the support that African nations can provide to India in achieving its development targets.

Richard Rekhy
CEO, KPMG in India

KPMG in Africa

Trade between India and Africa has a long and distinguished history. It goes back thousands of years to the days when Indian traders, using the seasonal monsoon winds, sailed to the East coast of Africa in search of mangrove poles, elephant tusks, gold and gemstones.

In more modern times, Africa's trade with Europe and the United States dominated the trading patterns until the recent gradual swing to the East, principally led by China, gained increasing momentum. Indian companies were fairly quick off the mark too, re-establishing contacts with the continent and expanding the volume of trade exponentially. The trend of Indian investment in Africa is also positive. Overall, Indian investment in Africa is believed to be around $33 billion. In recent times, India's economic partnership with African countries has been vibrant, extending beyond trade and investment to technology transfers, knowledge sharing and skills development.

India has particular knowledge of a range of areas that would benefit Africa especially small farm mechanization. Indian investment in agriculture has the potential to exponentially boost production. Indian investors have recently articulated their plans to spend $2.5 billion on millions of hectares of land in East Africa, to grow produce such as maize, palm oil and rice for export, mainly to India.

With their growing economic prowess and a shared vision of crafting an inclusive world order, it is not surprising that India and Africa are now complementing their economic ties with strategic collaboration. India and Africa are proactively seeking to collaborate on a lot of global issues, ranging from jointly combating terrorism and piracy to close coordination in global fora over UN reforms, climate change and the WTO negotiations.

We are looking at enhancing opportunities and collaboration for growth of current and future business in both India and Africa.

Seyi Bickersteth
Chairman, KPMG in Africa
CEO, KPMG in Nigeria

CII

India and Africa have bonded across the Indian Ocean for centuries and today, this relationship is expanding in a dynamic and multifaceted manner. The Third India – Africa Forum Summit reaffirms our close friendship and, in particular, our growing economic linkages. CII in association with KPMG is pleased to bring out this publication on trade and investment potential between Africa and India to coincide with the Summit.

The India – Africa story is one that holds immense promise for the future. With our two regions enjoying young populations, abundant natural resources, good connectivity and strong ties, we can progress together on our development journey. Both sides have experienced strong growth in recent years, including in social and physical infrastructure, leading to rising incomes and new sectors of cooperation.

This is reflected in the fact that bilateral trade has multiplied manifold in the last decade, while Indian companies are displaying rising interest in investing in Africa. The sectors of interest include agriculture, infrastructure, education and skill development, healthcare, manufacturing amongst others.

CII has been actively promoting trade and investment between India and Africa in partnership with the Indian Government and governments of African nations. Our spectrum of activities includes business delegations, trade shows, and conferences, including the India-Africa Project Partnership series extending over several years to all regions of Africa. The Third India - Africa Forum Summit promises to further catalyse our business partnerships and CII looks forward to engaging with African businesses for mutually beneficial ventures.

We hope this publication would act as a handy guidebook to industry of both sides and would help promote economic and commercial ties between India and Africa. We look forward to continuing our intensive engagement with Africa in coming days.

Chandrajit Banerjee
Director General, Confederation of Indian Industry (CII)

India-Africa Economic Relations

India-Africa Economic Relations

India has a long and deep historical connection with Africa, with people of Indian descent living, working and contributing in several African countries; in some cases, before current borders were drawn. Today, there remains a strong Indian presence in Africa across several economic, cultural, sporting and political spheres. Historically, while India's contribution to Africa is extensive and covers several countries in the east, west and certainly in southern Africa, perhaps its strongest ties are with South Africa.

India's links with Africa's southernmost country dates back to the British colonisation of the east coast, when the colonial authorities imported labourers from the subcontinent for the sugar economy and other trading families emigrated on their own initiative. India was among the early and leading nations to reject apartheid and lend its support to the anti-apartheid movement. After the fall of the Verwoerdian Wall in 1990, and following discussions with the liberation movement, India's relations with South Africa were restored after a gap of over four decades with the opening of a Cultural Centre in Johannesburg in May 1993. Formal diplomatic and consular relations with South Africa were restored in the same year. India has four consular offices in South Africa (in Pretoria, Johannesburg, Durban and Cape Town), while South Africa has two in India (in Delhi and Mumbai).[1] Across the continent, India has 35 embassies and consulates.[2]

According to documents released by the Indian Ministry of External Affairs ahead of the third India-Africa Forum Summit in New Delhi, Africa has become the 'Cape of Good Hope', with six of the world's fastest-growing economies located in Sub-Saharan Africa (SSA) and more than 30 African countries becoming functioning democracies. The document states that the 'emergence of a new generation of quality-conscious middle class consumers has enhanced the attractiveness quotient of both Africa and India'. What it all adds up to, is that new doors are set to be opened for up-scaling bilateral trade and investment, adding to the economic muscle of both sides. India-Africa trade is estimated to be around USD70 billion, and if the current optimistic trends are anything to go by, the two sides should be able to ramp up their bilateral trade to USD100 billion in the next two to three years.[3]

A February 2011 report by the South African Institute of International Affairs (SAIIA) titled 'Evolving India–Africa Relations: Continuity and Change' as part of its Emerging Powers and Global Challenges Programme agrees with the Indian government's assessment of potential, stating in the abstract to the report that India's relations with African countries 'are time-tested and historical; nevertheless in recent years the affiliation has been revitalised'. Furthermore, 'both continuity and change feature in India's evolving relations with Africa. India's engagement with Africa is not only directed towards aiding India's energy strategy, but has broader goals.' Key elements of these 'broader' objectives in Africa include off-the-books support such as technical assistance, training and capacity building and a more pragmatic approach. The nature of India's relationship with Africa is clearly evolving into a wider, deeper engagement that, while clearly in India's advantage, also offers significant potential benefits to its African counterparts.

Current economic relations

An important caveat pertaining to India's economic relations with Africa, is that they are not confined to the BRICS and India's reach in Africa extends beyond the alliance. A 2013 report 'India Africa: South-South Trade and investment for Devel opment' by the World Trade Organisation (WTO), compiled in conjunction with the Confederation of India Industry (CII), made the point that even in the midst of economic crises, bi-lateral India-Africa trade increased by an average of some 32 per cent annually between 2005 and 2011, with projections in the USD90 billion range for 2015. But the WTO report adds a critical point – it was not just bi-lateral trade that rocketed, but also direct investment from India into African economies in mainly key infrastructure projects such as IT, energy extraction, automobiles, telecommunications and the like. The surge into Africa is driven mainly by the Indian government, but the private sector has not been lagging and significant economic linkages have arisen due to the interventions of the private sector from India. 'This dynamism on the part of India is coupled with the increasing receptiveness on the part of African countries to strengthen the partnership with South-South partners. The annual India-Africa Conclave meetings are one clear example of this and have proven to be a particularly successful format', the WTO report states.

These sentiments are echoed by several other global organisations and think-tanks, including the London School of Economics (LSE)[4] and the SA Institute of Security Studies.[5] The overall conclusion is that Indian-African trade and economic relations are likely to continue to grow, even in the wake of massive increases over a relatively short period of time with no current indication that the relationships are likely to cool anytime soon. While global conditions dictate events, the fact that Indian-African trade and economic relations continued to grow even through periods of some economic crisis suggests potential that has yet to be fully exploited.

01. India –South Africa Relations www.mea.gov.in/Portal/ForeignRelation/India-SouthAfrica_Relations.pdf accessed 16 October 2015
02. http://www.mea.gov.in/indian-missions-abroad.htm accessed 16 October 2015
03. India and Africa: Sharing interlinked dreams-Ministry of External Affairs dated January 28, 2015
04. India's African Engagement, http://www.lse.ac.uk/IDEAS/publications/reports/pdf/SR016/SR-016-Large.pdf accessed 17 October 2015
05. India steps up its African engagement, https://www.issafrica.org/iss-today/india-steps-up-its-african-engagement accessed 17 October 2015

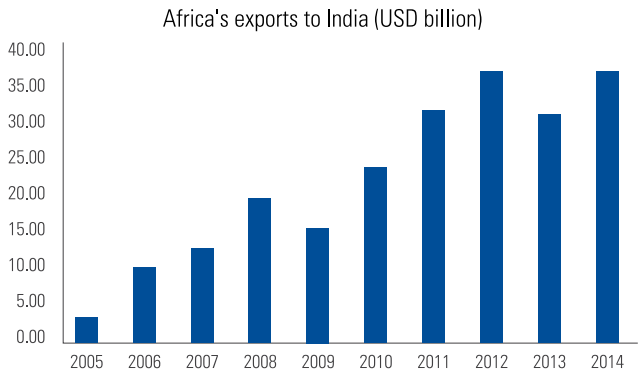
Trade flows

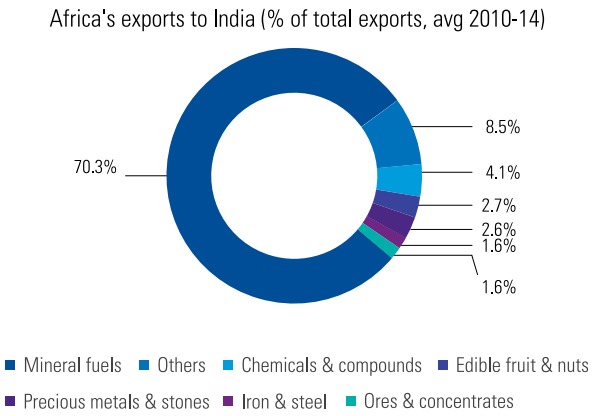
Trade between India and Africa dates back thousands of years to when Indian traders first sailed to the east coast of Africa in search of agricultural and animal goods, gems and minerals. The establishment of the Omani suzerainty in the seventeenth century over Zanzibar and its hinterland reinforced and developed this relationship and some Indian merchants and businesspeople who live in East Africa today trace their presence to this period of history. In addition, there were significant inflows of Indian labour during the colonial period to work in East Africa, Mauritius, Madagascar and Southern Africa.[6]

India's reliance on oil and gas from Africa has increased exponentially over the past few decades, from less than a single percentage point to an anticipated 90[7] per cent by 2025. As such, establishing solid trade and economic ties with Africa is of primary Indian economic concern. Africa has historically run a trade surplus with India, most recently estimated at just over USD6 billion in 2014.[8]

India's growing demand for energy to fuel its economic expansion spreads to other resources in Africa, including metals and minerals (also gold), while Africa imports an array of consumer goods and hi-tech requirements such as IT services, hardware and telecommunications technology.

Africa's exports to India





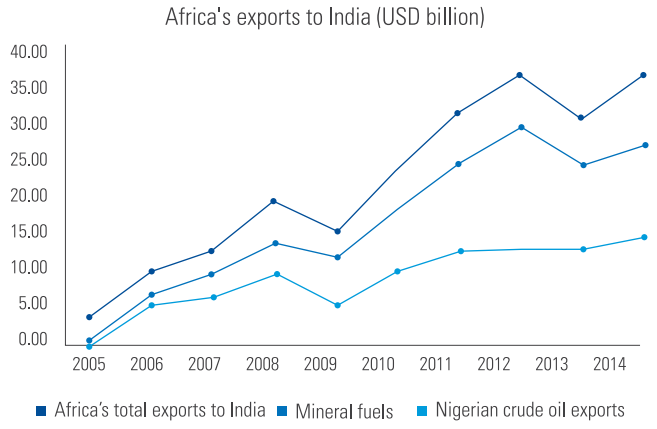
Source: Bilateral trade between Africa and India, Trademap.org accessed 15 October 2015

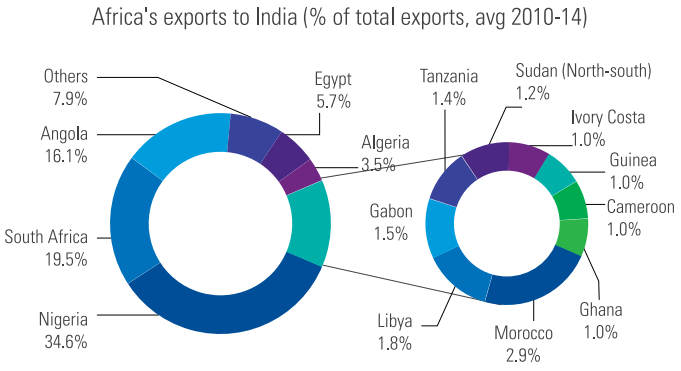
African exports to India

Africa's exports to India have grown sharply over the last decade, with mineral fuels consistently making up the majority of exports since 2006. Mineral fuel exports to India, which is mostly made up of crude oil (89 per cent in 2014), have grown from a mere USD832 million in 2005 to just over USD27.4 billion by 2014. The major African suppliers of crude oil to India last year were Nigeria (58.9 per cent) and Angola (21.7 per cent), with Egypt also supplying another 5.8 per cent of India's total crude oil imports from Africa in 2014. In turn, South Africa has historically been India's second largest supplier of imports (averaging 19.5 per cent of India's total imports from 2010-14), with Africa's southernmost country primarily exporting coal to India.[8]

06. India-Africa trade: a unique relationship, http://www.global-briefing.org/2012/10/india-africa-trade-a-unique-relationship/ accessed 16 October 2015
07. India in Africa: Moving beyond Oil, Centre for Strategic and International Studies
08. Bilateral trade between Africa and India, Trademap.org accessed 15 October 2015

Africa's exports to India



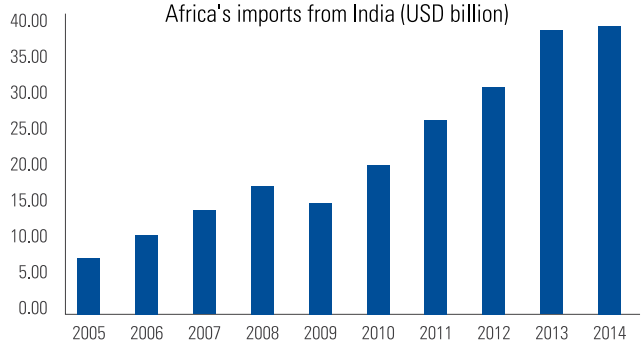


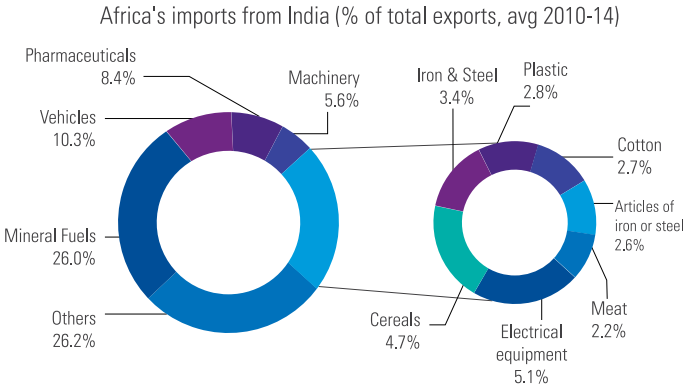
Source: Bilateral trade between Africa and India, Trademap.org accessed 15 October 2015

African imports from India

Looking at Africa's imports from India, the supplying categories are much more diversified than the other way round, with some of Africa's largest imports from India accounting for just 2 per cent of its overall imports. Nevertheless, mineral fuels (mostly non-crude petroleum oils) are still the single largest import category (averaging 26 per cent of total imports from India during 2010-14). On balance, Africa ran an average mineral fuels trade surplus with India of USD20.1 billion over the last five years. Vehicles accounted for an average of some 10.3 per cent over the last five years, with pharmaceutical products and machinery each accounting for an average of 8.4 per cent and 5.6 per cent of total imports from India, respectively.[9]

Africa's imports from India



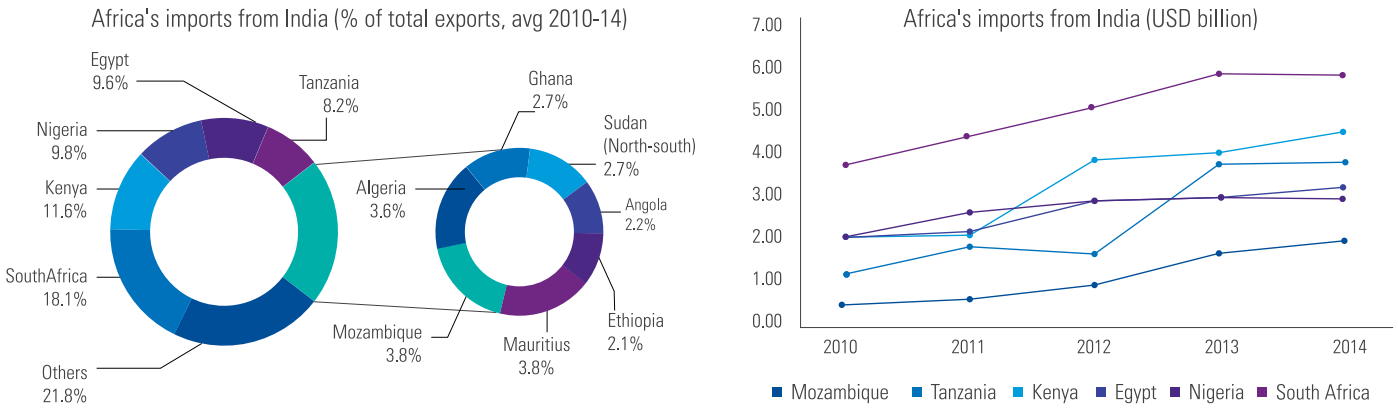


Source: Bilateral trade between Africa and India, Trademap.org accessed 15 October 2015

09. Bilateral trade between Africa and India, Trademap.org accessed 15 October 2015

Similar to the import categories, India's exports destinations in Africa are much more diversified than India's import sources. Countries that import less than 2 per cent of Africa's total imports from India also sum to the largest share of the last five years. South Africa was the single largest importer of Indian goods over the 2010-14 period, with Africa's second-largest economy primarily importing non-crude petroleum oils and vehicles from the Asian giant. In line with Africa's total imports from India, the six largest African recipients of Indian goods have increased the size of their imports from India over the last five years. Notably, Kenya and Tanzania overtook Egypt and Nigeria to become the second-and-third-largest importers of Indian goods in Africa over the last two years, cementing East Africa's growing economic ties with India.

Africa's imports from India



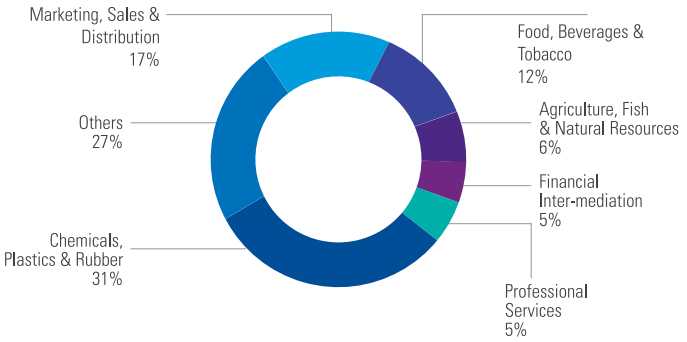
Source: Bilateral trade between Africa and India, Trademap.org accessed 15 October 2015

Indian investment in Africa

Indian investment into Africa has a rich and diversified history, ranging from spices and textiles to significant investments in the natural resources sector. India's dependence on energy imports, are partly fulfilled with oil exports from Africa.

According to a report published by the Heinrich Boll Foundation (HBF) in December 2014, the Export-Import Bank of India (Exim Bank) signed a memorandum of understanding with the African Development Bank (AfDB) in 2009 in order to finance Indian projects in Africa totalling USD3.4 billion.[10] As per this report, up to 2012, the line of credit was most prominently used to develop the chemical, plastics and rubber sub-sector (31 per cent), with the marketing, sales and distribution sub-sector coming in second (17 per cent). However, it must be noted that this line of credit only forms a small part of total Indian investment in Africa, and is only provided as an example of the diversified range of investment opportunities across Africa

Exim/AfDB Investment in Africa (2009-12)



Source: National Bureau of Statistics (NBS) Nigeria, accessed 15 October 2015

10. Indian Investments in Mining and Agriculture in Africa: Impact on Local Communities published December 2014

Investment in Eastern Africa

East Africa was originally India's investment doorway into Africa, with the region already establishing commercial links with ancient India. More recently, the first outward FDI project by an Indian firm in Africa is said to have been in Ethiopia.[11] Since then, Indian investments have extended across the region. India and East Africa have recently improved commercial ties through the commencement of the Supporting Indian Trade and Investment for Africa (Sita) project. The Sita initiative, led by the International Trade Centre (ITC), is a six-year (2014-20) project that aims to promote exports from five East African countries – Ethiopia, Kenya, Rwanda, Tanzania and Uganda – to India through investment and skills transfer from the latter to the former.[12] According to the ITC, the overall goal is to equip East African businesses with the means to produce high-quality products and services that meet the demands of the Indian market and beyond. East African businesses are expected to be introduced and matched with potential Indian partners, who they can then work with to produce competitive products and services. The Sita project will target specific sectors, namely essential oils, sunflower oil, business-process outsourcing, information and communication technology, leather, spices, cotton, textiles and apparel, coffee, and pulses. Since the implementation phase of the project commenced in April this year, five investments have already been identified that are under consideration to be facilitated under Sita. These include the construction of two plants for the processing of rice and beans in Rwanda, a sugar refinery in Tanzania and a pulses processing plant and a unit to process animal products. The approximate investment of these projects is expected to be around USD18 million.[13]

Looking at more country-specific relations, Ethiopia remains a significant beneficiary of Indian investment. China is currently the source of the largest number of foreign investment projects in Ethiopia, but the biggest investors by value are India and Turkey.[14] According to Consumer Unity & Trust Society (Cuts) International, an Indian non-governmental organisation, Indian firms have expressed interests in cotton, palm oil, rubber, oilseeds and horticulture, and in 2011 Ethiopia offered 1.8 million hectares of farmland to Indian investors. The companies have so far committed around USD4.7 billion in FDI in Ethiopia, with most projects related to the agricultural sector, according to Cuts.[11]

In Kenya, Indian firms have been largely active in the telecommunications, banking and insurance, mining, healthcare, ports and roads, floriculture, and energy sectors. According to Cuts, Indian FDI in Kenya amounted to around USD1.5[11] billion in the 2012-13 fiscal year (starting July). This figure is expected to increase going forward, with India expected to play a salient role in the East African giant's hydrocarbon ambitions.

Furthermore, Indian companies may be eager to contribute to the development of the nascent hydrocarbon sectors in Uganda and Tanzania, as Indian firms already have a presence in these countries. In the former, Indian investments play a key role in the manufacturing, communications, construction, and trade sectors. In turn, Tanzania and India have vibrant business and commercial relationships driven by the presence of a large community of Tanzanians of Indian origin.[11] The countries held a bilateral trade and investment symposium earlier this year, particularly focussing on the agricultural, infrastructure, energy, information and communication technology, healthcare, industry, and tourism sectors. According to the High Commission of India in Dar es Salaam, Indian investments in Tanzania reached just-over USD2 billion[15] over the 1990-14 period.

Investment in Southern Africa

Mauritius has made plain its plan to be the financial gateway to Africa, with Double Taxation Avoidance (DTA) at the centre of the country's endeavours.[16] As a result of the favourable taxation structure, large sums of foreign direct investment (FDI) are re-routed via Mauritius, with inflows to India no exception. According to India's Ministry of Commerce and Industry, some 24 per cent (USD9.03 billion[17]) of total FDI flows into the Asian giant stemmed from Mauritius in the 2014/15 fiscal year (April 1 to March 31). Similarly, Indian investments into Africa first go through the island nation, with countries like Mozambique receiving Indian investment into its nascent coal sector via Mauritius. However, the statistics change drastically when excluding global business communities (GBCs), with FDI outflows from Mauritius to India totalling only USD1.68 million over the 2011-14 period. In turn, FDI flows from India to Mauritius also decrease drastically when excluding GBCs, totalling USD7.38 million over the 2011-14 period.

11. Indian Investments in Mining and Agriculture in Africa: Impact on Local Communities published December 2014
12. Why Sita?, International Trade Centre http://www.intracen.org/sita-at-a-glance/ accessed 13 October 2015
13. SITA to facilitate investments in East African countries published 13 August 2015 on trademarkea.com
14. World Investment Report 2014 - Investing In The SDGs: An Action Plan, published June 2014
15. India-Tanzania Relations, published on http://www.hcindiatz.org/, accessed 13 October 2015
16. Mauritius, India agree to 'limitation of benefits' clause, published on livemint.com, accessed 13 October 2015
17. Mauritius regains top slot as source of FDI in India, published on timesofindia.com accessed 14 October 2015

Looking forward, there is a possibility of amendments being made to the DTA, with the Mauritian finance minister, Seetanah Lutchmeenaraidoo, stating in an interview with Reuters that the primary focus of any amendment is to ensure that a firm "add value" to Mauritius when using the island nation as a means to invest in India. The treaty was also discussed when the Indian prime minister, Narendra Modi, visited Mauritius earlier this year, although no finalised details have emerged till date pertaining to any possible changes to the DTA.[18] Overall, there is substantial potential for trade growth between India and Mauritius.

Exports from India to South Africa include vehicles and components thereof, transport equipment, drugs and pharmaceuticals, computer software, engineering goods, footwear, dyes and intermediates, chemicals, textiles, rice, and gems and jewellery, etc. India-South Africa relations today are warm, co-operative and multi-dimensional.[19] Rooted deeply in history, they now cover multiple avenues and enjoy regional and international significance. Sustained efforts are underway to strengthen, deepen and diversify them in the future.

Investment in Western Africa

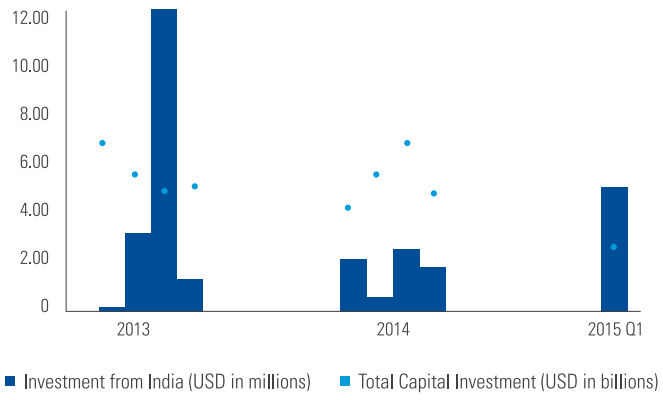
India is not among the foremost countries in terms of foreign investment in Nigeria. In fact, capital imports from India usually account for less than 1 per cent of the total capital imports into Nigeria – capital imports in this case refers to foreign direct investment (FDI), portfolio flows and other investments pertaining to trade credits, currency deposits and loans. Capital imports from India amounted to only USD15.9 million in 2013, and declined to USD6.7 million in 2014, according to the Nigeria National Bureau of Statistics (NBS). Meanwhile, Nigeria's total capital imports declined from USD21.3 billion in 2013 to USD20.8 billion in 2014. Total capital imports declined further during Q1, 2015. More specifically, capital imports declined from USD4.5 billion in Q4, 2014 to USD2.7 billion in Q1, 2015. The sharp decline in foreign investment is likely to be ascribed to elevated risk stemming from the presidential election. Another factor that deters investment relates to the central bank's staunch support for exchange rate stability. However, foreign investment from India largely shrugged off concerns about the outcome of the election and tight forex liquidity and increased significantly to USD4.7m in Q1, 2015, up from just USD1.7m in the previous quarter. That said, this still represents a very small proportion of total foreign investment.

Nigeria and India have strong commercial ties. India-domiciled organisations operating within Nigeria's borders are fairly widespread. The High Commission of India based in Lagos highlights that more than 100 Indian companies currently have operations in Nigeria. India-domiciled organisations are especially prevalent in the electricity distribution, manufacturing and pharmaceutical industries.

Given the fact that India represents one of the principal buyers of Nigerian oil, it is not surprising that Indian firms have also established a foothold in the West African countries' hydrocarbon sector.

According to the High Commission of India in Accra, Indian companies invested in a total of 602 projects with a combined value of approximately USD637 million between September 1994 and September 2013.[20] This made India the second largest foreign investor in terms of the number of projects during this period. India was also ranked as the ninth largest foreign investor by value over the same period. According to the Ghana Investment Promotion Centre (GIPC), India's investment in Ghana has focussed mostly on the manufacturing, general trading and services sectors.

Nigeria capital imports



Source: National Bureau of Statistics (NBS) Nigeria, accessed 15 October 2015

18. Mauritius in talks to review India tax treaty: minister, published on reuters.com 7 October 2015
19. KPMG report titled' India investing in South Africa and Africa'
20. India-Ghana Bilateral Brief, published on http://www.indiahc-ghana.com, accessed 14 October 2015

More recently, the value of Ghana's newly-registered FDI projects reached USD3.4 billion in 2014, according to the GIPC. FDI from India amounted to USD25.7 million[22] in Q1, 2014 – representing the largest investment by any country into Ghana during that quarter. India invested in nine projects in Ghana during the following quarter – becoming the country that invested in the most number of projects in 2014. In Q2, India was also ranked as the fourth-largest investor[21] by value. India invested in a further seven projects with a total value of USD14.2 million[21] in Q3.

However, the country's investment in Ghana seems to have declined since then. India invested in just three19 projects in Q4, 2014 and the country was not ranked among the top 10 foreign investors by value in that quarter. During H1, 2015, India's investment in Ghana amounted to only USD8 million[21]. Despite this decline, the outlook remains encouraging. An Indian business delegation visited Accra in April to consider various investment opportunities in Ghana. The Ghanaian authorities have also encouraged increased investment from India in power sector, especially in the solar and wind sectors[23], seeing as Ghana is still plagued by persistent power outages.

Investment in Northern Africa

India is heavily dependent on energy imports, with oil exports from Africa partly fulfilling that dependence. As a result, India's leading government-owned public sector enterprises acquired shares/assets in many countries of Northern Africa.

Indian companies have a strong and dynamic presence in Egypt and a number of Indian companies have become an integral part of Egyptian economy. Indian companies are providing direct and indirect employment to approximately 35,000 Egyptians. The direct employment generated by Indian companies is more than 21,200 and indirect employment more than 13,500. The top five Indian companies in terms of investment in Egypt, most of them in labour intensive textile industry, provide direct employment to more than 12,800 Egyptians.[25]

21. India-Ghana Bilateral Brief, published on http://www.indiahc-ghana.com, accessed 14 October 2015
22. GIPC Quarterly 2014 - Volume 10, Issue 1, 2,3 and 4; Volume 11, Issue 1 and 2
23. Ghana invites Indian players to set up power projects, published on economictimes.indiatimes.com, 8 July 2015
24. India - Egypt Relations, published on http://www.indembcairo.com accessed 14 October 2015

Partnering for Growth in Key Sectors

Infrastructure

Infrastructure development is essential for the sustained development of an economy. Across the African sub-continent, infrastructure has contributed a considerable share in economic growth in the last decade.[1] However, the sector is still grounded on account of several challenges which if taken care of, can lead to the economic turnaround of the continent. As such, in order to boost the economic growth, the African government is making a sustained effort to improve access to infrastructure needs such as transport, clean water and electrification.

The current scenario

Africa's growth story is changing. Six of the world's fastest growing economies lie in this region.[2] Infrastructure has played an important role in the economic development and has been responsible for more than half of the improved growth performance of the region. This is reiterated by the fact that Sub-Saharan Africa witnessed 4.5 per cent growth in 2014, which is forecasted to grow to 5.1 per cent by 2017. This growth is a combination of several factors that include investments in growing avenues such as infrastructure, agriculture production and the service sector.[3]

The African government has launched several programmes to boost infrastructure development in the region. These include 'Programme for Infrastructure Development in Africa' (PIDA), which is led by the African Union (AU), New Partnership for Africa's Development (NEPAD) and African Development Bank (AfDB). The programme aims to develop an infrastructure development strategy at a regional and continent level throughout the period 2011–30 by working closely with the respective member states, specific agencies of AU and sectoral organisations. PIDA covers four key sectors including transport, energy, trans-boundary water and Information and Communication Technology (ICT).[4]

Similarly, several African countries have also shown considerable improvement in the area of infrastructure with sustained efforts. Few examples of this are the Lagos Bus Rapid Transit system - a first-of-its-kind in Sub-Saharan Africa, rural electrification through an adaptive and multi-layered approach in Mali, access to safe water supply for the rural populations in Ethiopia, Madagascar and Uganda.[5]

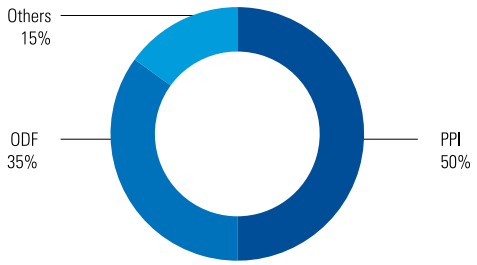
Despite all these success stories, the infrastructure system in Africa still lags other developing countries around the world. It is mainly characterised by missing regional links and sluggish access.

The Infrastructure Consortium of Africa (ICA) evaluates that 40 billion potential work hours are lost each year due to lack of clean water access at home for people, who therefore have to rely on getting it from a different source.[6]

Power remains one of the largest infrastructure challenges in Africa so far. This is strengthened by the fact that the 48 countries in Sub-Saharan Africa (with a total population of 800 million) generate approximately the same power as in Spain (with a population of just 45 million).[7] Roads are another area of concern which is critical to the infrastructure deficit in Africa. The World Bank estimates that Africa's road density is scarce in relation to the vastness of the continent. A minority of Africa's roads are paved and less than 50 per cent of the rural Africans have access to an all-season road.[8]

The World Bank study concludes that the infrastructure deprived state of in Africa decreases its economic growth by 2 percentage points every year and slashes business productivity by 40 per cent.[9] Further, it is estimated that USD93 billion is required per annum over the next decade to refurbish African infrastructure, which represents around 15 per cent of the region's GDP.[9] Out of this, currently only USD45 billion is being spent per annum on infrastructure, thus leaving a considerable shortfall to be financed.[10]

External infrastructure investment commitments in Sub-Saharan Africa, 2009-12



Source: Financing African Infrastructure, Brookings report, March 2015

01. Africa's Infrastructure: A time for transformation, Agence Française de Development and the World Bank, 2010 This report is 5 years old, please ensure it still holds value.
02. Why infrastructure development in Africa matters, Africa Renewal Online, http://www.un.org/africarenewal/web-features/why-infrastructure-development-africa-matters, accessed 8 October 2015
03. Sub-Saharan Africa, Chapter 2, World Bank Report, January 2015
04. Africa launches an ambitious programme for infrastructure development, NEPAD website, accessed 14 October 2015
05. African Successes - Listing the success stories, World Bank Blog, accessed 14 October 2015
06. Construction & Infrastructure, KPMG Africa report, accessed 8 October 2015
07. Fact Sheet: Infrastructure in Sub-Saharan Africa, The World Bank website, http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/0,,contentMDK:21951811~pagePK:146736~piPK:146830~theSitePK:258644,00.html, accessed 8 October 2015
08. Construction & Infrastructure, KPMG Africa report, accessed 8 October 2015
09. Africa's Infrastructure: A Time for Transformation, French Development Agency and World Bank report, 2010
10. India investing in South Africa and Africa, KPMG report, 2013

In order to compensate the rising infrastructure needs, African governments have historically depended on aid donors and external borrowings to finance their fiscal deficits. Also, infrastructure remains a prominent sector for Official development assistance (ODA) disbursements in Africa. A few major providers of ODA loans to Africa's infrastructure are the World Bank, AfDB, Arab Fund, Japan, Belgium, Germany, France, Spain, Portugal, the UK and Italy.[11] The key recipients of external financing during the period 2009–12 were South Africa, Nigeria, Ghana, Kenya and Ethiopia.[12]

Countries such as Brazil, China, India, Korea, Malaysia, Russia and Turkey are the emerging partners who are playing a pivotal role in shaping Africa's infrastructure landscape. While China has managed to grab a strong hold in the African infrastructure, India has adopted a proactive and strategic approach toward its presence in Africa.[13] According to the World Bank, Indian infrastructure deals in Africa averaged at USD500 million per annum during 2003–07. A considerable portion of Indian financing for projects in Africa is directed through the Exim Bank of India, which encompasses lines of credit (LOCs) to African governments aiming at direct infrastructure projects.[14]

Several large infrastructure companies based in India are also looking forward to grab a strong foothold in the African market.

The India story

Similar to Africa, India is also one of the rapidly-growing economies of the world. However, a dearth of superior infrastructure obstructs its growth and development to a great extent. Estimates suggest that scarcity of adequate infrastructure reduces India's GDP growth by 1 to 2 per cent every year.[15] The country needs to address challenges in several infrastructural fields such as electricity, where the misbalance between supply and demand hinders growth; road transport, which is inadequate in terms of quality, quantity and connectivity; and ports and civil aviation where modernisation is essential.

In order to tap the growing potential, the Government of India has increased its efforts to develop the public infrastructure by way of easing foreign investment and establishing targeted strategic initiatives. Infrastructure development was a key focus area in the country's 2015–16 annual budget as well. The Finance Minister declared a National Investment and Infrastructure Fund and long-term tax-free infrastructure bonds.[16] Additionally, roads and railways are expected to receive additional capital resources of USD2.1 billion and USD1.5 billion, respectively, during the year.[17]

Furthermore, the government is promoting public private partnership (PPP) investments to bridge the gap in infrastructure funding requirement. Backed by strong infrastructure related reforms, the country is also collaborating with both multilateral donors (such as the World Bank) and bilateral donors such as Korea and Japan to enhance its infrastructure sector.[18]

The government has also announced a plan to develop 100 smart cities across the country. According to the Ministry of Urban Development (MoUD), the initiative is expected to receive an external funding worth USD63.2 billion[19] by 2020, translating into 80 per cent of the total estimated spending. Countries including France, China, Sweden, Singapore and the U.S. have expressed interest to share funds and technical know-how for this initiative.[20]

Thus, Africa and India are facing similar challenges of creating robust infrastructure facilities to meet requirements of their growing populations. Both the nations have a notable opportunity to work together not only to meet the funding requirements, but also to share leading practices from each other's experiences to achieve enhanced efficiency.

Challenges in infrastructure development

The shortage of physical infrastructure remains one of the top developmental challenges for Africa. Since the region is expecting rapid growth in population, economy and urbanisation, the need for infrastructure development could further aggravate. The growth in infrastructure in the African economy has been negligible until now. For example, a majority of Africa's population do not dwell within the reach of all-season roads. While in Kenya, only 32 per cent of the rural population reside within 2 kilometres (km) of all-weather roads, the figure is 31 per cent in Angola, 26 per cent for Malawi, 24 per cent for Tanzania and 18 per cent for Mali.[21]

The higher economic activity, greater efficiency and increased competitiveness are restricted by poor transport, communication and water and power infrastructure. Countries across the world have shown willingness to engage in business activities with Africa, but the difficulty of access to the regional market due to poor infrastructure constrains them from turning their ambitions into reality.

11. Mapping Support for Africa's Infrastructure Investment, OECD report, May 2012
12. Financing African Infrastructure, Brookings report, March 2015
13. Infrastructure Development Within The Context Of Africa's Cooperation With New And Emerging Development Partners, United Nations
14. Indian construction firms making inroads into Africa, HowwemadeitinAfrica.com, http://www.howwemadeitinafrica.com/indian-construction-firms-making-inroads-into-africa/4794/, accessed 9 October 2015
15. Infrastructure Challenges in India: The Role of Public-Private Partnerships, Observer Research Foundation report, February 2014
16. New budget focuses on infrastructure, Economic Intelligence Unit, 5 March 2015
17. Infrastructure Sector in India, IBEF, September 2015
18. Modi government plans $4-5 billion infrastructure fund; Japanese & Korean investors show interest, published in economictimes.indiatimes.com, 11 June 2014
19. Currency conversion rate used, INR 1 = USD 0.0158, as on 12 July 2015 (Oanda)
20. Smart Cities project From France to US, a rush to offer assistance, funds, India Express, 12 July 2015
21. Poor Infrastructure Is Africa's Soft Underbelly, Forbes, 25 October 2012

Difficult geography acts as a threat for infrastructure development[22]

The geography of Africa features low population density, low urbanisation rate, comparatively faster rate of urban growth and a large number of landlocked countries with many small economies.

Africa has a highly-fragmented infrastructure network. Sub-Saharan Africa has many small states with small populations and smaller economies. The intraregional connectivity is low as there is little connection between international frontiers for natural or artificial features. Discontinuity in the intraregional road network, existence of a few cross-border interconnectors to support regional power exchange, incomplete intraregional fibre-optic network and the scarcity of regional connectivity due to geographic isolation, add to the challenges faced by the African infrastructure sector.

Furthermore, the cost of providing infrastructure is quite high in rural areas due to spatial distribution and the swift migration of Africa's population (with rural population density being less than 15 people per square kilometre). On the other hand, infrastructure in urban areas is severely stretched and has declined in the past years, witnessing an average population growth rate of 3.6 per cent annually. The population density in Africa is also smaller compared to the global standards, due to which the cost of providing basic infrastructure packages is double that of developing cities.

The absence of infrastructure for water storage and distribution has resulted in under usage of the abundant water resources available. Hence, significant expansion of the water storage capacity is essential. Due to its vast geography, the cost of expanding water storage in Africa is considerably high. India, too, has many regions that face water shortage. To address this challenge, the government has proposed an ambitious National River Linking Project (NRLP). The project aims to transfer water from 'water surplus basins' to 'water deficit basins'. The plan enlists 30 links to connect 37 rivers across the nation via a web of about 3,000 storage dams.[23]

Thus, due to difficult economic geography in many parts of the Africa with lack of economic development in rural and urban centres, the continent is facing substantial challenges in infrastructure development.

Expensive infrastructure services[22]

According to a World Bank report from 2010, the expenses incurred to build and avail infrastructure services in Africa such as power, water, road freight, mobile telephones and internet are higher compared to the developing economies in the world. This can be seen in the following table.

Among all the above-stated services, power is the most costly infrastructure in Africa. Many developing economies rely on small diesel generators to address power deficits. Running such a generator costs approximately USD0.35 per kilowatt-hour to those economies as they have national power systems below the 500-megawatt (MW) threshold.

Africa's high infrastructure costs[24]

Infrastructure sector	Sub-Saharan Africa	Other developing regions
Power tariffs (USD per kilowatt-hour)	0.02–0.46	0.05–0.10
Water tariffs (USD per cubic meter)	0.86–6.56	0.03–0.60
Road freight tariffs (USD per ton-km)	0.04–0.14	0.01–0.04
Mobile telephony (USD per basket per month)	2.60–21.00	9.90
International telephony (USD per 3 minute call to the US)	0.44–12.50	2.00
Internet dial-up service (USD per month)	6.70–148.00	11.00

Note: Ranges represent prices in different countries and various consumption levels. Prices for telephony and internet service are representative of the developing regions, including Africa

Although the figures above may be a bit dated, it gives a perspective that the infrastructure costs in Africa are more than those of the developing countries across the world.

Africa's biggest infrastructure challenge: Power[22]

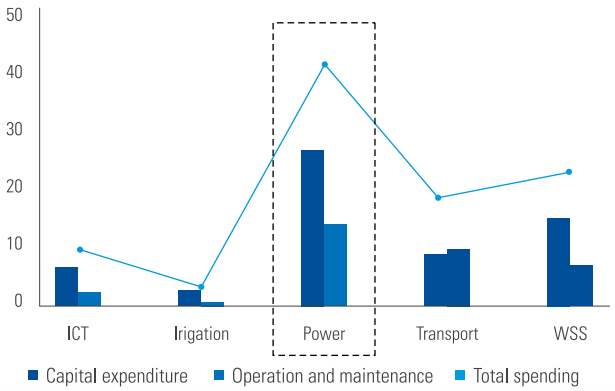
Africa's power sector provides just a portion of the infrastructure service when compared to other developing economies. The power consumption in Africa is just 10 per cent of the developing economies and is insufficient to power a 100-watt light bulb per person for even three hours a day.[24]

22. India investing in South Africa and Africa, KPMG Africa report, 2013
23. National River Linking Project: Dream or disaster?, India Water Portal, 14 September 2014
24. Africa's Infrastructure: A time for transformation, Agence Française de Development and the World Bank, 2010

Infrastructure spending needs for Sub-Saharan Africa[25]

The main causes of power shortages and regular interruptions to services are varied. A few important reasons for the interruptions are the inability to bring on new capacity to keep pace with the demands of economic growth, droughts that decreased hydropower in Eastern Africa, oil price hikes that subdued affordability of diesel imports for many Western African countries and conflicts that damages power infrastructure in weak states.[26]

Infrastructure spending



Source: Africa's Infrastructure: A time for transformation, Agence Française de Development and the World Bank, 2010
Note: Figures in USD billion per annum
ICT: information and communication technology; WSS: water supply and sanitation

Infrastructure-funding deficit

According to the World Bank, Africa currently faces a funding gap of USD35 billion per year. Redressing Africa's infrastructure deficit is estimated at USD38 billion of investment per year, and a further investment of USD37 billion per year is needed for operations and maintenance.[27]

In order to close Africa's infrastructure financing gaps, it may not only require raising additional funds but also improving the efficiency with which the existing resources are utilised. Monitoring infrastructure expenditure in detail is essential against recognising needs and priorities.

An enhanced planning on investment projects, prior completion of viability studies, efficient procurement processes and a shift to medium-term multi-year budgeting are a few things that will help increase the capital budget execution.

Efficiency and funding gap in Africa's infrastructure[25]

Item	Energy	ICT	Irrigation	Transport	WSS	Cross-sector gain	Total
Infrastructure spending needs	(40.8)	(9.0)	(3.4)	(18.2)	(21.9)	NA	(93.3)
Existing spending	11.6	9.0	0.9	16.2	7.6	NA	45.3
Efficiency gap	6.0	1.3	0.1	3.8	2.9	3.3	17.4
Gain from raising capital execution	0.2	0.0	0.1	1.3	0.2	NA	1.9
Gain from eliminating operational inefficiencies	3.4	1.2	—	2.4	1.0	NA	8.0
Gain from tariff cost recovery	2.3	—	—	0.1	1.8	NA	4.2
Potential for reallocation	NA	NA	NA	NA	NA	3.3	3.3
Funding gap	**(23.2)**	**1.3**	**(2.4)**	**1.9**	**(11.4)**	**3.3**	**(30.6)**

Source: Agence Française de Development and World Bank
Note: Figures in USD billion per annum
ICT: information and communication technology; WSS: water supply and sanitation; NA: not applicable; —: not available

25. Africa's Infrastructure: A time for transformation, Agence Française de Development and the World Bank, 2010
26. Presentation on Africa Clean Energy Corridor Concept Overview, international Renewable Energy Agency
27. Fact Sheet: Infrastructure in Sub-Saharan Africa, World Bank website, accessed 8 October 2015

Evolving collaborations in Africa's infrastructure

It is estimated that external financing for the African infrastructure sector has tripled between 2004 and 2012.[28] The significant growth in funding depicts Africa's rising focus on partnership-driven development projects. There are many foreign players looking at exploiting the growing opportunities in the African continent. However, India is expected to play a greater role in building the African infrastructure sector given the similarity of challenges faced by both Africa and India. The Exim Bank of India and many private companies are targeting investments in road, railways and construction sectors in the continent.[29]

Alliance with other countries

External alliances are and would continue to play a crucial role in bridging the gap in investments required in the infrastructure sector in Africa. The countries have received multiple investments from various sources in the past, in order to bridge the investment gap to some extent. According to Brookings, a non-profit public policy organisation, South Africa, Nigeria, Ghana, Kenya and Ethiopia were key beneficiaries of external funding for African infrastructure development in the period 2009–12.[28]

The external financing has largely been driven through Private Participation in Infrastructure (PPI), Official Development Finance (ODF) including multilateral institutions and the Organisation for Economic Co-operation and Development's (OECD) and Development Assistance Committee (DAC) donors, and others such as China, Middle Eastern countries, Brazil and India.[28] These channels of funding target different sectors and countries depending on their strategic objectives.

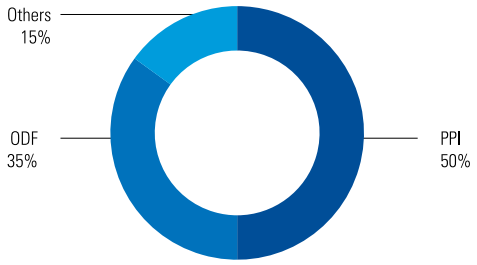
Further, private investments are gaining prominence in Africa's infrastructure sector and it is estimated that they account for approximately 50 per cent of the overall external investment in infrastructure. The private funding largely focusses on the telecom sector in Africa, holding about 64.1 per cent share in the total investment going to the sector.[28]

The ODF funding ensures consistent distribution of resources across countries and sectors, which may not be the case in private or bilateral financing. The World Bank and AfDB are the key bodies funding Africa's infrastructure.

Along with India, some of the key bilateral investors in the continent's infrastructure sector are China, Brazil, Russia, the European Union (EU) and the U.S. These donors facilitate investments via multi-donor platforms such as the Private Infrastructure Development Group, which mobilises private sector investment to assist developing countries.[28]

Moreover, multilateral donors such as the World Bank and AfDB have enhanced their focus on the infrastructure sector in Africa. In September 2014, AfDB sanctioned funding worth USD256 million for infrastructure development in Nigeria and Ethiopia. The investment is targeted at construction of port infrastructure in the Lekki Port in Lagos and establishment of Kukuza Project Development Company in Ethiopia.[30]

External infrastructure financing in Africa, 2012



Source: (1) Others include China, Arab States and emerging countries such as Brazil and India (2) According to Brookings, ODF, PPI and China accounted for over 97 percent of total external infrastructure financing in Africa, in 2012

In addition, the World Bank has also committed an investment of USD1.2 billion to fund infrastructure growth and enhance the attractiveness of East African Community (EAC) states (including Burundi, Kenya, Rwanda, Tanzania and Uganda). Moreover, the World Bank will work with International Finance Corporation (IFC) and Multilateral Investment Guarantee Agency (MIGA) to provide additional resources via market-driven private sector financing. The funding will support the planned investments in the region for the next three to seven years.[31]

The African infrastructure sector is likely to gain not only from the funds invested, but also the technical know-how brought in by the foreign players. These players hope to replicate projects already executed in their countries with greater efficiency. However, external funding has to be backed by substantial public/government funding to fully meet the infrastructure needs of Africa.

28. Financing African Infrastructure - Can the World Deliver?, Global Economy and Development at Brookings report, March 2015
29. Infrastructure Development Within The Context Of Africa's Cooperation With New And Emerging Development Partners, United Nations
30. AfDB approves US $256 million investments in infrastructure, water, sanitation and health, AfDB, 9 September 2014
31. World Bank Group to provide $1.2 billion to improve infrastructure and competitiveness of East African Community, World Bank, 29 November 2014

Investing countries could benefit by being a part of the growing African economy, by building their 'geopolitical spheres of influence' and gaining access to commodities. Furthermore, investors are increasingly focussing on funding the infrastructure development in Africa given its strong macroeconomic growth, improving business environment and rising consumer base.

Moreover, there is considerable potential for external investors to invest in the African infrastructure sector. According to New Partnership for Africa's Development (NEPAD), there is a requirement to construct 37,200 km of new railway lines, 37,200 km highways and 16,500 km power lines by 2040. NEPAD estimates that the investment requirement would be of USD360 billion over the next 25 years.[32]

India is well placed to tap the growing potential of the infrastructure sector in African countries such as Ghana, Nigeria, Kenya, Tanzania, South Africa and Botswana. This is because of similar cultural influences, strong entrepreneurship talent and cost-effective operating models. According to AfDB, the Exim Bank of India has been one of the few agencies that work with Africa through the extended concessional LOC to African countries with an aim to develop infrastructure in the region.[33] Therefore, India has a significant opportunity to invest in Africa's infrastructure and build on the existing partnerships and relationships in the region

India's focus on Africa's infrastructure

Brazil, Russia, India, China and South Africa (BRICS) have emerged as a major financer and developer of infrastructure projects in Africa.[34] The companies across Asia, particularly Korea and China, are showing willingness to undertake projects which are considered as unviable by many companies in the West. Likewise, India is also looking for new markets with potential investment and cooperation opportunities. It has extended assistance to Africa chiefly in power and railway sectors in the past.[34] The key advantages offered by venturing Asian companies include easy disbursal of loans and technical assistance, and the ability to deliver projects at lower costs (due to the ease in accessing cheaper loans from the government).

India's aid to African infrastructure may be lesser than some of the other countries, but it has been growing at a rapid pace. Foster estimated that during 2003–07, India financed 20 infrastructure projects in Africa, with an approximate investment worth USD2.6 billion, averaging USD500 million per year.[34]

A couple of years ago, during the economic slowdown, Indian infrastructure companies were increasingly embracing projects in Africa in order to balance the impact of the slowdown in domestic orders due to prolonged decision-making by the Indian government, difficulties in land acquisition and ecological clearances. However, with the economic revival , the infrastructure sector within India is also going on an upswing. Several game-changing projects such as the 'Smart Cities' and the 'National River Linking Project' (NRLP) are showing potential with regards to changing the Indian infrastructure landscape. Likewise, if these projects are replicated in the African continent, they are likely to have the same impact.

Strong order prospects in areas such as roads, infrastructure concentrated in urban areas, mining and housing, along with less entry barriers in the African region are presenting opportunities for Indian companies to enter the African market.[35]

While a major concentration of the Indian companies has been on developing roads across Ghana, Nigeria, Gabon and Tanzania, India's involvement in a big railway project in Nigeria (involving aid, trade and private participation) indicates connections across several infrastructure sectors[34]. Overseas investment is one of the foremost steps to enter the global marketplace and in the recent times, India has taken essential steps to realize its presence in the global marketplace. There have been a number of instances where Indian private-sector players have positioned themselves to exploit Africa's infrastructure opportunities. Apart from private players, the Government of India too has been seeking to leverage investment opportunities in Africa's infrastructure sector. India's development assistance has been extended through budget allocation controlled by its Ministry of External Affairs and LOC administered through the Indian Exim Bank. By 2010, India had provided funds worth USD3.4 billion in 93 lines of credit to 47 African countries.[33] In addition, in November 2009, the Exim Bank signed an MOU with AfDB to set up a project development company to enable Indian developers to execute infrastructure projects across the continent.[34]

To further enhance India's presence in the infrastructure sector, the Exim Bank has been extending LOC to several African nations. For example, in September 2015, LOC of USD24 million was extended to the Government of the Republic of Côte d'Ivoire for financing Electricity Interconnection Project between Côte d'Ivoire and Mali.[36]

32. Return on Investment in Africa's infrastructure will far outweigh costs, Homestrings, 9 January 2015
33. Africa-India partnership at the centre of discussions: an opportunity for shared experience in project financing in Africa, AfDB, 29 May 2015
34. Infrastructure development, within the context of Africa's cooperation with new and emerging development partners, UN report, accessed 9 October 2015
35. For infrastructure companies, Africa's a land of opportunities, The Economic Times, 31 October 2011
36. Exim Bank extends LOC of USD 24 million, Exim Bank India website, http://www.eximbankindia.in/node/1410, accessed 12 October 2015

Overall, the growing trade relations between India and Africa have cemented prospering business collaborations across key African economies. Several Indian companies are now increasing their business within the African region by implementing organic growth measures. It is apparent that the economic enhancement, increased government support, resource abundance could continue to drive Indian investments into Africa, and in turn expected to present favourable prospects for bilateral growth.

According to media reports, it is believed that whatever has worked for India is likely to work for Africa as well. Africa, too, is a continent with a huge population, encompassing massive arable land, with negligible infrastructure, similar to what India was 20 years ago. Thus, the massive population base (which is gradually being economically liberated) could prove to be a big business opportunity in the years ahead. This is quite similar to the Indian growth story that occurred over the last couple of decades and provided a big opportunity for Indian entrepreneurs and corporates.

Upcoming trends - shaping the future of African infrastructure

Africa's high growth prospects present significant business opportunities for the corporates and investors to contribute to the development of this billion-plus population continent. With a projected annual growth of 5.5 per cent per annum by 2025, Africa is expected to become the second fastest growing regions worldwide overtaking the Middle East.[37] A continual growth in the African countries could certainly induce the need for constructive foreign investments. This would provide India the opportunity to invest in the region and act as a 'solutions partner' by generating employment opportunities, providing training for skill development and establishing the required infrastructure.

According to the 'Doing Business Report 2014' by the World Bank, Sub-Saharan Africa has accounted for the largest regulatory (telecom deregulation, tax cuts, power sector reform, land rights and others) reforms during 2013–14. The African continent has also witnessed large spread macroeconomic stability which is highly beneficial for global businesses. Consumer goods, IT services, agriculture and infrastructure, specifically power and pharmaceuticals provide vast opportunity for India to be 'solution provider' and thus establish its presence and credentials firmly in the region. This indicates that the current times are most appropriate for Indian companies to build on the existing African momentum and for the country to derive bilateral benefits from the Indo-African relationship

Potential opportunities for India

The global investment model is shifting from 'should one invest in Africa' to 'managing the risk of not being in Africa'. With the inclusion of South Africa in BRICS nations, India is now even more well-positioned to take advantage of a range of opportunities in Africa, which is a continent of thousands of Indian immigrants. Indian businesses are making use of the expatriate Indian network to capture business opportunities in Africa.

Infrastructure is one such sector where the Indian companies are slowly grabbing foothold. Given that Africa faces a funding gap of USD 48 billion[38] for the next decade in its infrastructure sector, opportunities for Indian infrastructure companies to invest in Africa are abundant.

Africa has a vast population, improving investment environment, better economic management. Additionally, India's rising demand for Africa's resources, make the continent a desired destination for infrastructural investments for India. During the last decade Africa has had the highest growth rate of private foreign direct investment (FDI) among the emerging markets (including India). Between 2003 and 2012, India accounted for a decent share of FDI inflows into Africa with a major focus on telecom, energy and mining sectors. However, it still lags behind countries such as the US, the UK and France, showcasing prospects for the Indian infrastructure companies to invest even further.

Transport and power: filled with opportunities

Out of the expected business opportunity worth USD 2.6 trillion per annum by 2020, infrastructure is expected to contribute USD 200 billion, which in itself is a notable amount.[38] Amongst all the sub-sectors, transport (including roads and highways, ports and airports, railways) and power present immense opportunities in the region's infrastructure space. As Africa's power sector chases to catch up with other emerging markets, it offers a substantial growth potential for the Indian companies. The private Indian players have enhanced significant generation capacity in the last few years. The country's installed power generation capacity has risen from 112,700 MW to 234,600 MW over the period 2004-14.[39] In this context, the Indian companies can leverage their entrepreneurial mindset, technical know-how, expert engineering capabilities in ramping up Africa's infrastructure. Several big Indian power companies have already entered the

37. Africa's Pulse, An analysis of issues shaping Africa's economic future, World Bank report, October 2013
38. India investing in South Africa and Africa, KPMG report, 2013
39. India's power generation capacity doubles to 2.34 lakh MW, India times, 17 February 2014

African power sector in the past years. Apart from the private players, public sector's support is also essential for the Indian companies to succeed since nations across the continent prefer direct dealings with the government, which lends credibility, especially in the early stages of projects.

However, several challenges, which are characteristic of a developing nation, proliferate and Indian companies might have to encounter them. These could include subdued power generation and demand, poor distribution across all the countries, unreliable power purchase agreements; fuel supply could be restrained due to the lack of coal mines in all the nations, relaxed regulations, inadequate local talent and political and economic volatility.

The region's transport sector, too, presents a good opportunity for the Indian companies. For instance, lack of railway connectivity across Africa. However, a number of projects to improve the regional connectivity are ongoing. Tanzania is an apt example, which seeks funding from an Indian company to invest in a metro rail project.[40] Such projects provide the state-owned Indian railways with extensive opportunities for outward expansion. Africa's port projects are also a step in the right direction, however, the region still needs to do more for moving goods by sea. As far as the airways are concerned, both Eastern and Southern Africa have infrastructure in place with plans for two new airports in the western part.

Thus, Africa's infrastructure sector is endowed with ample opportunities for the Indian companies. Moving ahead, a number of India-based infrastructure companies, with plans to expand global presence, having large purchasing power and a strong appetite for acquisitions, would be eager to collaborate with Africa. While a few companies are already operating in the continent, others are expected to follow suit.

40. Tanzania seeking India funding for urban metro rail project, Economic Times, 20 June 2015

Energy and Natural Resources

Africa's energy demand is registering significant growth owing to urbanisation, rising population and strong GDP prospects., Africa accounts for 13% of the world's population, but only 4% of its energy demand.[1] This deficit in demand could create enormous business opportunities. Africa's oil and gas sector is one of the highest revenue-generating sectors.

Commanding 10 per cent of the world's oil and gas reserves, Africa fulfils approximately 7 per cent of the global gas demand. Also, the continent is home to 15.7 per cent of shale gas potential with approximately 2,200 blocks still unexplored,[2] which presents a sizeable opportunity for the investors.

Africa's growing reliance on renewable sources is expected to fuel economic growth and improvise energy security with limited environmental impact.

Currently, a large segment of the population depends on biomass fuel for cooking, which has detrimental impact on the environment as well as public health and hence, Africa is exploring sustainable solutions. A shift to modern, renewable energy cooking solutions is expected to reduce the use of traditional cooking stoves by more than 60 per cent. Furthermore, this shift is anticipated to reduce the health complications from poor indoor air quality and save USD 20 to 30 billion annually by 2030.[4] According to International Energy Agency (IEA), renewable energy is expected to account for almost half of Sub-Saharan Africa's power generation growth by 2040, where solar energy would lead the frontier. The growth potential of this sector is evident since it is estimated that only 10 per cent of the Sub-Saharan hydropower potential is currently being exploited. Other regions including South Africa, Kenya and Ethiopia have plans for wind and solar power installations.[5]

Power is also an attractive investment segment in Africa. Electricity is one of the most important sources of energy in industrial activity. Therefore, its limited availability impedes the economic development of the continent. Africa anticipates a total investment of USD55 billion per year until 2030 to meet the growing demand and attain universal accessibility to electricity.[6] A significant penetration of diesel generators is seen in several countries, indicating consumer willingness towards access of electricity. The cost of diesel generators ranges from three to six times that of grid, offering opportunities for investment across the entire power sector.[7]

Vast resource availability also plays an important role in attracting Foreign Direct Investments (FDIs) to the African continent. As per the United Nations Conference on Trade and Development (UNCTAD),[8] Sub-Saharan Africa received FDIs in access of USD3 billion.[8] The resource-rich countries namely Nigeria, Mozambique, South Africa, Democratic Republic of Congo (DRC) and Ghana were prime receivers of foreign funding. With the recent discovery of hydrocarbons, Eastern regions of Africa that include Tanzania and Uganda, has also attracted FDIs. The growing mining sector across various regions including DRC and Tenke Fungurume has attracted new investments.[9]

Thus, Africa is rich in terms of natural resources with abundant fossil fuels and renewable energy resources. It has many oil and gas reserves, increasing reliance on renewable sources along with untapped potential in the power sector. Therefore, it is a great time for investors to look at these sectors and leverage opportunities available.

Dependence on abundant oil and gas reserves

Africa's oil and gas potential is forecasted to grow significantly in the next two decades, primarily due to high population growth, urbanisation, increasingly-wealthy middle class and increasing demand from emerging markets.

Africa has one-tenth of the world's crude oil. It is accounted as one of the fastest growing oil regions in the world with 30 per cent of all new discoveries.[10] The continent's oil and gas reserves play a crucial role in balancing the world's hydrocarbon supply and demand. In 2015, the continent is projected to contribute 13 per cent to the global oil production.[11] In spite of crude exports, Africa imports expensive petroleum products due to lack of refining strength.[12] Nigeria, arguably Africa's largest oil producer, presents an example, where it has to import refined petroleum products due to insufficient domestic-refining capacity.[13]

Africa is second only to the Middle East as a net exporter of oil. The potential for export is high due to the low level of oil consumption in Africa, registering only 4 per cent of global consumption.[14] Countries in Northern and Western Africa have mature markets and are major contributors to oil and

01. Power in Africa, Sector report, KPMG Africa 2015
03. African renewable energy offers alternative to ExxonMobil, Triple Pundit, 13 October 2015
04. Renewable energy in Africa is set to surge by 2040, IEA Says, Climate Progress, October 2014
05. Power people planet, Africa Progress Report, 2015
06. Power sector opportunities in Sub-Saharan Africa, Power Elec Ghana, accessed on 18 October 2015
08. Middle Africa insight series, Ecobank Report, 23 July 2013
09. Top trends, African Arguments, 08 August 2013
10. Africa's oil boom goes bust, African Arguments, 24 September 2015
11. Transforming Africa, Mail & Guardian Africa, 09 July 2015
12. Africa's biggest economy is shutting down for lack of fuel, Quartz India, 24 May 2015
13. Nigeria to cut fuel imports with refinery makeover, Oxford Business Group, 17 August 2015
14. KPMG oil & gas sector report, KPMG Africa, 2015

gas revenues in the world. Recently, with newly-discovered hydrocarbon reserves, Eastern Africa has emerged as a developing prospect for international oil companies. Currently, hydrocarbons account for 57 per cent of export earnings in the continent.

Africa is estimated to have at least 100 billion barrels[15] of undiscovered oil offshore, offering exploration opportunities for investors. The reserves play a crucial role in balancing the world's hydrocarbon supply and demand. Four countries namely, Libya, Nigeria, Angola and Algeria, accounted for 84.8 per cent of Africa's oil reserves by the end of 2013.[15] Other countries rich in oil resources include Egypt, South Sudan, Gabon, Equatorial Guinea, Republic of Congo, and Chad. In the recent years, new countries including Ghana, Uganda and Kenya are also emerging as areas rich in oil reserves.[15]

International oil prices are volatile and witnessed a sharp decline since 2014. In the last one year, the price of crude oil fell 45 per cent.[16] This volatility has a varying effect on the continent. A few countries are negatively impacted, especially in the Eastern Africa region, as they need substantial investments to commercialise the available hydrocarbon resources. On the contrary, others are benefiting from this price drop as the trend improves the purchasing power of the consumer and reduces fuel subsidy costs. Some oil companies are expected to invest more in Western Africa and benefit from the low onshore oil production cost of the region.

Africa's sizable gas reserves are expected to attract major international investments in the coming years, however, fragile and uncertain policies on investment and restrictive legislations could hinder these transactions. The main gas producers include Algeria, Egypt and Nigeria, which account for approximately 90 per cent of total gas reserves.[15] Natural gas production in Africa is anticipated to rise during 2015[15] with a few of the major gas projects expected to boost the exports by 2018. Even though Nigeria holds maximum reserves, due to limited infrastructure, it falls behind Algeria and Egypt in terms of output. The country is estimated to have 16.8 trillion m^3 gas reserves, hence, offers an opportunity for further exploration.[15] The discoveries of new natural gas reserves in Tanzania and Mozambique have also attracted global attention and are contributing to the economy's growth.

Overall, the prospects of African oil and gas sector seem bright in the context of its significant undiscovered reserves.

Substantial investment is required to churn out the vast mining reserves

Africa produces more than 60 per cent of metal and mineral products, and offers considerable potential for mineral reserves exploration and production.[17] It holds a major share in the world's mineral resources: 60 per cent of diamonds, 40 per cent of the phosphate and 30 per cent of cobalt reserves.[18] According to the US Geological society,[19] Africa is amongst the top two areas in the world with reserves of minerals like bauxite, cobalt, industrial diamonds, manganese, phosphate, platinum and zirconium. In the recent past, the global mining industry is experiencing structural changes owing to the high volatility of commodity prices and rising exploration costs. Africa's mining industry is export-oriented and is critically affected by the world's commodity market. Lower commodity prices reduce miners' profits, royalty and taxes for the country in addition to discouraging investments. Africa accounts for just 8 per cent of the global mineral production.[20] At present, the investment level in the mining sector is relatively low compared to the amount of resources available. Also, the sector is affected by the low levels of industrialisation. Hence, a large chunk of the products are exported as raw materials. The sector is in need of structural transformation which may require leveraging technology and skills from mature markets.

In the coming years, the demand for major mined commodities is expected to grow, primarily to support urbanisation. This is expected to have a positive impact on Africa's mining sector. At the same time, international investors are willing to expand into developing economies for better opportunities like lower cost of production and the African mining industry is sure to benefit from this. Mining firms operating in Africa are also planning to increase investments and are expected to expand their production facilities.[21] The rise in investment can help in better revenue generation, helping the economy in strengthening its comparative advantage and achieve greater economic diversification.

Even though currently the sector is witnessing a global downturn, impacted by fluctuating commodity prices, the advent of the expected rise in investments promises a positive future for the African mining sector. Various measures, such as Africa Mining Vision[20] (AMV), have been adopted to boost the sector. Other initiatives include steps taken by the African Development Bank[20] to support the development of the mining sector in Africa. The bank is intensifying efforts to promote the mining sector through its network of public and private sector operations.

15. KPMG oil & gas sector report, KPMG Africa 2015
16. Transforming Africa, Mail & Guardian Africa, July 2015
17. New technology supports Africa's mining potential, mining-technlogy.com, January 2010
18. Mineral wealth spurs growth, SMBC
19. Mining in Africa towards 2020, KPMG South Africa, 2013
20. Mining industry prospects in Africa, Africa Development Bank Group, 26 December 2012
21. African miners to increase spending in 2015: survey, Mining.com, 08 January 2015

Significantly underdeveloped power system

The continent of Africa has vast energy resources that has not been exploited even remotely. The areas such as Sub-Saharan Africa have high availability of energy resources, however, it lacks energy supply.

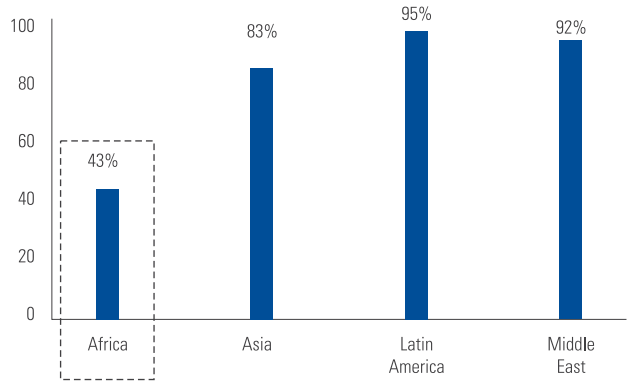
The potential can be measured by the fact that despite accounting for 13 per cent of the world's population, the region generates only 4 per cent of the energy demand.[22] The International Renewable Energy Agency estimated that Africa has one of the lowest installed capacities of around 147 gigawatt (GW), with the consumption in the Sub-Saharan Africa region, which is about 153 kWh/year.[23] This difference poses an opportunity for substantial investment and increases the scope for private sector participations in the energy development across the region. To meet the growing demand, Africa needs to add around 250 GW of capacity between now and 2030.[23] The significance of the sector is further reinforced by the fact that the untapped potential results in loss of 2 to 4 per cent of the country's GDP annually.[24]

Africa's electricity generation has increased steadily over the years. The electricity generation registered an increase of 48 per cent between 2002 and 2012, and has reached over 680 billion kWh in 2012. The electricity generation witnesses a scattered pattern with South Africa and Egypt, collectively, accounting for nearly 60 per cent of the total generation in 2012. On the contrary, more than half of the countries in Africa contribute only 1 per cent to the overall electricity generation. Likewise, electricity consumption also showed a similar pattern increasing by 47 per cent over the period to reach 600 billion kWh.[23]

One of the biggest challenges faced by Africa is access to energy primarily due to a poor distribution network and inefficient quality of supply. A higher proportion of energy produced in most African countries is directed towards industrial enterprises rather than to the general population.[23]

In comparison to other developing markets, Africa registers the lowest electrification rate. In most of the African countries, electricity access is generally limited to urban areas, with the overall electrification rate remaining low.[23] In the present scenario of Sub-Saharan Africa, only 32 per cent out of 915 million people have access to electricity.[22] Two-thirds of the population in the Sub-Saharan Africa region live in scarcely-populated rural areas without access to an electric grid. The scattered population makes the grid connections expensive.[25] Only a few regions such as Cabo Verde, Mauritius, Réunion, Seychelles and South Africa have more than 80 per cent of the electrification. As per IEA, 315 million people in the rural areas of Sub-Saharan Africa are expected to gain access to electricity by 2040, with 220 million of this population anticipated to gain access through off-grid and mini-grid solutions.[26] Given an investment of USD205 billion, the Sub-Saharan Africa region might register an electrification rate of 70 per cent by 2040.[27]

National electrification rate (%) 2012



Source: World Energy Outlook 2012,

It can be stated that the power sector has untapped potential, especially with the need for additional installed capacity and future plans for the electrification of rural areas

The value proposition in the India - Africa energy collaboration

The India Africa relationship has gained momentum in the recent years. Higher economic engagement has acted as a prime driver in boosting ties between Africa and India. India's trade is expected to rise substantially in the near future. India relies heavily on Africa for its energy requirements. In turn, Africa's dependence on India can help in the continent's growth and development in various sectors.

22. Africa energy outlook, World Energy Outlook 2014, IEA
23. Power in Africa, Sector report, KPMG Africa 2015
24. Power People planet, Africa Progress Report, 2015
25. Standardized baseline assessment for rural off-grid-electrification in sub-saharan africa, UNDP 2013
26. African utility companies struggle to stay on the grid, Climate Central, 20 June 2015
27. Africa energy outlook 2014, October 2015

A long-standing relationship

The first collaboration between the two nations, which triggered India's role as a development collaborator, was the Indian Technical and Economic Cooperation (ITEC) Programme that was initiated in 1964.[29] Over the course of time, this evolved into wider participation with current involvement of national governments, private sector, etc.

Africa's role in India's energy strategy

Energy trade is one of the major drivers of the India Africa partnership. India is the fourth largest consumer of electricity accounting for 4.4 per cent[30] of global energy consumption and is soon expected to take over Japan as the third-largest consumer.[31] India's economy is expanding and is expected to grow by 7.7 per cent in 2016.[32] With this trend, it is also projected that, by 2035, India's energy production will rise by 117 per cent and consumption by 128 per cent.[33] At present, maximum of India's energy needs are met by coal and oil.[34]

Due to the expected strong growth in demand, India's dependency on oil imports is likely to increase further. According to IEA estimates, India's oil demand would grow at a CAGR of 3.5 per cent to reach to 4.7 million barrels per day in 2020.[35] The reliance on oil imports is expected to grow from 79 per cent in 2014 15 to 90 per cent by 2020,[36] primarily due to high economic expansion and the rising demand from factories and the automobile sector.

To meet the energy crisis and to attain better accessibility of power, India needs an investment of USD250 billion over the next five years.[37] The government is planning to invest USD100 billion in renewables and USD50 billion in the transmission and distribution of power. As a part of its international strategy, India has diversified its energy suppliers to balance its acquisition portfolio. It has reduced its dependence on Gulf countries with overall imports from the Middle East registering a decline of 5 per cent to reach to 109.9 million tonnes (MT) in 2014 15. At the same time, the imports from Africa registered an increase from 30.39 MT in 2013 14 to 33.1 MT[38] in 2014 15, accounting for 16 per cent of India's oil imports worth USD125 billion. Government is promoting National oil companies (NOCs) to increase investments in oil and gas assets in the African continent.[39] This growing dependence on Africa is likely to be one of the key influencers in India Africa trade and investment.

Several Integrated oil companies (IOCs) are planning to acquire stakes in oil and gas blocks and are also planning to form new joint ventures to procure crude oil and liquefied organic gas from Eastern Africa.[40] With the roll-out of new technology like Full Tensor Gradionometry (FTG) and 3D seismic surveys that trap hydrocarbons, the region promises significant hydrocarbon production.[40] Kenya, alone, is expected to have a billion barrels[40] of crude oil reserves. This gives an opportunity to potential investors like India to invest in oil blocks.

With the surge in energy needs, India is also focussing on nuclear energy as one of the alternatives to meet the demand. The nuclear power capacity is expected to be tripled by 2024 from 5,780 megawatts. India aims to produce 25 per cent of its electricity through nuclear power by 2050.[41] India has entered into numerous nuclear deals with African countries. In one of the agreements signed, India will depend on Namibia for Uranium supplies. Uranium trade is critical for India's civil nuclear programme, which is focussing on India's pressurised heavy water reactors fuelled by this metal. Also, Africa's civil nuclear industry is apparently underdeveloped and India's expertise could help African nations progress in this sector. A few exploration projects are underway with the aim of acquiring stakes in uranium deposits particularly in Namibia. Malawi, Namibia, South Africa, Niger and Madagascar, are the top exporters of uranium to India.[42]

In the recent times, India has diversified its portfolio of energy suppliers, with increasing dependence on Africa for its oil imports. Additionally, various deals have been signed with Africa for the development of nuclear power, reinforcing its importance as an essential part of India's energy security.

What a rejuvenated India is offering to Africa

India is evolving its strategy for securing energy in future. It is an import-dependent country and relies on foreign suppliers to fulfil its energy demands. In fact, the imports are expected to be over 50 per cent by 2030. The energy sector is one of the top priorities of the government. Therefore, it has introduced new policy directives to facilitate exploration and accelerate development of domestic resources.

The government aims to reduce its import dependency by exploiting the available hydrocarbon resources. India has also increased the investment in exploration and production of natural gas from sources within the country. To further develop its energy portfolio, India has been sourcing natural gas from overseas and continues to look for more sources to tie-up on a regular supply.

29. 50 Years of Indian technical and economic cooperation, Indian Development Cooperation Research, January 2015
30. India leveraging oil imports for market access, Live Mint, June 2015
31. India is battling Japan to become the world's third largest oil consumer, Quartz India, 17 June 2015
32. India's economic growth to surpass China's in 2015-16: UN report, Economic Times, 19 May 2015
33. Nuclear power in India, World Nuclear Association, September 2015
34. Oil and gas in India, IBEF, September 2015
35. India is battling Japan to become the world's third largest oil consumer, Quartz India,04 June 2015
36. India's oil imports to be 90% by 2020: Report, IBN, 29 August 2015
37. Power minister says $250 billion needed to tackle energy crunch, Reuters, 11 November 2014
38. India cuts oil imports from top supplier Saudi Arabia, increases from Africa, Business Insider, 27 July 2015
39. India to focus on oil diplomacy at India–Africa Summit Forum, Creamer Media, 07 October 2015
40. India turns attention to East Africa's oil and gas blocks, ITEOil&Gas, 16 January 2015
41. India nuclear sector trickles down, The National, October 2015
42. Energy, nuclear and uranium: Critical frontiers in India-Africa relations, Foreign Policy Journal, 20 July 2012

In coming years, the country is expected to witness a shift in its energy-mix from coal and petroleum to other renewable resources. The government aims to generate 188 GW of renewable energy by 2022. India is the only country to set up a Ministry of New and Renewable Energy (MNRE) with an aim to support, design and development of renewable source of energy in the country.[43] A large number of reforms have been introduced aiming at the renewable sector. In the coming years, the government plans to invest USD100 billion in the renewable energy sector. As of July 2015, the total thermal installed capacity stood at 191.6 GW, while hydro and renewable energy installed capacity totalled 41.9 GW and 36.5 GW, respectively. At 5.8 GW, the nuclear energy capacity remained broadly constant compared to the previous year. The Indian solar installations are forecasted to be approximately 2,500[44] MW in 2015.

The country has revised its target estimates for solar power capacity from 22 GW installed capacity in 2022 to 100 GW by 2019,[45] primarily driven by its vast population, good irradiation, growing energy demand and power deficit, limited access to fossil fuels and a large number of unlit villages. According to solar intelligence firm Bridge to India, in 2015, India's solar industry is expected to grow by 250 per cent,[46] ahead of Germany, to enter into the top five solar markets globally in the next three years. New domestic policies such as mandatory solar rooftops on buildings and the construction of solar parks have been announced to boost solar power. Sustained economic growth and the government's objective of 'power for all' has been driving solar and hydro power electricity in India.[47]

The government has also revised the target to double install wind power capacity to 40 GW by 2019.[48] At present, India is just behind China, the U.S., Germany and Spain in terms of the total installed wind power capacity. India is home to a few large wind turbine companies and permits 100 per cent foreign direct investment in the renewables sector. However, India usually prefers joint ventures to expand local presence.[49] At present, the country is looking at various ways to diversify the application of wind energy. Experiments are underway to identify the usage of wind energy in various exploration processes such as fracking, providing power for irrigation systems, etc.[50]

Indian government plans to boost the use of biofuels in the transportation sector. MNRE has proposed a national biofuels policy with a target of 20 percent blending of transportation fuels including diesel and petrol with bio-diesel and bio-ethanol by 2017.[51] The government is planning to enhance the incentives for production activities as well as encourage foreign investment in the sector. Additionally, the government has also created a National Clean Energy for funding research and innovative projects in clean energy technologies.

The Government is taking major initiatives for low cost financing of renewable energy such as low cost borrowing through multi-lateral and bi-lateral agencies, approval for issuance of tax free infrastructure bonds for funding renewable energy projects, etc. In rural areas, Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY) scheme offers grant through REC for decentralized distributed generation. These measures are aimed to increase the renewable energy usage in the country.

As a reform measure, the government has updated the India Energy Security Scenarios, an energy-scenario building tool. This framework offers assessment of alternative policy options, different combinations of efficiencies of energy demand and supply sectors. The government has also introduced initiatives of 'Make in India' and 'Smart Cities' to reinforce the need for greater access to affordable and efficient energy forms. The development of Smart Cities using solar power is another major trend, which will increase Africa's power supply to India.[52]

The Electricity (Amendment) Bill 2014 induced a wide and deep impact in the power sector. The renewal energy promotion, open access in the country and the separation of distribution and supply function signify a fundamental shift in the sector. The bill aims to remove the monopoly of power distribution companies by segregating the distribution from the supply business in the power sector by issuing multiple supply licensees. The government has also introduced renewable purchase obligations (RPOs) for solar from 3 per cent to 10.5 per cent, coupled with non-compliance penalties. The government will also mandate a 10 per cent[53] renewable generation obligation (RGOs) for new conventional power projects.

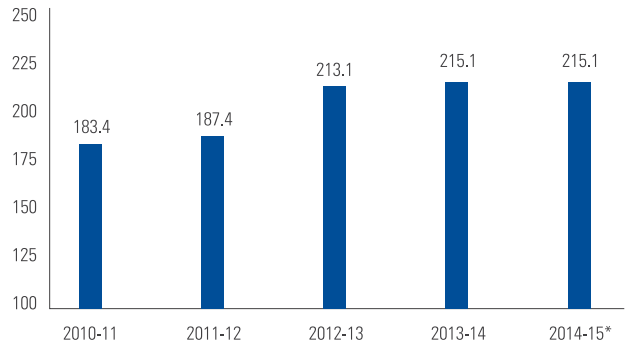
In India, more than 290 million people[54] live without basic lighting, negatively impacting economic growth. The Rockefeller Foundation[54] has been playing a pivotal role in increasing rural electrification through a model that provides electricity through mini-grids for lighting and business use. The model involves growth and support for small scale Energy Service Companies (ESCOs), innovative partnerships, policy and regulatory engagement.

43. Renewable energy, Arena, accessed on 17 October 2015
44. Indian solar market ready to takeoff says Mercom Capital Group raising solar installation forecast to 2.5 GW for 2015, Mercom Capital, accessed on 20 October 2015
45. India officially ramps up solar power target to 100 GW by 2022, Clean Technica, 22 June 2015
46. Renewable energy heats up in India, CNBC, 29 June 2015
47. Ministry of power, October 2015
48. India eyes $100 billion investment in renewable energy, Clean Energy, 09 November 2014
49. Renewable energy heats up in India, CNBC Press Release, 29 June 2015
50. Wind energy will play a major part in shaping India's future, Economic Times Press Release, 04 January 2013
51. India Proposes National Policy On Biofuels, Clean Technica, August 2015
52. Ministry of power, October 2015
53. India to amend its "Electricity Act", Bridge to India
54. Smart power for rural development, The Rockfeller Foundation, accessed on 18 October 2015

Challenges like high transmission and distribution loss because of large distances, terrain and lack of funding for physical infrastructure are prevalent and applicable to Africa as well. The foundation wants to expand the model to additional countries. It has partnered with leading consulting firm to assess the viability of model in seven countries throughout Africa and Asia.[55]

India has evolved into a major refining hub and exporter of refined products. The refining capacity grew at a CAGR of 4 per cent during 2010 to 2015. The refinery capacity is expected to reach 307.4 million metric tonne per annum (MMTPA) by the end of the Twelfth Five Year Plan.[56] To attract more FDIs, the government has further liberalised the policy. FDI for petroleum refining has been allowed with 49 per cent foreign equity under the automatic route instead of approval through Foreign Investment Promotion Board. The government is promoting India as a preferred and economically viable refining destination for both, domestic as well as the export markets.

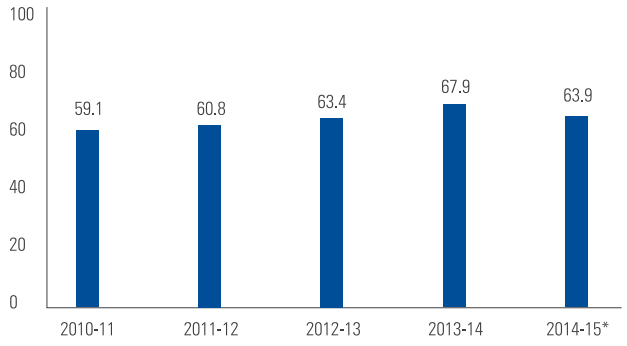
Refining capacity (MMTPA) 2010-15*



Note: *As on 1st April of initial year
Source: Indian Petroleum and Natural Gas Statistics 2014-15, Government of India, Ministry of Petroleum and Natural Gas

The export of petroleum products are increasing over the years in India. The domestic demand has also increased with the opening of the retail fuel market for private refiners as well as higher demand from the automotive sector. Despite crude exports, Africa imports refined petroleum products at a high cost. While India is expanding the existing refineries and constructing new ones, Africa is projected to add only a 46,000 barrel per day total upgrade capacity by 2016.[57] Africa can team up with India and leverage its expertise to upgrade itself from the current state.

Export of petroleum products (MMT) 2010-15



Note: *Indicative value
Source: Indian Petroleum and Natural Gas Statistics 2014-15, Government of India, Ministry of Petroleum and Natural Gas

With the 'Make in India' initiative, India is focussing on increasing its dependency on natural resources like solar and wind energy for power generation. India's targets for solar and wind energy generation deployments are second only to China.[58] Further, South Africa could join forces with India, making the latter a hub for all the research and development activities to achieve its objective to grow at 30 per cent for the next three decades.

Along with investment opportunities, India is offering significant opportunities for renovation, modernisation of aged power plants, building grid infrastructure, technology deployment along with offering employment and training opportunities to African nations. Currently, India is helping Nigeria overcome this constraint by offering technological support since India also imports oil from Nigeria. Similar support by Indian companies has been witnessed in Liberia, South Africa (nuclear power plant), Kenya and Tanzania.[59]

Leading NOCs and private players in collaboration with Ministry of Petroleum & Natural Gas (MOPNG) and Ministry of Power have invested in countries such as Algeria, Angola, Burkina Faso, Djibouti, Ethiopia, Ghana, Guinea Bissau, Liberia, Malawi, Mauritania, Morocco, Mozambique, Nigeria, Namibia, Sudan, Tanzania, Tunisia, Uganda, Zaire, Zambia and Zimbabwe.

With the advent of new initiatives introduced by the governments, revised targets of renewable energy, India's growing refining capacity and various measures undertaken for rural electrification, Africa could further collaborate with India for its economic growth and stability.

55. Smart power for rural development, The Rockfeller Foundation, accessed on 18 October 2015
56. Indian petroleum and natural gas statistics 2014-15, Government of India
57. Africa Needs greater oil refinery capacity urgently, Evaluate Energy, 23 June 2014
58. Renewable energy: A new sunrise in Indian power sector, Make in India, accessed on 18 October 2015
59. Ministry of power

India - Africa energy cooperation: looking forward

The present scenario

India and Africa share a symbiotic relationship in the energy sector. While African countries are able to address India's growing energy demands with their abundant resources, India is a suitable partner to help Africa exploit its natural resources, given the sub-continent's experience and expertise of operating in a similar challenging environment.

Africa has easy access to natural resources and metals and minerals, and is expected to play a greater role in addressing the rising need for hard and soft commodities across the world. It is estimated that Africa houses close to 30 per cent of the world's mineral reserves, and approximately 10 per cent of its oil and 8 per cent of global gas reserves.[60]

India is one of the key importers of these commodities from Africa. It is estimated that African crude oil imports contribute approximately 21.5 per cent of India's total crude oil imports.[61] The major petroleum suppliers are Nigeria, South Africa, Angola, Egypt, Algeria and Morocco.[62] In June 2015, it was reported that Nigeria became the top crude oil supplier to India, displacing Saudi Arabia from the top spot. Indian companies are switching to African companies due to the spot prices offered by African suppliers.[63] Nigeria's oil exports to India rose by almost 200 per cent, delivering nearly 745,000 barrels per day.[63]

However, over the past decade the geographical distribution of India's trade with Africa has evolved further. In 2002, the majority of exports (60 per cent) to India was attributed to Southern Africa, with Western Africa accounting for only 16 per cent of the total. Conversely, in 2013, Western Africa's share in total exports increased to 40 per cent and the southern region's share declined to 24 per cent.[62] In addition, media reports[64] suggested that Indian players could meet their energy requirements by exploring the potential of oil and gas reserves available in Eastern Africa.

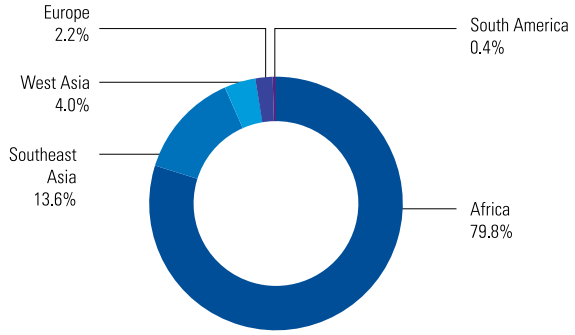
To build on its trade relationship and meet its energy demands, India is actively investing to tap the unexplored potential of the African continent by directly acquiring stakes in African resources or establishing joint ventures. The International Energy Agency estimates that from 2013 to 2040, India will account for the highest growth in oil demand at a CAGR of 3.5 per cent.[65] Some of the key focus sectors include natural gas, petroleum resources, electricity and renewable form of energy.

In terms of countries, India has made significant investments in Mozambique, amounting to approximately USD7 billion. India is looking to strengthen its relationship with Mozambique by investing in an 80 trillion cubic feet offshore gas reserve. Recently, the two governments have expressed interest to partner on developing non-conventional energy resources.[66]

Furthermore, it is highlighted that there is significant untapped opportunity for Indian companies to invest in Ghana. The African country has declared a plan to double its existing power-generation capacity, by adding 3,665 MW capacity in the next five years.[67] Moreover, India can help Ghana exploit its abundant resources of metals and minerals with the former's technical know-how in mining.

Both state-owned and private companies are actively investing in the African energy sector.

Regional distribution of Indian LOCs to energy projects (2004/05-2013/14)



Source: Trends in Indian Development Assistance in Energy sector Energy, Indian Development Cooperation Research

60. African natural resources center (ANRC), AfDB, accessed on 14 October 2015
61. India turns attention to East Africa's oil and gas blocks, ITE Oil&Gas, 16 January 2015
62. India-Africa ties energised with oil and other products, DNA Times, 3 September 2013
63. Nigeria replaces Saudi Arabia as top crude oil supplier to India, International Business Times, 25 June 2015
64. East Africa Oil and Gas : The Next Epicentre, ICWA, 31 January 2013
65. India leveraging oil imports for market access, Mint, 17 June 2015
66. Mozambique needs greater Indian investment in oil, gas sectors, Financial Chronicle, 5 August 2015
67. Ghana invites investment from Indian power companies, Ignite Africa, 11 July 2015

The Exim Bank also plays an important role in exploring Africa's energy and natural resources sector. The bank has partnered with the African Development Bank, to establish a Project Development Company (PDC) in Africa. The newly-established company will assist the Indian private sector to invest in the continent by identifying and conceptualising infrastructure projects in Africa. Given the fact that while Africa accounts for 13 per cent of the global population, it accounts for nearly 50 per cent of the global population without access to electricity. India plans to tap this void and invest in transmission line projects, with an aim to generate 2,600 GW over the next 10 years.[68]

According to the Indian Development Cooperation Research, the energy sector accounted for close to 23 per cent of India's total Line of Credit (LOC) USD2.3 billion between 2004/05 2013/14. Moreover, in terms of region, Africa accounted for the biggest share of India's LOC extension, at 80 per cent between 2004/05 2013/14.[69] In May 2014, the Exim Bank extended USD100 million LOC to support three solar projects in Nigerian rural areas.[70] Additionally, India has offered several LOCs to the Democratic Republic of Congo for projects in the areas of rural electrification and cement plants, among others.[71] Both countries are in a suitable position to build on their existing trade and business relationships, to expand their geopolitical presence and achieve the desired economic growth.

Prospects and challenges

Being one of the prominent consumers and importers of hydrocarbons, a key priority for India is to build and strengthen its ties with countries rich in oil and gas. Due to the political upheaval in the Middle East and volatility in West Asia, it is expected that India may have to increase oil imports from the Sub-Saharan African countries including Nigeria, Angola, Algeria, Sudan and Congo which could be about 20 per cent of India's fuel imports.

Africa's evolving regulatory environment

The regulatory reform of Africa is complex, however, the situation is improving. A number of African countries are introducing ongoing reforms with the aim to make business incorporation and trade easier. According to The World Bank and IFC's Doing Business 2015 report, between 2013 and 2015, Sub-Sahara Africa implemented the largest number of reforms that streamlined and reduced the complexity of regulation. Other countries, such as Ethiopia, and Lesotho, have improved the banking regulations with the introduction of more legislative protections for investors and easy accessibility to credit reporting information. Many countries are also instituting quality control regulations for better distribution network of lighting and cook stove products.[72] Furthermore, many member countries of Southern African Development Community (SADC) have autonomous regulatory bodies. The regulatory agencies in the region have also created a Regional Electricity Regulators Association of Southern Africa (RERA), a platform for exchange between independent electricity regulators within the SADC region.[73] Additionally, The African Development Bank is encouraging African countries to formulate required legal and regulatory framework for PPPs for ease in trade across Africa.

The changing legislative reforms and opening of energy sector to private players have triggered changes in the regulations with the aim to facilitate the trade and investment.

New India's new approach

Characterising its engagement with Africa as 'distinct and different from any other', India's capital city, New Delhi, is working on developing a model that amalgamates resource extraction with long-term industrial growth in the host country or region. India has implemented a policy of adding value to its investments and attempts to mix itself into the economy, rather than simply viewing Africa as a supply depository for resources. The objective is to develop and foster a more conducive and sustainable relationship between the two regions.

Driven by this approach, the Indian government is not only eager to purchase more crude oil, source larger volumes of gas and invest in more upstream opportunities. It is also focussed on capacity building, human resource and infrastructure development, narrowing the information gap. India is even building closer cultural contacts with African nations by offering skills, talent and technology and participating in community development programmes.

India's focus on Africa is also vigilant in delivering dividends. The bilateral trade between India Africa has grown in the past years, however, lagged behind considerably in comparison to China. India recognises the challenges imposed by other nations pursuing similar relations with Africa, but also realises that in the end, it is Africa's view on Indian policies that matters the most. In several ways, India is better placed to understand the challenges faced by the African countries, since not so long ago, India also faced similar challenges and risks related to governance, security, infrastructure and regulations. Unlike some other countries, India's approach in the African region could be development-oriented, with an emphasis on long-term interest in Africa based on training, technological assistance and trade.

68. India eyes Africa's 2,600 GW power pie over next 10 years, Economic Times, 13 October 2015
69. Trends in Indian Development Assistance in the Energy Sector, Indian Development Cooperation Research, 1 February 2015
70. "Exim Bank of India and Nigeria sign US $100 million loan for energy development", African Development Bank Group, 23 May 2015
71. Export-Import Bank of India, 26 February 2015
72. Political and Regulatory Environment, Energy map, accessed on 19 October 2015
73. Regulating the energy sector, Energy Regulation Board, 19 October 2015

India's changing penetration in the African markets

However, there are several challenges, related to security and stability issues, that India encounters with respect to increasing fuel imports from traditional oil-rich countries (especially in the Western African region), barring few like Angola and Sudan. Various analysts acknowledge that the continent's oil industry is largely captured and engrained in China's resource diplomacy, bringing external actors to fully benefit from enormous oil reserves in these countries.

Although a latecomer to Africa's energy sector, limited to oil trade with Nigeria, India has understood the importance of developing a deeper and more enduring relationship with Africa's energy sector. As far as Africa is concerned, the overall energy sector faces several risks pertaining to domestic growth, competition from other buyers, impoverished local human resource and transport infrastructure, corruption, regime insecurity, fragmentation with many states regimes and cultures, and rising civil societies that can help in transparency but slowdown the environmental clearances.

Africa's financial market

FDI inflows into Sub-Sahara have increased from USD 148 billion in 2000 to USD 246 billion in 2012.[74] However, Africa's largely underdeveloped financial market poses as a challenge for Indian investors and requires Indian players to raise money locally. This would require strong support for development finance options such as micro-finance and project finance.

Recommendations for consolidating India's position in African energy

Various opportunities that exist for India Africa tie-up in the energy sector are as follows:

Investment in renewable companies in Africa

India could also announce initiatives in Africa to promote green technologies and to create expertise in the rural electrification process. Partnerships with African companies are likely to create opportunities to produce alternative energy sources. This is because most African countries do not have large hydrocarbon resources and, the ones which do, need increasingly sustainable and cleaner forms of energy to meet climate change pressures.[75] Moreover, connecting through locals is more likely to achieve a higher degree of acceptability among the rural population.

Have a development-oriented approach with a long-term vision

While entering a period of re-engagement with Africa, India needs to be aware that there are other potential competitors as well who are waiting to build and strengthen ties with Africa. India needs to be careful in its approach, to avoid being perceived as mercantilist and interested solely in resource extraction. Thus, India needs to grab the advantages it has over other countries, such as the traditional ties based on similar colonial heritage, goodwill existing between India and African countries and accordingly endeavour to enhance relationship between the two regions.

Improve investment environment in Africa

Africa historically has seen large capacity addition projects financed by state-owned power utilities. But with the increasing scale and complexity, the financing approach needs to evolve. Taking a cue from China, Indian companies could explore capital raising through government backed funding and development finance institutions.

Leverage India's refining capability

Another opportunity for the India Africa energy sector lies in the region's (especially Nigeria's) disparity between its petroleum refinery capacity and consumption levels. While India is expanding the present refineries and constructing new ones, Africa is projected to add only a 46,000 barrel per day total upgrade capacity by 2016.[76] This complementary relationship opens up a substantial space for partnerships and collaborations.

Africa to fuel India's nuclear needs

Nuclear energy is a significant part of India's efforts to balance its dependence on energy imports. This goal could be seen as an important part of the India Africa energy partnership through uranium commerce. India is constructing six nuclear reactors and aims to have 25 more in the next 20 years.[77] For this, India would need a sustained uranium supply to support its nuclear energy expansion plans and South Africa is expected to emerge as the largest supplier of uranium, thus providing an opportunity for India to collaborate.

74. Manufacturing FDI in Sub-Saharan Africa: trends, determinants, and impact, World bank, June 2015
75. India and Africa: Towards a sustainable energy partnership, SAIIA, February 2011
76. Africa needs greater oil refinery capacity urgently, Oil and gas Journal, 23 June 2014
77. Nuclear Power in India, World Nuclear Association, October 2015

Africa to incorporate leading practices from India's 'cookstoves programme'

Initiatives such as the National Biomass Cookstoves Programme,[78] to develop next-generation cleaner biomass cookstoves and provide them to Indian households that currently use traditional domestic biomass, could be leveraged by African countries as well. Africa can learn from India's experience and roll-out national programmes for higher penetration of cookstoves and greater awareness about the concept of clean and healthy living.

Africa to invest in 'Make in India'

The Indian government's 'Make in India' initiative, launched by Prime Minister Narendra Modi in September last year,[79] focusses on increasing its dependency on renewable technologies, such as solar and wind energy, for power generation by moving towards a R&D and OEM hub. India's targets for solar and wind deployments are second only to China. Africa can invest in programmes such as the National Solar Mission, a brainchild of the Ministry of New and Renewable Energy, which could be integral in bringing clean and affordable energy to rural Africa, thereby improving the continent's electrification status.

78. National Biomass Cookstoves Programme, MNRE, accessed on 18 October 2015
79. Manufacturing push: Modi to launch 'Make in India' campaign on 25 Sep, First Post, 18 September 2014

Agriculture

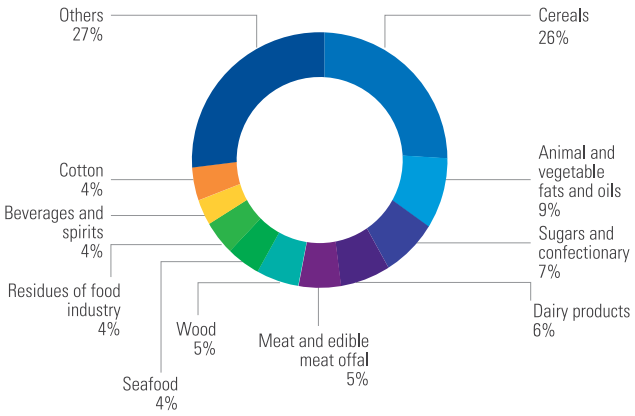
Agriculture is a key sector that has the potential to lift Africa out of poverty as well as help alleviate the problems of hunger and malnutrition. The World Bank estimates that when compared to other sectors, growth in agriculture is two to four times more effective in reducing poverty.[1] The significance of the agriculture sector is further reinforced by the fact that the sector employs two-thirds of Africa's labour and accounts for almost one-third of the continent's Gross Domestic Product (GDP).[2]

Agriculture has a vast but untapped potential

The African continent has millions of hectares of arable land which has not yet been exploited. Sub-Saharan Africa[3] itself is estimated to have around 60 per cent of the globally available unexploited arable land.[4] Of the arable land under cultivation, only five to seven per cent is under irrigation.[1] In addition, around 80 per cent of all the estimated 33 million farms in Africa are less than two hectares each.

Despite these and other challenges, agriculture production in Africa has increased steadily over the years. The value of agricultural produce has increased by 160 per cent in the last 30 years, and is almost at par with South America, while the growth has been comparable to the growth of the sector in Asia.[5] However, a significant proportion of this growth has come from area expansion and the increase in the agricultural labour force, while there has been little improvement in productivity.[5] In addition, fertiliser application in Sub-Saharan Africa averages approximately eight kilograms per hectare, compared to the global average of about 107 kilograms per hectare. This contrasts with the soil depletion rate of approximately 60 kilograms per hectare, which is much higher than the rate of application of fertilisers in the region.[1] As a result, farm yields in Africa are among the lowest globally.[2] As a case in point, cereal yields in Africa are less than half of those in Asia on an average. This gap is wider for meat and processed agricultural produce.

Agricultural Imports - Africa (2011-2013)



Source: Trade Maps statistics, http://www.trademap.org/ accessed 16 October 2015

A consequence of the long-term neglect of the agriculture sector is that Africa today is a net importer of cereals, a long way from being self-sufficient in the 1960s.[5] Imports are estimated to account for 1.7 times the value of exports. In 2013, imports of agricultural products were estimated to be worth about USD94 billion while exports were estimated to amount to around USD60 billion, with most of the imports competing with some of the key agricultural produce from Africa, i.e., cereals, dairy products, meats and oils.[6]

With a large proportion of farmers being small holders or practicing subsistence-based farming, it is essential to provide access to: quality and economically-sustainable inputs, markets for produce, easily-available finance, and capacity building in modern agricultural tools and techniques.[7]

Key enablers driving African agriculture

Agricultural productivity and growth are typically driven by a combination of factors that are related to the environment, public policy, technology and various macro and micro economic factors that are usually specific to each country.[8] In the African context, several region-level initiatives in the past decade, starting from the Comprehensive Africa Agriculture Development Programme (CAADP), which was initiated in 2003, have tried to cover these factors, and have met with some success.

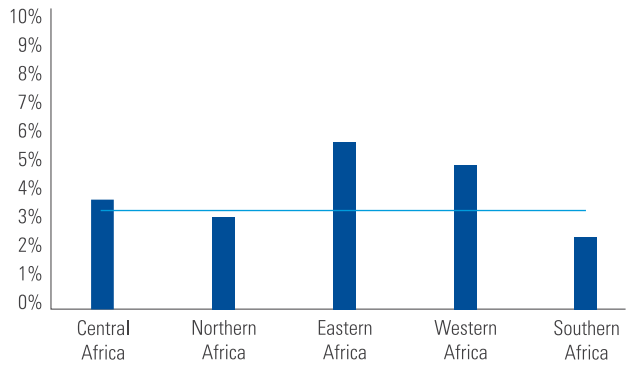
01. 'Agriculture in Africa', KPMG Africa report, June 2014
02. 'Fact Sheet: The World Bank and Agriculture in Africa', The World Bank website, http://go.worldbank.org/GUJ8RVMRL0, accessed 29 September 2015
03. Sub Saharan Africa region includes Algeria, Chad, Egypt, Libya, Mali, Mauritania, Morocco, Niger, Western Sahara, Sudan and Tunisia
04. 'Democratic Renewal in Africa: Trends and Discourses', Said Adejumobi, 2015, p18
05. Agriculture in Africa: Transformation and Outlook', United Nations report, January 2014
06. Trade Maps statistics, http://www.trademap.org/, accessed 29 September 2015
07. KPMG in India analysis
08. 'Africa Agriculture Status Report', Association for Green Revolution in Africa (AGRA), http://agra-alliance.org/download/533977a50dbc7, August 2013

Policy

In the African context, government policy is considered to be the key driver to shift the agriculture sector to a higher-growth trajectory.[9] A key turning point in the agricultural policy of the region was achieved in 2003, when at the African Union (AU) summit, African leaders pledged to allocate at least 10 per cent of their national budgets to the agricultural sector. This was in addition to a growth target of at least 6 per cent per year for agricultural growth, and the formation of the Comprehensive Africa Agriculture Development Programme (CAADP).[9] The CAADP facilitates defining country-level priorities in agriculture, as well as provides a single forum for African nations to create financial and technical-level synergies outside of the AU.[10] However, the CAADP has had limited success in facilitating and ensuring that African nations achieve the targets set at the time of the programme's institution. As of 2014, only 11 of the 54 countries that had agreed to the CAADP had achieved the target of allocating 10 per cent of their annual public expenditure budget to the agriculture sector.[11]

The rise of regional cooperation through regional integration and sector-level policy formulation has enhanced the speed in the setup of Farmer Organisations (FO). Formed initially at a sub-regional level, the level of their engagements were expanded from the national to continental levels. A result of the increased interaction, in 2010, the FOs formed the Pan African Farmers' Organization (PAFO).

Agriculture expenditure share of public spending (2003-2013)



Source: ReSAKKS data, http://www.resakss.org/region/africa-wide/growth-options

Yield and productivity

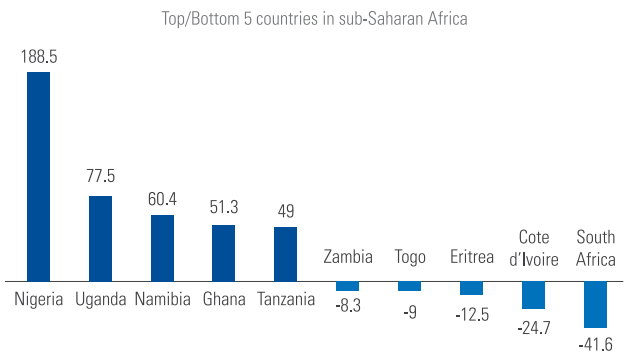
Yield of cereals in Africa has steadily increased between 2003 and 2013. Despite the increasing trend, these yield levels are still very low for countries in Sub-Saharan Africa as compared to global averages.[12] Though the yields have increased, the average grain yields were only at one-third of the global average of 3.2 metric tons per hectare, at 1.1 to 1.5 metric tons per hectare, between 2000 and 2010.[10] Excluding South Africa, Zambia and Malawi were the only countries in the Sub-Saharan Africa region that had average yields above two metric tons per hectare during the period 2008 to 2010.[10] Reliance on traditional irrigation and low application rates of fertilisers have further hampered the yield of various crops.

As a result, there is a significant difference between the potential and actual yield for most food crops, despite their significance in economic and food-security. As the price of such agricultural produce typically falls within import and export price bands, the international trading prospects of such commodities are also restricted.[10]

Science, technology and innovation

The role of technology development and innovation has been gradually increasing in the field of agriculture, beyond the field of seed technology. Use of modern farming techniques such as precision farming at a collective farming scale can help improve productivity. With the proliferation of mobile telephony, it is possible to extend agri-extension services to the marginal farmer. Technological interventions can also be used to increase resilience to climate change. As an example, drought can be countered through improved water harvesting and irrigation techniques like drip irrigation, agro-ecological technologies like conversion farming and breeding of new crops and livestock that are more resilient to drought.[13]

Increase/Decrease in public R&D expense in Agriculture (2001-2011) in 2011 PPP USD



Source: ReSAKKS data, http://www.resakss.org/region/africa-wide/growth-options

09. 'Agriculture in Africa 2015', KPMG Africa report, September 2015
10. 'Agriculture in Africa: Transformation and Outlook', United Nations report, January 2014
11. 'After 10 years, does CAADP understand political economy?', Future Agricultures, http://www.future-agricultures.org/blog/entry/after-10-years-does-caadp-understand-political-economy, 02 April 2014
12. 'Sustainable Agriculture Reviews, Volume 15', Eric Lichtfouse, 2014, p260
13. 'Growth with Resilience: Opportunities in African Agriculture', Montpellier Panel report, April 2012

The trend in public spending on research and development (R&D) in Africa is very diverse. Despite the total R&D spend in agriculture in Sub-Saharan Africa having increased significantly, it is only a few larger countries that have contributed significantly to this growth. A report by the International Food Policy Research Institute (IFPRI) in 2014 estimated that public expenditure on R&D in agriculture increased by around USD500 million from 2000 to 2011.[14]

However, around half of this increase came from just two countries – Nigeria and Uganda. In addition, Namibia, Ghana, Kenya and Tanzania also accounted for between five to nine per cent of the growth each.[14]

Apart from low spends on R&D in agriculture, poor infrastructure and lack of skills and institutions to support the use of technology are key challenges being faced by African agriculture, especially in West African countries such as Sierra Leone, Liberia, Niger, Mali, and Burkina Faso, among others.[15]

Access to finance

The lack of access to finance also impacts the adoption of improved cultivation techniques, especially for small farmers. According to the World Economic Forum's (WEF) Global Competitiveness Report for 2014-15, lack of access to finance is a key challenge for doing business in Africa, and was identified as the biggest challenge to business in 21 of the 32 Sub-Saharan African countries studied in the report.[16] Micro financing has become popular, however, this requires proper regulation especially during lean harvests.

India's value proposition for African agriculture

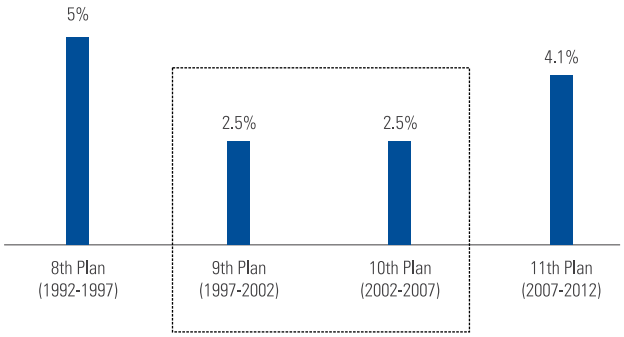
The similar agro-climatic and socio-economic conditions prevailing in Africa and India create a potential for enhanced co-operation in this sector. With both India and Africa having huge landscapes as well as diversity in common, both regions have significant potential for growth, as well as face some common challenges. Some of the key challenges are related to nutrition and food security, and raising the economic returns for farmers through productivity enhancement and reducing losses.[17]

Learning from India's experience: Trends in Indian agriculture

Agriculture is a key sector of the Indian economy, employing 47 per cent of the workforce and contributing to 17 per cent of the country's GDP (as of 2014).[18]

In the mid-1990's, this sector suffered a significant slowdown in India, which resulted in widespread agrarian distress, amongst other things.[20] Many of the challenges that were identified as the cause of this slowdown are the same as what the agriculture sector in many African nations face today.

Growth rate of agriculture GDP in India



Source: ReSAKKS data, http://www.resakss.org/region/africa-wide/growth-options, accessed 15th october 2015

The key issue that was identified in relation to the slowdown was 'technology fatigue' by the Planning Commission of India in 2007. The term referred to the lack of increase in crop productivity due to the slow increase in the net irrigated area as well as the poor penetration of quality seeds. In addition, it was also identified that with Indian farm prices becoming increasingly aligned with global prices, farmers were subjected to greater variability of prices.[19]

Several initiatives were taken up by the central government and various state governments to address this challenge. As a result, in the period from FY05 to FY13, the growth rate of the agriculture sector revived to an average of 3.75 per cent annually.[20]

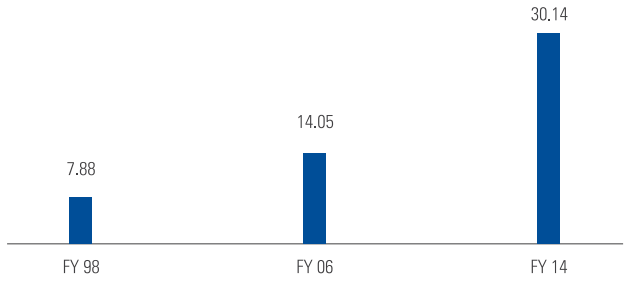
14. 'The Maputo Commitments and the 2014 African Union Year of Agriculture', One.org report, August 2013
15. Growth with Resilience: Opportunities in African Agriculture', Montpellier Panel report, April 2012
16. 'Agriculture in Africa 2015', KPMG Africa report, September 2015
17. "Africa and India cultivate agricultural research ties", Scidev.net, http://www.scidev.net/global/biotechnology/feature/africa-and-india-cultivate-agricultural-research-ties.html, 28 January 2014
18. World Bank Database, http://data.worldbank.org/, accessed 01 October 2015
19. "Agriculture Strategy for Eleventh Plan: Some critical issues", Planning Commission of India, http://planningcommission.nic.in/plans/planrel/53rdndc/AgricultureStrategy.doc, May 2007
20. "From Slowdown to Fast Track: Indian Agriculture since 1995", Indian Council of Agricultural Research, March 2014

Increase in the gross irrigated area was a major factor for the increase in agricultural productivity after 2005. During the ten-year period from FY96 to FY05, the gross irrigated area (GIA) increased from 71.4 million hectares to 81.1 million hectares, an increase of 10 million hectares.[21] By FY12, the GIA increased further to 91.5 million hectares, achieving a similar increase in just seven years.[22]

The agriculture sector also saw increased public spend on R&D in the sector. The eleventh Five Year Plan (2007-12) further emphasised the critical role of R&D in agriculture as well as the need to improve yields to close the significant yield gaps. Linkages between R&D and extension agencies were improved, with a renewed focus on establishment of Krishi Vigyan Kendras (KVK), which act as technology-delivery centres.[22] The number of KVKs increased from 277 at the end of the ninth Five Year Plan period (1997-02), to 637 by the end of the second year of the twelfth Five Year Plan Period (2012-17).[21]

There was a significant emphasis given to seed technology by the Indian Council of Agricultural Research (ICAR) and state agricultural universities, which resulted in a higher share of public institutions in seed production, as well as improved and hybrid varieties of cereal and horticulture crops.[21]

Distribution of quality seeds (million quintals)

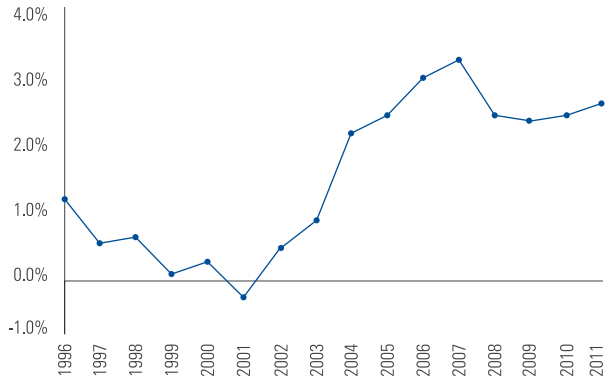


Source: "Pocket Book of Agricultural Statistics: 2014", Ministry of Agriculture (Government of India), http://eands.dacnet.nic.in/PDF/Pocket-Book2014.pdf, March 2015

As a result, the significant increase in the availability and distribution of quality seeds played a major part in boosting agricultural productivity. The supply of quality seeds in the country increased by around six million quintals during the eight years between FY98 and FY06. However, from FY06 to FY14, the increase was more than 16 million quintals, or more than two and a half times the increase in the corresponding period between FY98 and FY06.[22]

A result of the increased focus and public spends on R&D in agriculture can be seen in the trend of Total Factor Productivity (TFP). TFP is the ratio of agricultural outputs to inputs such as land, fertiliser, labour, machinery and livestock.[23] TFP increases as outputs rise at a greater pace than inputs, and public expenditure in R&D in agriculture is considered an explanatory variable for TFP growth.[24]

TFP Growth

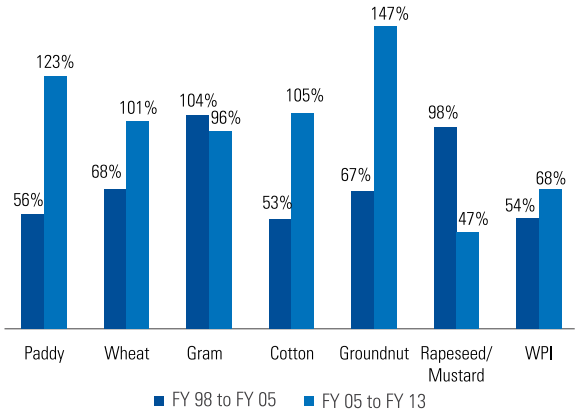


Source: "Agricultural total factor productivity growth indices for individual countries, 1961-2011", USDA Economic Research Service, http://www.ers.usda.gov/data-products/international-agricultural-productivity.aspx, accessed 02 October 2015

21. "From Slowdown to Fast Track: Indian Agriculture since 1995", Indian Council of Agricultural Research, March 2014
22. "Pocket Book of Agricultural Statistics: 2014", Ministry of Agriculture (Government of India), http://eands.dacnet.nic.in/PDF/Pocket-Book2014.pdf, March 2015
23. "2014 Global Agricultural Productivity Report", Global Harvest Initiative, http://www.globalharvestinitiative.org/GAP/2014_GAP_Report.pdf, September 2014
24. "Agricultural Investment, Production Capacity and Productivity", Food and Agricultural Organization (FAO), accessed 02 October 2015

Another key factor for the improved performance in the agriculture sector in India has been the increase in the prices received by farmers for their produce, post FY05. This has been a result of increase in the Minimum Support Price (MSP) and food grain procurement by the government as a result of greater coverage of food security programmes. Increases in input and production cost, along with greater integration with the global economy, necessitated higher support prices. In most major crops, especially cereal crops where MSP is backed by government procurement, increase in MSP in the nine years from FY05 to FY13 was close to double of the increase in the corresponding period from FY96 to FY05. Increase in global agricultural prices and shift in domestic demand from cereals towards high value agricultural commodities as a result of economic growth were other key factors that contributed to the increase in prices.[25]

Increase in MSP of selected crops and Wholesale Price Index (WPI)



Source: "From Slowdown to Fast Track: Indian Agriculture since 1995", Indian Council of Agricultural Research, March 2014

Higher farm-gate prices serve as an incentive to farmers to use better quality and modern inputs and induce adoption of better technology which increases productivity while reducing cost.[26] This impact can be seen in the usage of fertilisers, which increased by almost 50 per cent from FY05 to FY12 (from 18.4 million tonnes to 28 million tonnes, respectively), compared to an increase of only around 14 per cent from FY98 to FY05, despite a significant increase in fertiliser prices globally.[27] Better farm-gate prices were further aided by improved supply of institutional credit that further incentivised farmers to improve productivity.[28]

Food security in India

A key program for food security in India has been the Targeted Public Distribution System (TPDS), which aims at providing food at affordable prices to vulnerable sections of the population. The National Food Security Act (NFSA), which was notified in September 2013, is expected to increase the coverage of the public distribution system from 36 per cent of the population to close to 67 per cent of the population of the country.[29] However, a key challenge to the effectiveness of such a large program is the leakages in the PDS, which are to the extent of 40 to 50 per cent.[30] Computerisation of the PDS system, from procurement to disbursement, is expected to significantly reduce this leakage.[30]

India-Africa co-operation in agriculture

The agriculture sector in Africa and India shares many characteristics, from diversity of agro-climatic regions to similarities in the farming systems such as the small size of farm holdings.[31] These similarities lend themselves to creating multiple opportunities for collaboration. With Africa's farm sector expected to grow to USD1 trillion by 2030 from USD280 billion in 2014,[32] with growth largely dependent on technology, there is significant scope for the agriculture sector in Africa to benefit from the Indian experience in the sector, as well as co-operation on solutions for the common challenges.[31] To this effect, the first India-Africa Forum Summit (IAFS) was held in 2008, in New Delhi, India. The summit culminated in the creation of the Africa-India Framework for cooperation, as a part of which the Africa-India Science and Technology Initiative was started. This initiative has been key to the growth and success of the co-operation between Africa and India in the field of science, technology and innovation (STI) in agriculture.[33]

The present scenario

As a result of the summits of 2008 and 2011, Africa and India started implementing initiatives in agriculture in the areas of capacity building, and knowledge transfer and adoption in common priority areas for research.[34] The initiatives have enabled exchange programmes for researchers in both regions as well as the strengthening of research intuitions in African countries like Benin, Gabon and Tunisia, as well as small to medium scale technology transfers in the field of agriculture.[34]

25. "Statistical Yearbook 2014", Ministry of Statistics and Program Implementation (MoSPI) (Government of India), http://mospi.nic.in/Mospi_New/upload/SYB2014/CH-8-AGRICULTURE/Agriculture%20writeup.pdf, December 2013
26. "Agricultural Price Policy, Output, and Farm Profitability—Examining Linkages during Post-Reform Period in India", Tripathi, A. K., 2014, p99
27. "From Slowdown to Fast Track: Indian Agriculture since 1995", Indian Council of Agricultural Research, March 2014
28. "Agri-input Marketing in India", Venugopal, P., Kaundinya, R., 2014, p41
29. "Economic Survey 2013-14", Government of India, http://indiabudget.nic.in/es2013-14/echap-08.pdf, June 2014
30. "Economic Survey 2014-15", Government of India, http://indiabudget.nic.in/es2014-15/echapter-vol2.pdf, February 2015
31. "India-Africa conclave to discuss agri cooperation", The Financial Express, 19 August 2015
32. "Potential for high returns from agriculture", Alliance for a Green Revolution in Africa, http://agra-alliance.org/media-centre/news/-realizing-the-potential-for-high-returns-from-agriculture/, accessed 03 October 2015
33. "India-Africa Cooperation in Agriculture Science, Technology and Innovation: New Avenues and Opportunities", Forum for Indian Development Cooperation, January 2014
34. 'Africa and India cultivate agricultural research ties', Scidev.net, http://www.scidev.net/global/biotechnology/feature/africa-and-india-cultivate-agricultural-research-ties.html, 28 January 2014

There has been considerable support from India specifically in the cotton sector in Africa, especially for the Cotton Four (C-4) countries of Benin, Burkina Faso, Chad and Mali, primarily on technical assistance for capacity building and R&D in seed technology through the Technical Assistance Programme (TAP) for cotton, launched in 2012.[35]

In addition, there has been a significant increase in collaborations between research institutes in Africa and India. As an example, the International Livestock Research Institute (ILRI), based out of Nairobi, Kenya, has programs covering the countries of Ethiopia, Kenya, Mali, Mozambique, Tanzania, as well as India, in the field of animal biotechnology.[36]

Another good example is the programmes conducted by the New Delhi-based The Energy Resources Institute (TERI). The programmes conducted by TERI include policy dialogues and knowledge sharing, as well as participating in capacity-building programmes such as the Indian Technical and Economic Cooperation (ITEC) programme, which offers courses on biotechnology with a focus on Africa.[37]

Apart from the cooperation and exchange in the areas of technology and R&D, India has also extended Lines of Credit (LoC) as a means of collaboration with African countries. Since LoCs were launched in 2004 till 2014, the Exim Bank has extended LoCs worth USD6.3 billion to 48 African countries, accounting for 133 out of the total 187 LoCs extended by the bank.[38]

The Government of India is also facilitating private investments in the agriculture sector in Africa, through supporting Indian foreign direct investment (FDI) in the sector, public-private partnerships, and by allowing tariff reduction on agricultural goods imported from Africa to India through regional trade agreements.[39]

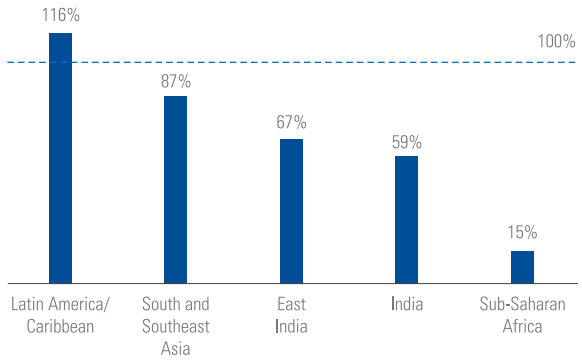
Indian firms have invested in more than one million hectares of farm land in Africa.[40] Many of the Indian companies that have invested in the agricultural sector already have a presence in Africa and are looking to enter the agricultural sector, even if they are not involved in agricultural activities at present. The profile of these companies range from large to small and medium enterprises, that are present in sectors ranging from tea and spices to chemicals. Some countries that have seen significant interest from the Indian private sector are Ethiopia, Malawi, Kenya, Uganda, Ghana and the Congo.[41]

Moving forward: Opportunities for Indian-African collaboration in agriculture

In the coming years, Africa is expected to play a significant role in global food security. Though the region has 25 per cent of the world's arable land, it generates only 10 per cent of global agricultural output.[42] In addition, from India's point of view, Africa can be a key sourcing destination for pulses, a major source of protein in the diet of the Indian population, especially as the demand for pulses is expected to increase as the country develops economically.[43]

The biggest challenge anticipated for both Africa and India is the gap in food demand and supply. According to the 2014 GAP Report by the Global Harvest Initiative, at current rates of improvements in productivity, or TFP growth rates, only 15 per cent of the demand for food would be met in Sub-Saharan Africa by 2030.[44] The situation is expected to be better in India, however, it is estimated that at current TFP growth rates, 41 per cent of the demand in food would remain unmet.

Percentage of food demand met at current TFP growth rates by 2030



Source: "2014 GAP Report", Global Harvest Initiative, http://www.globalharvestinitiative.org/GAP/2014_GAP_Report.pdf, September 2014

Agricultural technology therefore must be a key priority area for cooperation between India and Africa.

35. Technical Assistance for Cotton website, http://www.cottontapafrica.org/, accessed 03 October 2015
36. 'Africa and India cultivate agricultural research ties', Scidev.net, http://www.scidev.net/global/biotechnology/feature/africa-and-india-cultivate-agricultural-research-ties.html, 28 January 2014
37. "India-Africa Cooperation in Agriculture Science, Technology and Innovation: New Avenues and Opportunities", Forum for Indian Development Cooperation, January 2014
38. "Development and Diplomacy through Lines of Credit", Observer Research Foundation, http://www.orfonline.org/cms/export/orfonline/modules/occasionalpaper/attachments/op_53_1411638542827.pdf, August 2014
39. "India-Africa conclave to discuss agri cooperation", The Financial Express, 19 August 2015
40. "Indian foreign direct investments in Africa: a geographical perspective", Anwar, M. A., Nicolaus Copernicus University, http://www.bulletinofgeography.umk.pl/26_2014/03_Anwar.pdf, August 2014
41. "Indian Investors Buy Farmlands In Africa", Africa-business.com, http://www.africa-business.com/features/indians-africa-farmlands.html, accessed 03 October 2015
42. "Green shoots in African agriculture", FICCI, http://blog.ficci.com/india-africa-agriculture/4905/, February 2014
43. "Indian Private Agro-Investments in Zambia", Oxfam India report, https://www.oxfamindia.org/sites/default/files/Indian%20agro%20investments%20in%20Zambia%20FINAL%20wp.pdf, May 2014
44. "2014 GAP Report", Global Harvest Initiative, http://www.globalharvestinitiative.org/GAP/2014_GAP_Report.pdf, September 2014

Hence, a key challenge for both Africa and India is to apply technology for improving productivity as well as the use of biotechnology for developing seed varieties with qualities specific to the varied needs of the farmers in the different agro-climatic zones.[45] With common agro-climatic and socio-economic characteristics of the agriculture sector in both regions, leading practices and approaches can be replicated across both Africa and India.

In this context, seed technology could be a key area of co-operation. One way could be the transfer of seed technology that has been successfully proven in India, such as tropically-adapted varieties, to Africa.[45] This can be done by Indian public and private-sector breeders collaborating with seed companies in Africa. The continent holds significant potential for the seed market, as at present, most African seed systems are still informal and farmer-based, resulting in low yields and hence not meeting current demand.[46] There have been some crop varieties, such as sorghum and millet, which were developed in India that have been performing well in Africa. It is likely that farmers would benefit immensely if more such varieties are introduced.[47]

Africa and India may also need to further build and promote their existing co-operation in R&D in this sector, the foundations of which are already present in the Africa-India Cooperation Framework. India has a well-established research ecosystem for agriculture, with seed development and testing laboratories and institutes in place.[48] The expertise of the Indian R&D establishment could play an important role in facilitating African countries for building their own R&D infrastructure, as well as building a platform that allows for sharing mutual practices and expertise in this sector.[45] This could also help in the creation of institutional mechanisms that allow for easier field testing of seeds, while also focussing on developing seed varieties that are specific to the nation or zone with particular characteristics, helping enhance the efficiency of the seed varieties.[49]

A joint initiative in the field of R&D needs to be accompanied by co-operation in the field of standardisation. With multiple countries involved in R&D, it seems imperative to set standards for movement and development of agricultural plant material, laboratory and testing practices to help ensure effective collaboration. These standards also need to ensure compliance with external eco-standards that have been set by developed markets to certify the export suitability of the output.[49] A common infrastructure for ensuring compliance with eco-standards would also require significantly-lower overall investment.[50]

An important area of collaboration outside technology and capacity building is the field of regulations. Africa and India both have concerns regarding certain biotechnologies like genetically modified (GM) seed technology, and it is accepted in both regions that there needs to be a strong regulatory mechanism in this field.[45] India as well as many countries in Africa are in various stages of setting up mechanisms to regulate biotechnology. The lessons in creating and implementing these mechanisms could be shared and used to co-evolve them in both regions. This may result in more robust frameworks for regulations, as they would be built on experiences based on the common agriculture sector characteristics of both regions.[49]

Finally, there is a need to evolve the co-operation between Africa and India to support collaboration between firms, especially entrepreneurial organisations, in the development of agro-products and services.[45]

The seed sector shows immense potential for such collaborations. A key challenge in the seed sector in Africa is the lack of co-operation between researchers, producers and suppliers. Additionally, despite the availability of high-quality seed production technologies, there are no frameworks to ensure that seed production companies have access and can adopt these technologies.[51] As Indian seed companies gain access to the African market, they could help African entrepreneurs and companies build the distribution chain based on the successful Indian model of small seed companies, which do not require high investment.[51] Already, Africa and India are running trials under the India-Africa Seed Bridge project in emerging African markets, which aims at linking plant breeders with new seed production and distribution channels.[51]

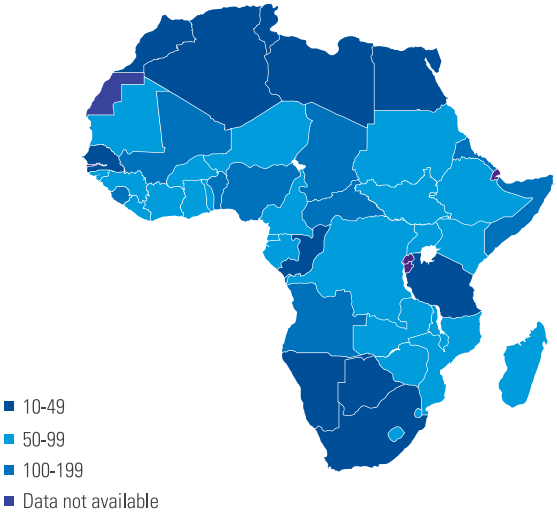
45. "India-Africa Cooperation in Agriculture Science, Technology and Innovation: New Avenues and Opportunities", Forum for Indian Development Cooperation, January 2014
46. "Africa and India cultivate agricultural research ties", Scidev.net, http://www.scidev.net/global/biotechnology/feature/africa-and-india-cultivate-agricultural-research-ties.html, 28 January 2014
47. "The role of introduced sorghum and millets in Ethiopian agriculture", ICRISAT Journal Vol. 3 Issue 1, http://ejournal.icrisat.org/mpii/v3i1/news/The%20role%20of%20introduced%20sorghum.pdf, December 2007
48. "India: The Funding and Organization of Agricultural R&D", Pal, S., Byerlee, D., IFPRI, 2006, p155
49. KPMG in India analysis, 2015
50. "Trade and Environment Review: 2006", United Nations Conference on Trade and Development (UNCTAD), http://unctad.org/en/Docs/ditcted200512ch1_en.pdf, 2006, p52
51. "Africa and India cultivate agricultural research ties", Scidev.net, http://www.scidev.net/global/biotechnology/feature/africa-and-india-cultivate-agricultural-research-ties.html, 28 January 2014

Healthcare

The African population pyramid constitutes primarily of a young and rapidly growing population, forecasted to be the demographic giant of the twenty-first century. The second-most populated continent with a population of over one billion people is expected to double these figures over the next four decades.[1]

The countries in this continent have experienced improvements in health outcomes during the past decade. That said, there has been a sizable decline in child, maternal and adult mortality rates, and substantial decreases in the burdens of several diseases. In spite of these improvements, Africa's under-five mortality rate and Maternal Mortality Ratio (MMR) are among the highest in the world.[2]

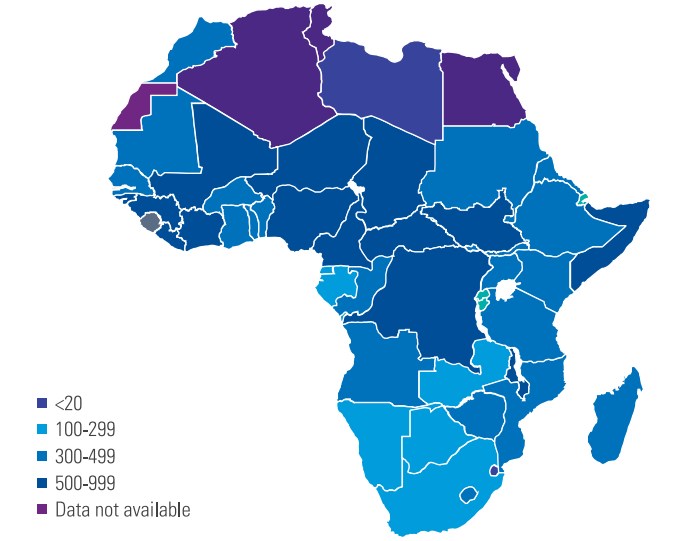
Under five mortality rate in Africa, 2015 (per 1,000 live births)



Source: "Under-five mortality rate (probability of dying by age 5 per 1,000 live births, 2015)", WHO, 2015

In the Sub-Saharan region, the average Infant Mortality Rate (IMR) is 64 and average under five mortality rate is 97 per 100,000 live births at present. These numbers are way behind the millennium development goals target.[3] Similarly, this region also has a high MMR with average value of 474.

Maternal mortality ratio in Africa, 2013 (per 100,000 live births)



Source: "Maternal mortality ratio (per 100,000 live births), 2013", WHO, 2013

With continuous efforts, the region has managed to add six years to life expectancy at birth — from 50 years in 1990 to 56 years in 2011.[4] However, there is still a long way to go to meet the mean global life expectancy of 70 years.[4]

The life expectancy of African population has been stunted for many decades due to communicable diseases. But now, lifestyle-based non-communicable diseases (NCDs) are also increasing in the region. This is reflected by the high number of Disability-Adjusted Life-Years (DALYs) from non-communicable diseases.

01. World Population Prospects, United Nations 2015 Revision
02. Under-five mortality, World Health Organization
03. Human Development Report 2014, UNDP, 2014
04. "The Health of the People – What works", The African Regional Health Report 2014, WHO, 2014

Regional ranking of leading causes of disease, measured in DALYs, 2011

Infectious diseases still pose as a paramount challenge to the health of African people. Communicable diseases account for two-third DALYs lost, about one-third of DALYs lost are due to NCDs and disorders and injuries. In the year 2011, the region lost a total of close to 675 million DALYs. One-third of this loss (36 per cent) was due to infectious and parasitic diseases alone, 26 per cent from NCDs, 13 per cent from neonatal conditions, 11 per cent from respiratory infections, 7 per cent from unintentional injuries, 5 per cent from nutritional deficiencies, 2 per cent from maternal conditions and 2 per cent from intentional injuries.[5]

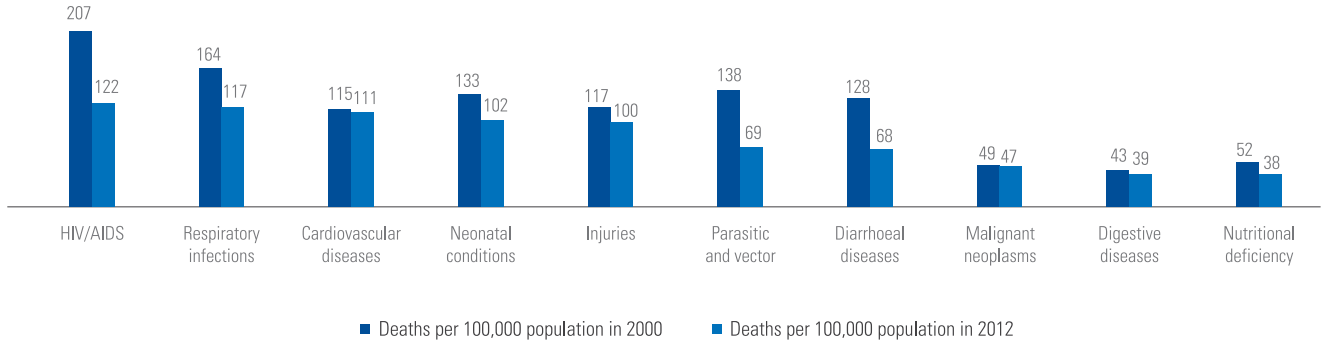
Cause	Africa	South-East Asia Region (including India)	Global
Lower respiratory infections	1	1	1
HIV/AIDS	2	15	6
Diarrhoeal diseases	3	3	4
Malaria	4		13
Preterm birth complications	5	4	5
Birth asphyxia and birth trauma	6	7	9
Protein-energy malnutrition	7		
Meningitis	8		
Congenital anomalies	9	10	11
Road injuries	10	8	8
Neonatal sepsis and infections	11	20	
Iron-deficiency (Anaemia)	12	11	15
Strokes	13	6	3
Endocrine, blood, immune disorders	14		
Maternal conditions	15		
Ischaemic heart diseases	16	2	2
Tuberculosis	17		16
Unipolar depressive disorders	18	12	10
Interpersonal violence	19		
Epilepsy	20		

Ranking legend

- 1-5
- 15-20
- 6-14
- No rank

05. "The Health of the People – What works",The African Regional Health Report 2014, WHO, 2014

10 Main Causes of Death in Africa



Source: Main causes of death in Africa, WHO, 2014

HIV/AIDS disease remains a major cause of deaths across Africa. However, significant progress has been made in combating the disease over the last decade.

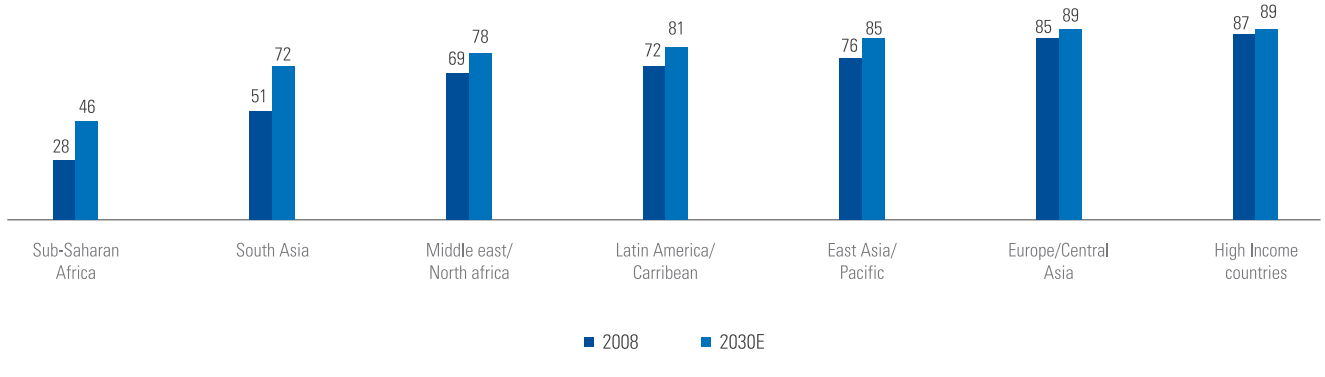
As per WHO statistics, 121 people out of a 100,000 died of AIDS[6] in 2012, down from 207 in 2000 due to increase availability of antiretroviral treatment that increased from less than 1 million in 2005 to 7.1 million in 2012.[7] Increased urbanisation and lifestyle changes are fuelling the growth of chronic cardiovascular and respiratory diseases

Future healthcare demand trends in Africa

NCDs are expected to overtake communicable diseases in number of deaths by 2030 in Africa.[8] This implies that NCDs will be the leading cause of ill health and premature deaths. The four main factors that are increasing the risk of NCDs in Africa are consumption of tobacco and alcohol, physical inactivity and an unhealthy diet.[9] NCDs are spreading gradually in Africa so the continent should control the spread in the early stages itself by prevention and health promotion among its population.

Healthcare services in Africa need to adapt to the changing mortality demographics of the region.

NCDs account for growing share of total deaths - Percentage of total deaths



Source: "Fact Sheet: Global Burden of Non-communicable Diseases", Population Reference Bureau website, accessed Sep. 2015

06. Main cause of deaths in Africa, WHO, 2014
07. How Africa turned AIDS around, UNAIDS, May 2013
08. The Health of People: What works, The African Regional Health report 2014, WHO, 2014
09. http://www.who.int/mediacentre/factsheets/fs355/en/ accessed 16 October 2015

The need for a stronger pharmaceutical industry in Africa

Even though the African region endures the extreme burden of many diseases in the world, the capacity for pharmaceutical research and development (R&D) and local drug production continues to remain amongst the lowest in the world. The region depends heavily on externally-developed and procured drugs, vaccines, medical devices and diagnostics to support the healthcare services required for the suffering population, which is consequently placing a burden on individuals to spend for their medical expenses. At present, 70 per cent of drugs are imported into Africa to treat patients. According to UNAIDS estimates, more than 80 per cent of antiretroviral drugs (ARVs) are imported to meet the demand.[10] In addition, the rise of NCDs, coupled with the burden of communicable ones and emergent infections, require new medical services and treatments.

During the past decade, value of Africa's pharmaceutical market grew from USD4.7 billion in 2003 to USD20.8 billion in 2013, and has shown the potential to grow up to USD45 billion by 2020.[11,12] The African continent has been going through a robust demographic shift with increased disposable income and healthcare spending due to fast urbanisation. This fact is opening up a window of opportunity for the growth of the pharmaceutical market. The improved middle-class strength (accounting for 34 per cent of African inhabitants),[13,14] and increased demand for the chronic care drugs, reflecting the shift towards NCDs, is driving the demand for medicines across Africa.

Although Africa is relatively small in the global pharmaceutical market, accounting for just about 2 per cent of the global market by value, pharmaceuticals and remains one of its fastest-growing industries with an estimated 9 per cent CAGR between 2010 and 2020.[15] The prospects of investments in the pharmaceutical industry are immense all along in its value chain. Pharmaceuticals are striving to work out commercial models in a low margin environment replete with infrastructural bottlenecks. To help alleviate access of drugs to those who need it, pharma has put in place various programs spanning from license share, technology transfer, last step local manufacturing and of course CSR. Over the next five years, each segment of the pharmaceutical market is poised to grow in Africa with an expected CAGR of 6 per cent for prescription drugs, 9 per cent for generics, 6 per cent for over-the-counter medicines and 11 per cent for medical devices.[16]

On the other hand, local production has been narrow with an approximate production of 25 to 30 per cent of pharmaceuticals and less than 10 per cent of medical supplies available in the African market.[17] There exists a strong impetus for the pharmaceutical industry growth in Africa via R&D, licensing arrangements, joint ventures, etc.

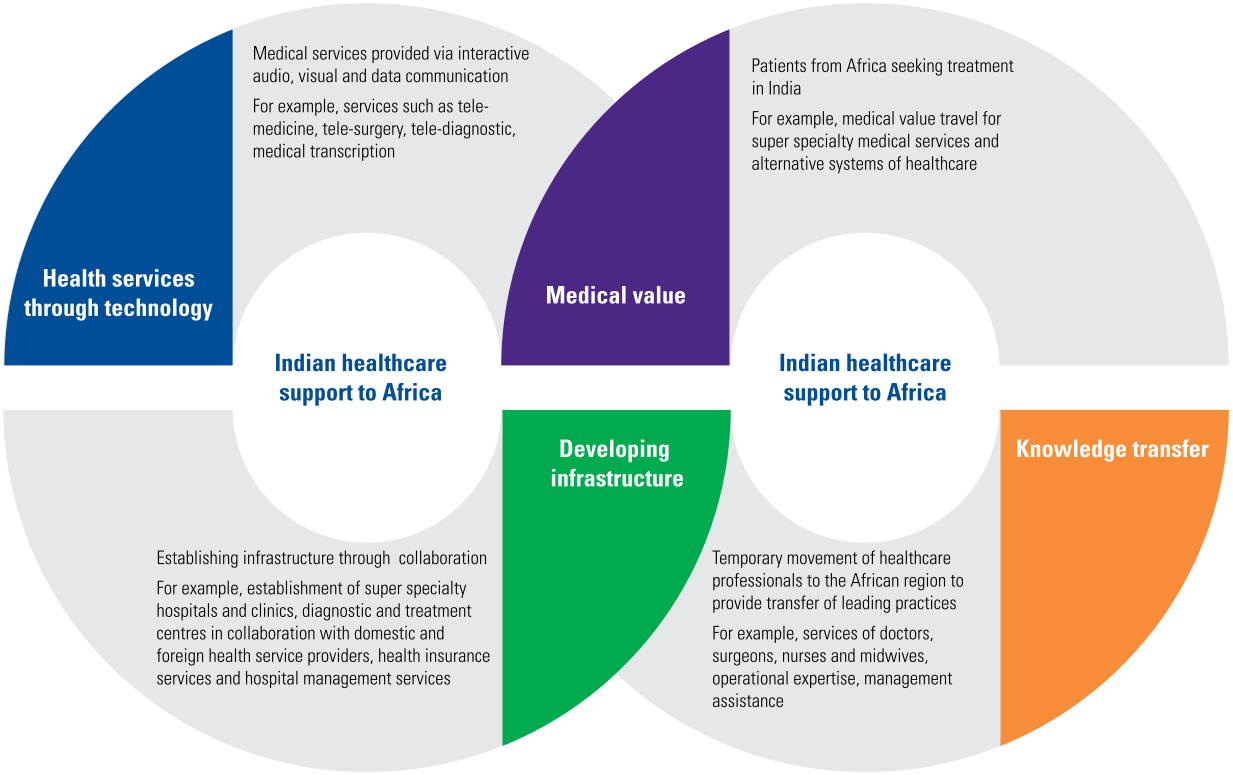
India can contribute to a healthier Africa

India has been historically making its presence felt in the global market through export of high quality services in many sectors. While IT has been a forerunner in this, with time, the country has also been able to successfully establish its formidable force in the trade of health services. With the growing impact of technology revolution, improvements in infrastructural and quality benchmarks, cost arbitrage and enhanced skillset of medical staff, India has emerged as an important and favourable medical value travel destination and a medical process outsourcing centre.

India has been exporting health services in the form of providing medical treatment to overseas patients, especially from Africa. The Indian healthcare players have also been able to establish their niche globally with the setting up of super specialty hospitals and clinics, diagnostic and treatment centres through collaborations.

10. "Making medicine in Africa - the untapped possibilities that could save millions of lives", Mail & Guardian Africa, 17 Feb 2015
11. "African pharma industry poised to make major strides", Pharmabiz, 06 November 2014
12. "Generic drugs demand grows in South Asia & Africa", Pharmabiz, 06 November 2014
13. "Analysis - Commodities' dive raises doubts over Africa's 'middle class'", Reuters, 23 September 2015
14. The African Development Bank analysis
15. "Healthcare and Pharma", Joshua's Capital
16. "Africa: A Pharmaceutical Growth Market", International Federation of Pharmaceutical Wholesalers, 25 June 2015, Vol. 22, No. 13, Pg 1
17. "Revitalizing Africa's pharmaceutical industry", African Development Bank Group, 04 June 2014

Health services through technology



Source: "Healthcare Services", Services Export Promotion Council website, accessed February 2015

The role of technology and telecommunication is being explored to add value to the healthcare delivery value chain and within multiple healthcare categories globally. Be it prevention, diagnosis, treatment or management of an ailment (chronic or acute) - Information Communication Technology-based models find relevance in all cases Economic globalisation has further facilitated cross-border delivery of health services by electronic means.

Cross-border services carry immense export potential for India, owing to its large talent pool and technological advancements. With the said advantages, India is in a leading position to offer services such as tele-medicine, tele-surgery, tele-diagnostic services, medical process outsourcing services such as medical transcription, medical back office, medical coding, medical billing, etc.

Case in point: Pan-African e-network

Background: The Pan-African e-Network project envisages connecting Indian institutions with African nations[18] through fibre-optic links and satellite, to provide tele-medicine and tele-education services, etc. This network aims to connect 53 remote hospitals, 53 learning centres, five regional universities and five regional hospitals throughout Africa. India has empanelled 12 super specialty hospitals and seven leading universities to provide expert domain services in tele-medicine and tele-education, respectively.[19]

Discussion: This network is a shining example of 'south-south co-operation'. Doctors in India are helping to diagnose patients remotely. This project also helped African students to study medicine at seven universities in India. Continuing Medical Education (CME) classes are also conducted to train African doctors and nurses. India has also installed medical equipment in many hospitals in Africa that includes both diagnostics and pathology equipment.

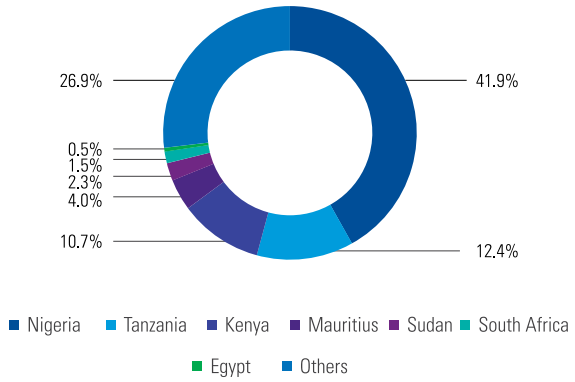
Potential benefits intended for African Nations:[20] The programme is expected to help African nations in terms of capacity building. The tele-medicine component includes online medical consultation for an hour every day to each country for five years. India also aims to provide offline advice to five patients daily to each country for five years. India will also provide CME for practicing doctors and working nurses, physician assistants to upgrade their clinical skills and medical knowledge.

Medical value travel

Medical value travel in India, also popularly known as medical tourism, is poised for growth by leaps and bounds. The country has been successfully attracting patients from across the globe and providing high-quality, low-cost treatments in India, without any time lags or waiting period.

The market worth of medical value travel in India has been estimated to grow at a CAGR of 30 per cent to reach USD8 billion in 2018, from USD2.8 billion in 2014.[21] The rising costs of healthcare in the developed world along with rising disposable income and healthcare awareness among the global population is forcing patients to explore cheaper options in other countries. Following the rising demand, India hosted around 171,021 patients from all over the world in 2012, where a majority of patients were from developing and under-developed economies.[22] About 21 per cent of these patients arrived from African countries.[23] A total of approximately 35,000 patients arrived in India in 2012 with a medical visa. Nigeria leads the regional outflow, contributing to 42 per cent of the African patients seeking treatment in India.[24]

Medical FTAs from Africa in 2013



Source: KPMG in India analysis 2015; "India Tourism Statistics 2013 report", Ministry of Tourism, Government of India

Case in point: Nigeria

Background: According to United Nations Human Development Index in 2014, Nigeria was ranked close to the bottom, at 152 among 187 countries.[23] This low ranking indicates not only the problems with infrastructure and healthcare facilities, which are poor, but also high infant mortality rates and relatively low life expectancy. Current gaps in the Nigerian healthcare system like the low doctor-population ratio, inadequate infrastructure, low health insurance cover, absence of internationally-recognised certifications and high brain drain, has forced Nigerian patients to seek medical services abroad.[25]

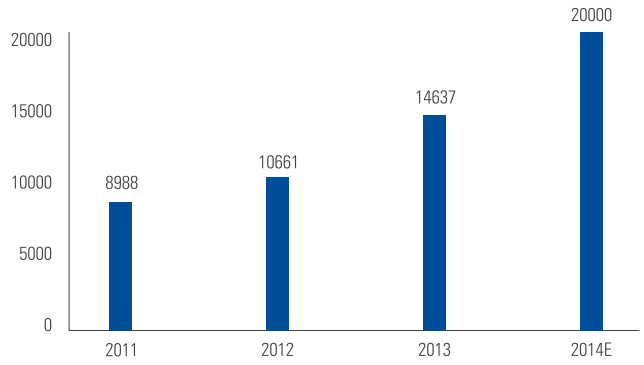
Discussion: In the last few years, India has become a 'destination of choice' for a large number of Nigerian patients owing to its low cost, quality of healthcare, expertise in complex surgeries and relatively low waiting time.

The medical tourist inflow in India is increasing over the years and Nigeria is among the top five source country for Foreign Tourists Arrivals (FTAs) for medical treatment purposes.[26]

18. "Pan-African e-Network", Telecommunications Consultants India Limited, June 2007
19. "Inauguration of Pan-African e-Network Project (Phase 2)",
20. "Pan-African e-Network project – A practical example for south-south cooperation", 3rd international conference on Transforming Healthcare with IT, August 2012
21. "Healthcare: The neglected GDP driver", KPMG, 2015
22. India Tourism Statistics 2012" Ministry of Tourism
23. "Medical Value Travel in India", KPMG, September 2014
24. "India Tourism Statistics 2012" Ministry of Tourism, KPMG in India analysis, 2015
25. http://www.newindianexpress.com/world/India-Helps-Nigeria-Ramp-up-its-Health-care-Systems/2015/09/16/article3031469.ece accessed 16 October 2015
26. "India Tourism Statistics 2013 report", Ministry of Tourism, Government of India

Potential benefits intended for Nigeria: Patients who were unable to get healthcare services in Nigeria were able to get quality cardiovascular, oncology, renal care, bone marrow transplant, etc. services through medical tourism in India.

Number of Nigerian tourists arriving in India for medical treatment



Source: India Tourism Statistics report 2011, 2012 and 2013, Ministry of Tourism; "20,000 Nigerians seek medical treatment in India annually", Premium Times, 18 January 2015, KPMG in India analysis, 2015

Developing infrastructure

India's healthcare players have developed capabilities to establish and operate hospitals and clinics abroad. Establishment of satellite healthcare facilities by huge hospital chains, especially in high potential medical value travel countries can help India gain a leading position in medical value travel. However, the presence of Indian hospitals abroad is limited and steps need to be taken in this direction in order to facilitate the export of services through this mode.

The development of high quality standards and accreditations from international bodies such as the Joint Commission International (JCI) has helped India in a big way. Moreover, Indian doctors are well recognised worldwide for their knowledge and skills in the field of medical science. These capabilities allow the Indian healthcare players to establish hospitals abroad.

At present, a few hospital chains are focussing on the African and Asia Pacific region as the healthcare platform required in these countries resonates with India's requirements. India can focus on developing countries as they have less legal constraints in comparison to developed nations. And, in context of Africa, the establishment of hospitals is core to India's relationship building efforts with the continent's nations.

In the last few years, Indian hospitals along with the Ministry of Tourism, Government of India and Indian High Commission in African regions kept organising healthcare events to strengthen the partnership in the healthcare sector between India and Africa, and are expected to continue to do so in the future. A few Indian hospital chains also provided training to African doctors on specialist medical procedures, thereby improving patient care in the region. About 100 doctors of Abuja University Teaching Hospital were recently trained by medical experts from an Indian hospital group in India.

Indian players' footprints in African healthcare and pharma

A number of healthcare organisations from India have established footprints in Africa and many more are planning to do so in hospitals in Africa. In a nutshell, Indian healthcare organisations are actively looking to establish their footprints in many forms such as greenfield and brownfield expansions, tele-medicine centres to attract medical tourism, etc. Some good initiatives such as training African medical professionals and free health check-up camps are also organised regularly by Indian healthcare providers to establish a strong connect with Africa.

Since the last decade, a number of pharmaceutical companies from India have established their footprints in Africa and are still exploring opportunities for providing affordable healthcare in Africa. Many Indian manufacturers have set up their subsidiaries in this continent and have secured a large market share by supplying antiretrovirals to treat HIV and other drugs, which are in demand on a mass scale by the government/NGOs. Of late, Nigeria has emerged as the biggest export market for Indian pharmaceuticals, generating USD384 million revenue by the end of September 2014. Currently, there are more than 35 Indian pharmaceutical companies operating in Nigeria [27] out of which about 30 Indian pharmaceutical companies are located in Lagos alone for manufacturing and/or importing Indian products.[28]

The Indian pharmaceutical companies have established their roots in Africa either through joint ventures or by setting up their manufacturing plants. Some companies have established their presence through collaborations with NGOs and the government.

27. "India, China challenge big pharmaceutical companies in Africa", African Business, 10 December 2014
28. "Indian pharma firms campaign to build 'Brand India' in Africa", India Africa Connect, 30 September 2015

Leveraging Indian life-sciences sector to fulfil the medicine demand in Africa

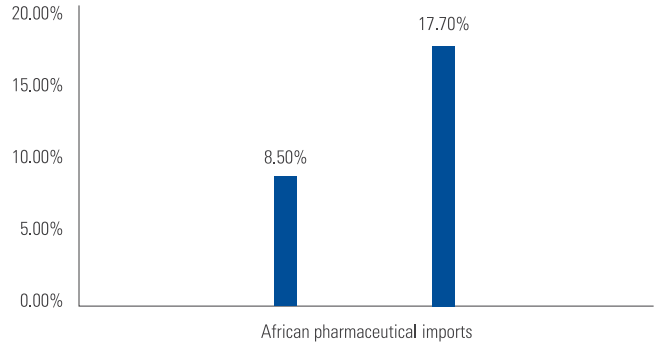
India has established itself as an economical and well-developed industry with strong manufacturing base and a research hub with a vast pool of skilled professionals. Together with its marked presence in the API manufacturing base, India has emerged as a hub for bio-technology, bio-informatics, and contract research,. Indian pharmaceutical market is expected to grow up to USD55 billion by 2020 at a CAGR of 23.9 per cent.[29]

India ranks third in production volume (10 per cent share) and fourteenth by value (1.4 per cent share) globally with an established base of exporting in more than 200 countries.[30] India has successfully established its global footprint in terms of cost-effective quality products and rise in credibility and popularity of Indian pharmaceuticals. Cost advantage, highly skilled manpower and vast patient population are few of the reasons that have attracted the MNCs to establish their collaborative R&D base here. India is one of the largest manufacturers of the pharmaceutical dosage forms. The pharmaceutical industry has been an eyewitness to the remarkable development of infrastructure, technology and simple-to-complex products manufacturing. The sector has been able to produce cost-effective drugs within US FDA-approved advanced manufacturing facilities (outside the U.S.).

In the past decade, Africa has witnessed an expanding presence of the Indian pharmaceutical companies, especially in the generic space. On one hand, these companies are among the largest providers of generic medicines across the world, while on the other hand, the African continent faces a huge demand for cost-effective life-saving drugs. Establishing relations between the two could therefore effectively and efficiently create a favourable situation for the economies of India and African nations.

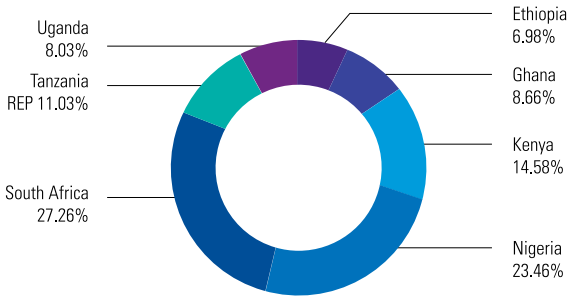
In the past five years from FY09 to FY13, the exports to Africa from India has been growing at the CAGR of 21 per cent,[30] major contributors to this statistic being anti-malarial and anti-retroviral drugs and driven by South Africa, Nigeria, Ghana, some eastern and north African countries.

Indian pharmaceutical share in African imports



Source: Global import and export data, "profit from rising disease burden", Africatime.com

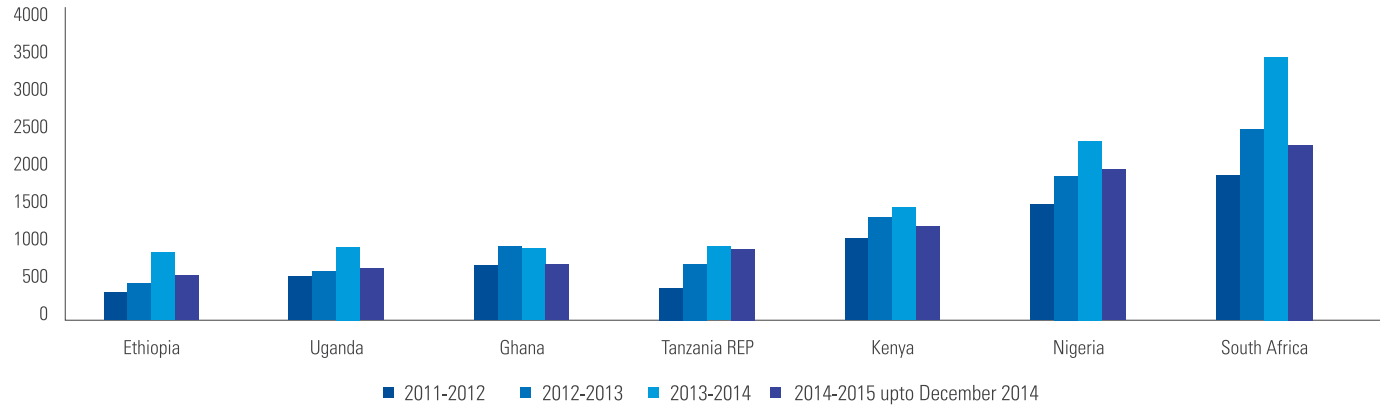
Country-wise exports of medicines/drugs from India 2014-15-upto December 2014



Source: "Country-wise Exports of Medicines/Drugs from India: (2011-2012 to 2014-2015-upto December 2014)", Indiastats, September 2015

29. "A Brief Report on Pharmaceutical Industry in India", Corporate Catalyst India, July 2015, Pg 2
30. "Pharmaceutical Exports from India", IBEF, August 2015

Exports of medicines/drugs from India



Source: "Country-wise Exports of Medicines/Drugs from India: (2011-2012 to 2014-2015-upto December 2014)", Indiastats, September 2015

Though Africa represents high growth potential in the near future, it is imperative to understand the market and customers' needs. In Africa, regulations are still evolving, supply and distribution mechanisms pose a challenge that cause an increased lead time. Nonetheless, the growing disease burden coupled with stronger spending capacity could provide a flourishing market opportunity in the future for Indian pharmaceutical companies. In such a scenario, liaising with the local manufacturers can facilitate efficient collaboration and better understanding of the varying regulatory environment in the continent. In a nutshell, India's collaboration in terms of joint ventures with African companies, establishing API/ formulations manufacturing plants and technology transfer for bio-pharmaceutical products could empower Africa in attaining affordable quality healthcare.

How India and Africa can promote better healthcare in the region

Today, African healthcare systems face many basic challenges which impede this second most-populous continent from providing access to affordable quality healthcare and lead to mortality from treatable diseases. Access to sanitation, clean water and controlling communicable diseases are still prevalent in the healthcare agenda for many African countries. Growing NCD burden in these nations is creating new milieu of challenges for stakeholders involved in the healthcare system in Africa. In fact, NCDs are projected to overtake communicable diseases as the biggest healthcare challenge in Africa[31] by 2030. The Ebola outbreak in recent times in West Africa has demonstrated how such communicable diseases can take a toll on the economies.

The poor healthcare delivery infrastructure, along with shortage of skilled medical workforce, is adding to the healthcare crisis for the continent. An inadequate procurement and distribution system of medicines is also leading to unequal access to essential healthcare services.[31] Additionally, the financing system is burdening people, with huge healthcare spends being out-of-pocket, and pushing them further into poverty. It is important to answer the question on how to balance a healthcare model for the poorest of the poor needing assistance with a sustainable co-payment / payment / out of pocket mechanism to defray the costs.

India with its strong life-sciences and well-recognised healthcare sector, is poised to team with African countries to overcome these challenges. With its relevant set of resources such as skilled doctors, advanced hospitals and generic drug supplier, etc. A lot of existing diseases can be mitigated through awareness

31. The future of Healthcare in Africa, Economist Intelligence Unit, 2012

campaigns be it diet or health related. India, with its experiences in driving awareness via pharmaceuticals and healthcare, would play a pivotal role in reducing the burden of disease. India can help African nations in building newer and stronger healthcare infrastructure that provides quality care across four healthcare pillars – accessibility, affordability, acceptability and availability.

Overall, India can help Africa through:

- joint ventures with African companies who already have an established presence
- technology transfer of biotech products/vaccines
- the establishment of API/ formulations manufacture in antibiotic/HIV segments
- the establishment of a good network for supply chain management
- the supply of quality medicines at competitive prices for crucial diseases plaguing the African region
- supplies against global tenders
- the supply of generic medicines.

KPMG in India

KPMG in India, a professional services firm, is the Indian member firm of KPMG International and was established in September 1993. Our professionals leverage the global network of firms, providing detailed knowledge of local laws, regulations, markets and competition. KPMG has offices across India in Delhi, Chandigarh, Ahmedabad, Mumbai, Pune, Chennai, Bengaluru, Kochi, Hyderabad and Kolkata. KPMG in India is currently offering services to over 3,000 national and international clients in India across sectors. We strive to provide rapid, performance-based, industry-focussed and technology-enabled services, which reflect a shared knowledge of global and local industries and our experience of the Indian business environment.

KPMG in Africa

KPMG firms are well-represented across the African continent. Our objective is to provide consistent, high-quality services to multinational, regional and local clients and to enhance product offerings in certain previously under-serviced markets.
All Anglophone and Lusophone practices in Africa are members of KPMG Africa Limited (KAL). KPMG practices in Francophone Africa are managed by KPMG in France. KAL has very close working relationships with KPMG's Francophone countries. KAL also has working relationships with KPMG's North African firms, which form part of the Middle East/South Asia sub-region of KPMG's global network. The rest of Africa is covered by KPMG through firms in adjacent countries. By undertaking assignments in neighboring countries, KPMG can ensure that the needs of our firms' clients are met wherever they are in Africa. Our African footprint enables our offices to work effectively, efficiently and cohesively across the continent.

KPMG's dedicated India-Africa Corridor

In view of the significant growth in trade and investment between India and Africa, a dedicated team has been setup to help clients having interests between the two geographies. The corridor program is an initiative of KPMG in India and KPMG's Global Africa Practice. Through this program our clients can experience seamless services across India and their business interests in African countries and vice-versa.

Our focus is to develop, support and facilitate Africa-India bilateral business opportunities – both for Indian businesses entering the African market as well as African businesses setting up in India. In addition, our team has deep insight and up-to-the minute experience of the opportunities and challenges that businesses face in India-Africa cross-border activities. Our network of specifically identified KPMG professionals in both Africa and India work seamlessly together to ensure our clients are best equipped to operate effectively and optimally in this Corridor. The team also regularly produces through leadership articles and newsletters in the marketplace in which the latest relevant insights and experiences are shared.

About CII

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, playing a proactive role in India's development process. Founded in 1895, India's premier business association has over 8000 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 200,000 enterprises from around 240 national and regional sectoral industry bodies.

CII charts change by working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry through a range of specialized services and strategic global linkages. It also provides a platform for consensus-building and networking on key issues.

Extending its agenda beyond business, CII assists industry to identify and execute corporate citizenship programmes. Partnerships with civil society organizations carry forward corporate initiatives for integrated and inclusive development across diverse domains including affirmative action, healthcare, education, livelihood, diversity management, skill development, empowerment of women, and water, to name a few.

In its 120th year of service to the nation, the CII theme of "Build India- Invest in Development, A Shared Responsibility", reiterates Industry's role and responsibility as a partner in national development. The focus is on four key enablers: Facilitating Growth and Competitiveness, Promoting Infrastructure Investments, Developing Human Capital, and Encouraging Social Development.

With 66 offices, including 9 Centres of Excellence, in India, and 8 overseas offices in Australia, Bahrain, China, Egypt, France, Singapore, UK, and USA, as well as institutional partnerships with 312 counterpart organizations in 106 countries, CII serves as a reference point for Indian industry and the international business community.

KPMG contacts:

India

Richard Rekhy
CEO
KPMG in India
T: +91 124 307 4303
E: rrekhy@kpmg.com

Nitin Atroley
Partner and Head
Sales and Markets
KPMG in India
T: +91 124 307 4887
E: nitinatroley@kpmg.com

Navin Agrawal
Partner and Head
India Africa Corridor,
KPMG in India
T: +91 22 3090 1720
E: navinagrawal@kpmg.com

Africa

Seyi Bickersteth
Chairman
KPMG Africa
CEO
KPMG in Nigeria
T: +234 1280 5984
E: seyi.bickersteth@ng.kpmg.com

Trevor Hoole
CEO
KPMG in South Africa
T: +27 11 647 7276
E: trevor.hoole@kpmg.co.za

Josphat Mwaura
Senior Partner & CEO
KPMG in East Africa
T: +254 20 280 6000
E: jmwaura@kpmg.co.ke

Bryan Leith
Africa COO
KPMG in South Africa
T: +27 11 647 6245
E: bryan.leith@kpmg.co.za

Neeraj Shah
Partner and Head
Africa India Corridor,
KPMG in South Africa
T: +27 11647 7825
E: neeraj.shah@kpmg.co.za

The Confederation of Indian Industry (CII) contacts:

E. B. Rajesh
Regional Director
International Division - Africa
T: +91 11 2465 3092
E: e.b.rajesh@cii.in

Karanjit Singh
Executive Officer
International Division
T: +91 11 2462 9994
E: karanjit.singh@cii.in

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