African Agriculture: An Abiding investment Avenue for India

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Introduction

The post 1990 global challenges focus on three F's i.e. Food, Fuel and Finance. To deal with these challenges, India firmly believes that developing countries are not accepting the Concept of Aid in terms of quantity and demand quality to be an integral part of economic development. Science and Technology (S&T) of India shaped new vision in the economic front, necessitating modification in the Indian foreign affairs in the post 1990s.India adopted market economy and presented itself as emerging entrepreneur under global economy. 'Indian foreign policy believes in self-reliant economic growth in developing countries that will lead to self-reliant development. The development cooperation should not be based on donor-recipient basis but stand on equal partnership' (Suresh Kumar: 2008). Indian political economy as a gear of its foreign policy is focusing on the African society.
The human resource in Africa is 900 million as compared to India's 1100 million.
'The Africa-India Summit 2008 endeavors capacity building in policy analysis, planning and training in agriculture sector--- capacity building in best practices and adaptation on the impact of climate change and desertification' (Africa-India Framework, 2008: emphasis mine).
India adopted collective engagement in Africa that will promote African infrastructure and agro-industry. African regional approach will give the member states greater opportunities to attract foreign investments. The process of creating a

free trade area that incorporates the East African Community, the Common Market for Eastern and Southern Africa, and the Southern African Development Community is underway, bringing together nearly 600 million people into a single market. Such a development will have a major bearing on India-Africa economic exchanges.

Is India A Threat to Africa?

Today, Africa is the hub for resources with leading world powers eyeing the continent for its natural resources. Only an average 3% of cultivatable land in Africa is being used now, which is not sufficient to feed the entire population of Africa. It is imperative to incorporate the development of agriculture sector as a prerequisite to country's progress and overall prosperity in contemporary Africa. The trade and investment in agriculture and agro-infrastructure are inter-linked and need mutual support, which persuaded Africa to share Indian experience in this sector. National Research Development Corporation (NRDC), Central Food Technological Research Institute (CFTRI), Council of Scientific and Industrial Research (CSIR), Government of India, and Indian Council of Agricultural Research (ICAR) have assisted 5,000 entrepreneurs for developing their business ideas in the African countries. Today, India's foreign policy is being questioned while dealing with agriculture sector in Africa. The issues being raised are:

1. Is India accused of 'neo-colonialism' in Africa using its agriculture land to cater Indian population at home?

2. How best can India work with African countries in facing the challenges of food sufficiency?

3. Are there any S&T measures that can ensure a long term benefit that is adaptable for the local requirements?

4. Are there any institutional links and processes by which this knowledge can be shared with African states?

India will be the largest importer of the food in the world. The agriculture development in Africa will strengthen the food security to its indigenous people on the one hand and play its role as the world grainary on the other hand. It will be the additional source of income for the African countries as it will bring the dollar by exporting the numerous items related to agriculture sector.

Land per capita is shrinking – 1 to 1.5 acres, 0.3 hectares

Farming is a terrible business – 45% want to quit farming, middle class nightmare

Increasing cost of land - $20,000+ acre,

10 to 100 acres, illegal crop farming, land ceiling act

Climate Change – glaciers

Damming the Brahmaputra

Water table is falling – NASA image, water table

1. India and New Colonialism in Africa

The academic circles on Africa worry about its New Scramble and having a larger fear on India's role as neo-colonial power.
Dean Nelson observed that Karuturi Global (KGL), an Indian company, one of the world's largest producers of cut roses has been accused of neo-colonialism in Ethiopia and Kenya (Dean Nelson: 2009). KGL refuting these claims, mentioned its agriculture investment policy clearly and highlighted that 'Our labour welfare measures in Kenya such as Healthcare services to locals (other than employees), food to drought victims, sponsored a village mortuary and the regional WWF, provided infrastructure to the local police and manages the Sher Football Club, a team in the Kenyan Premier League, which has six of its members in the national squad are having a positive impact on the lives of Kenyan workers, their families and communities. Similarly, KGL plans to provide schools, hospitals, housing and bus facilities to Ethiopian workers. The KGL social welfare initiated programmes such as distribution of woolen blankets to poor and elderly in June 2007 and 2008, contributed $75,000 towards drinking water supply for Holetta town, provided free food every Sunday to 100 destitutes for the past two years and drinking water supply to Sadamo village. The company facilitates by using indigenous Greenhouses, in-house power generation from biomass, rainwater harvesting, use environment-friendly fertilizers and chemicals, different technique for irrigation and hydroponics method of cultivation' (Karturi: 2009).
The investment in agriculture sector in Kenya and Ethiopia has created employment opportunities for skilled and unskilled labour there. More or less, the company uses the green houses for floriculture as that land is not suitable useful for other crops. The company plans to grow sugar, cereals, vegetables and palm and has acquired 336,000 hectares of land in Ethiopia and Kenya covering self-reliance schemes avoiding huge debt policy.
A good number of sugarcane factories have been started by Indians in Ethiopia according to the region's demand. They are sowing sugarcane locally and producing sugar to cater domestic as well as regional market.

Devinder Sharma of the Forum for Biotechnology and Food Security termed such deals as land grabbing and exporting food from Africa as food pirates (Dean Nelson: 2009). He did not support it with substantial documents. Indian Ministry of Finance's data on Foreign Direct Investment (FDI) in African countries refutes negative propaganda and shows the real picture.

'In the case of outward FDI, it is already observed that approvals of Indian investment abroad increased significantly. The volume of FDI and share of cumulative outward FDI towards the developing countries are shown in **Table-1**. Table-1 shows that Mauritius and Russia are at the top of the figure of cumulative share of FDI towards the developing countries for the period 1996-2008, followed by Sudan, China, Egypt and Brazil' (Subhasis: 2009).

The government approved sector wise FDI in manufacturing, financial & non-financial services and trading.

This data does not show anywhere the investment in procurement of land and in agricultural sector in general. Hence, the data does not prove the intention of Indian FDI as being used for land grabbing or food piracy. Indian corporate houses are making overseas investments through countries like Mauritius that either have low tax rates or allow tax-free remittance of income. Despite the fact that outward FDI is moderately concentrated for the developing world, the African countries may follow different trends. Similarly, John Heine expressed, "Yet, contrary to what some might surmise from this new version of the Scramble of Africa, if African countries play their cards right, they have much to gain. Indian companies are more willing to invest in infrastructure and in the downstream facilities needed to bring products to port than western ones" (John Heine: 2008).

It is observed that India focuses on bilateral, multilateral and regional economic cooperation acting as bridging power with all the major powers as a part of its foreign economic policy. But being seen as the bridging power, it should not be misused by Multinational Corporations using India in Africa for its self interests and assigning a proxy label of new-colonialism on India. Following suggestions may help to curb misnomer of new colonialism on India.

1. Public-Private Partnership (PPP) in Africa is concerned about the relative decline of agricultural production of domestic food and industrial requirements. It is estimated that the use of 15 percent of the total land in Africa is sufficient for the domestic consumption including having food stock for the emergency. Indian investors are buying land in Africa for agricultural purposes. The sharing of the total produce should be in the ratio of 70:30, where 70 percent should be reserved for the export & industry and only 30 percent should be used for domestic consumption. This ratio may vary from 70:30, 75:25, 85:15 and so on depending on particular country's land fertility and the requirements of the total population of the country concerned. The suggestion to put this ratio is that most of the African states do not have the advance cold storage facility to keep the food grains presently on the one hand and the lower ratio is sufficient to cater population of a country on the other hand.

2. African governments should adopt a method of assessing the quantity of food production required for local market versus production for exports. Along with it, similar method should be used for local agro-industrial activities. These measures will help to develop mutual understanding among PPP.

Criticizing PPP, Dinesh C Sharma has stated that 'Indian firms are trying to gobble cultivable land in Africa. These companies are going to produce food for shipping it back to India taking advantage of the duty-free options of the LDCs. I wonder---Indian business, will grow food not for the people of Africa but for shipping it back home' (Dinesh C Sharma: 2009). It should be remembered that African demand of 200,000 tons of food grains accomplishes a supply of only 100,000 tons in Africa (FAO: 2003 & 2002: emphasis mine). It needs scientific technology and investors in agriculture sector to make up the difference between the demand and supply.

It is up to Africa either to adopt another phase of failed experiment of Structural Adjustment Programme sponsored by World Bank and IMF on their terms & conditions or to develop the mutual bond with developing countries like India to cater to their domestic and regional demand. The ratio of agreements on the use of arable land between

India and Africa as discussed above will provide sustainable development for Africa in food and will also support for Asian granary.

2. Indian Investors and Africa's Food Sufficiency

The question raised that are there any S&T measures that can ensure a long term benefit that is adaptable for the local requirements shows a genuine concern of local users and investors. The answer lies in the India's transfer of knowledge/technology that could help Africa deal with the problem of food crisis. The importance of small farm mechanisation and India's expertise in small tractor production by good number of companies is highly relevant to Africa. Indian investors provide agricultural mechanisation such as seed cum fertilizer drill that facilitates seed and fertilizer saving, enhancement in cropping intensity and increase in gross income and return to farmer in Africa. India manufactures agricultural tractors, mould board plough, disc plough, sub-soiler as primary tillage, spring loaded tillers, harrow, leveller, bund former, scraper, rotary tiller as secondary tillage, back hoe with tractor, laser grader, graders, scrapers with tractors as earth moving equipments[1] and sowing machinery.[2]

Indian investors promote agro-processing firms, joint ventures in horticulture, storage facility and technology transfer with African governments to address world markets. Besides the other areas, India should focus on the Africa's need for quality infrastructure and micro financing to enhance the farm productivity in the African countries. Along with it, Mr Sanjay Kirloskar stated that 'African women are the real workers on small farms. The experience of Indian women working with micro finance in developing self-help groups (SHGs), co-operative societies producing number of food, medicine, beverages and cosmetic items for the urban market will be the real input for the African women. Africa having small holding can use this micro finance for better seed, agriculture implements, irrigation systems and natural pesticides. Along with farm-related partnerships, African countries hope to replicate India

’s success in microfinance. Indian microfinance institutes could assist Africa to build this sector. And, a system of sharing of expertise in microfinance could be developed with the participation of India’s leading microfinance companies. Africa could become the world’s food basket with Indian expertise and farm technologies.’ (Kirloskar Sanjay: 2009).

3. Indian Institutional Links and Knowledge Sharing with Africa

The Focus Africa Programme of India initially emphasized on seven major trading partners of the region, namely Ethiopia, Nigeria, South Africa, Mauritius, Kenya, Tanzania and Ghana that account for around 69% of India’s total bilateral trade with the sub-Saharan Africa (CII India-Africa: 26). NEPAD shares the developmental approach with India and Indian institutional partners. The institutional entrepreneurship in Africa represents through CII, FICCI, EXIM (BANK), IOR-ARC, and Focus Africa. India's economic engagement in Africa is working as per their local needs. Different turnkey contracts have been undertaken in Tanzania, Uganda and others. It enables import of Indian equipment and technology on deferred credit terms extended through EXIM Bank, PTA Bank, BOAD, EADB and EBID. Joint Ventures of Indian companies are engaged in Africa through Line of Credit (LoC). A visible change in perception with access to greater knowledge of the region has helped in promoting economic relations between the Indian industry members and the African countries. CII’s effort is to develop a long term sustainable relationship with the private sector in the African countries. The participants in March 2009 Conclave was remarked by 483 African delegates and 318 Indian delegates who discussed more than 193 projects worth $17.2 billion in technology, agriculture, human resources and energy in the COMESA regions (CII: 2009).

African Priority in Agriculture Sector and Indian Investors

The agriculture sector faces the changing environment that demands higher food quality, productivity improvements and environment friendly agricultural methods. This sector needs sophisticated equipments for agronomy concerns optimized yield, precision farming, fuel saving, less soil compaction and safety. Africa needs Green Revolution for achieving food security as the population will reach 1.8 billion by 2050. **Table-2** highlights the Afro-Asian particulars about the irrigated land area and the potential through irrigation in this sector. More than 90% of agriculture in Africa is rain dependent. Africa has abundance of water across the continent. The major water bodies across the African continent includes major rivers such as Blue Nile, White Nile, Limjpopo, Niger, Volta, Senegal and Chari and lakes such as Lake Chad, Victoria and Malawi. There are 73 other major rivers and Lakes, 1300 small lakes, 13 major river basins and 104 small river basins across Africa. Only 20% of it is required to make the continent food secure. It is thus essential to enhance irrigation facilities equipped with extensive infrastructure to fulfil the basic needs' (Kirloskar : 3-6).

Africa needs water pumping system and water management techniques from India. The requirement of little training to African HRD will help installation of pumps for handling it that will change even the deserts into green areas. More than '100,000 Kirloskar pump sets are greening 200,000 ha of desert land along the Nile for the last 40 years and are in operation at more than 50 large pumping stations in Egypt. These pumping systems are also used in South Africa, Lesotho, Angola, Ghana, Ethiopia, Sudan, Kenya, Tanzania, Uganda, Zambia and Zimbabwe making a difference in key sectors of economy' (Kirloskar, 2008: 14-15). Indian investors in Agriculture sector in Africa offer better seed technology, irrigation, scientific instruments, etc. (Annexure-1) to get more output supporting poverty alleviation programmes. Mr. Felix Matati, Minister for Commerce, Trade and Industry, Zambia pointed out, 'African countries would prefer Indian investment as we understand each other. You have cost-effective technology, which we want. We are able to understand each other better as we are both from the south. India-Africa trade has been lacking clear visibility. We want to change that' (

I T Christie:
2005).

Africa offers different key areas of investment (**Table-3**) that may start in different provinces/districts/zobas/villages. Table-3 deals with Fruit & Vegetable, Agriculture Engineering, Fish and Fish Farming Industry, Livestock Industry, Food & Beverages and Dairy Sector.
The experiences of African visits and five Conclaves on India-Africa Partnership [3] enriched detailed knowledge on agriculture sector of some African countries that are discussed here as case studies.

1. Investment in Burkina Faso

Burkina Faso is second largest producer of cotton in West Africa and ranks third in Africa. Agriculture plays a key role in this country's economy that accounts for over 40% of the country's GDP, 80% of export revenue and 85% of employment (Burkina Faso in Focus: 30). The government gives priority to twelve fields for investment in cotton, cereals, fruits & vegetables, oil seeds, skin and leather, meat, milk, chemical products, fertilizers and pesticides and guarantees certain rights [4] to boost the confidence of the foreign investors. The country provides a possibility of Joint Venture with local business community, low cost of labour and good infrastructure (telecommunication, roads, railways and airport) and services in the heart of West Africa' (Burkina Faso in Focus: 26). The agriculture investment exists in the following sectors such as Industrial units of manufacturing tractors, manufacturing pump sets for irrigation, manufacturing agro-food products, agro-chemicals (fertilizers and pesticides), manufacturing textiles (Cotton fabrics, garment production and yarn) and setting up commercial farming units (fruit, vegetables, Arabic gum and cotton).

2. Investment in Ethiopia

Ethiopia adopted an agriculture and rural-centered development strategy known as Agricultural Development-Led Industrialization (ADLI). ADLI focuses on the development of smallholder farm productivity and the expansion of commercial farms. One suggests the structure of cooperative farming [5] should be like that of West & South India and Kenya may be replicated in Ethiopia. If successfully implemented, it has the potential to reduce food insecurity, absolute poverty and environmental degradation.

Ethiopian farmers should adopt alternative technologies that require Indo-Ethiopian investments in rural infrastructure, input and output market improvements, land markets, credit policy, agro-industry and promotion of non-farm enterprises. The challenge is to develop innovative and cost-effective PPP related institutions (including NGO's) that support agriculture establishing pro-farmer environment.

Ethiopian agriculture, second largest sector of investment focuses on FDI since 2004 and received number of projects as mentioned in Table-4. It is observed that the Indian community has been involved in teaching, health, industrial development and agro-industry that promote goodwill and understanding among people in Ethiopia. Overseas Infrastructure Alliance (I) Pvt. Ltd. (Annexure-I) is currently 'supplying of 132 kv Power transmission Line, Substation & Distribution Equipment Project worth approximately US $ 78.0 million to Electric Power Corporation (EEPCO). It is setting up 26000 tons per day Green Field sugar project in Tendaho, worth US $ 345.00 million and installing new power plant worth US $ 142.00 million in Finchaa Sugar Factory in Ethiopia.' (Your Partner: 2008: emphasis mine). Similarly, Kamani Engineering Corporation (KEC) International is working for power transmission over minefields in Africa from scorching deserts of North-West Africa and Egypt. It has also undertaken rural electrification across Ethiopian working on altitude of 2100 m above sea level and politically sensitive Somalia-Ethiopia border and other parts of African continent. It helps the agriculture sector adopting mechanical technology and irrigation facility (Annexure-I). The production of sugarcane and the sugar industries in Ethiopia and Kenya are benefiting indigenous people of this region and nothing has been brought back to India. [6] This counters the allegation of food piracy against India.

3. Investment in Ghana

The government gives incentives by way of tax rebates for manufacturing in certain locations, tax holders, ranging from 5 to 10 years depending on sectors, custom import duty exemption for plant machinery, equipment and parts thereof and double taxation agreements (Ghana: 2005). Ghana
is searching for an investment location and offers opportunities such as agriculture (Cassava, Cotton, Sugarcane, Soya Beans, Oil Palm, Pineapples, etc.), agro-processing (
Cocoa
, Fruits, Vegetables, etc.), general infrastructure (Agricultural and Industrial Estates, Roads, Railways and Ports) and fisheries.

4. Investment in Senegal

Senegal has become a leading exporter of cherry tomatoes, fine green beans, basil, green asparagus, onions, potatoes and aubergines. 70% of Senegalese population is involved in agriculture sector that is central to the country's development. Senegal is highly dependent on import of rice. As an alternative, the
Senegal
government offers investment opportunities in this sector particularly in
Senegal River
Valley
region. An upper limit of CFA F 15 million is the condition of investment in this country. There are export opportunities facilitated by AGOA visa in the agri-business sector in 'floriculture, fruit cultivation, market gardening, thousands of hectares of cashew nut plantation, diversification of the industrial processing of groundnut, fish cultivation, support to the development of horticultural exports, improvement of the condition of market operation, support to agro-business producers & operators for a better adaptation of products to the market, development of private irrigation and land-related activities' (Senegal in Focus, 2007: 24-25).

5. Investment in Uganda

Uganda is east Africa's food basket with over 80% of the population relying on agriculture for its livelihood. The 32 million hectares of arable land in Uganda is lying

untapped. The agro-processing can improve the livelihood of low income groups as it produces cereals, root crops, coffee, tea, livestock, fish and forestry. There is a lot of scope for business in processed agro products.
India
and
Africa
are starting quota free trade and thus Ugandan products will be sold duty free in
India
. The linkage potential in the plantation and agro-industry includes:

· Outsourcing the field operations including seed-bed preparation.

· Supply of produce to processors.

· Maintenance of machinery.

'Uganda needs US $ 15-30 million investment to expand rose industry depending on wooden or metallic infrastructure. All the rose projects send soil samples to Holland for analysis that cost US $ 200-600 per hectare. The investors may establish soil analysis laboratory and provide services in
Uganda
itself at much cheaper price. Greenhouse plastics constitute 6% of the investment requirement and need to be replaced every 2-3 years, providing commercial opportunities for local manufacturers. Fertilizers, herbicides, pesticides currently imported are another area of investment' (Outline: 8: emphasis mine).

This agro-industry needs strong infrastructure such as roads, railway, etc. in Uganda. It requires a more efficient railways network to connect
Kenya
,
Tanzania
,
Rwanda
,
Burkina Faso
and

Southern Sudan
. This is a very important area of investment for Indian investors. The railway is the system that can withstand Ugandan local weather, because it gets lot of rains, which can be a problem for the roads. Finally, the rate of return in Africa and Uganda is very high, about 30% as compared to India, European Union, China and Latin America (Uganda 2007: 11).

6. Investment in other African Countries

a. Angola- It has introduced development programmes for rural economy and is expecting more cooperation in private sector in terms of 'investment in mostly cereals, coco, cane sugar and tobacco from India'.

b. Botswana- It is looking forward to setting up units of production of commercial farming such as fruits, vegetables, Arabic gum and cotton. The opportunities in this sector include the setting up of small industrial units of milk processing (dairy plants) breweries, production of animal feeds, veterinary pharmaceutical products, meat processing, leather tanning and products, cattle rearing-ranching and poultry.

c. Cameroon- The Government is stressing upon 'PPP to promote farm productivity and Indian private investors could supply equipment to small farm holders'.

d. Eritrea- The Government of Eritrea announced new economic investment policy that is known as Proclamation No.159/2007 regarding Foreign Financed Special Investments (FFSI) Proclamation. It applies to all FFSI of more than Twenty Million US Dollars (20,000,000 USD) or its equivalent in other convertible currency. The Eritrean government policies give priority to agriculture sector.

e. Mozambique- It uses 15% of total cultivatable land. It plans to begin a 'Green Revolution through farm mechanisation and formulated a Food Production Plan for 2008-2011. India could be a partner in providing the infrastructural support and transfer of skills to facilitate the revolution as it has rich experience in capacity building, research and technical training in this field.'

f. Southern Sudan- The government offers policy of concession for ‘private companies to initiate affirmative business atmosphere that is conducive for Indian companies to take a lead’.

g. Mali- Angelique International has been engaged in for the ‘manufacturing and assembling of tractors. The plant was handed over to the client organisations in 2007. The company later entered into a separate joint venture with the Government of Mali with 51% shareholding’ (CII: 2009: emphasis mine).

h. Tanzania- Zanzibar, part of Tanzania is known as the Spice Islands. It offers investment opportunities in horticulture and floriculture, agro-processing, fruit processing & canning, cloves, cinnamon, cardamom, nutmeg, black pepper, chillies, etc.

CII Africa Committee has Institutional Agreements with Africa’s Small and Medium Enterprises (SMEs) and signed Memorandum of Understanding (MoU) in the fields of soap plan, water management and infrastructure related projects during this Conclave of 2009. A strong structure that supports a continuing dialogue, transparent access to opportunities, interaction with the government and the African Heads of Missions has now been institutionalized. Indian institutions such as NRDC, CFTRI, CSIR & ICAR and NEPAD (New Partnership for Africa’s Development) should approach the Forum for Agriculture Research in Africa (FARA), the Southern African Centre for Cooperation in Agricultural and Natural Resources Training (SACCAR), the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) and the African Centre for Agricultural Research an Development (CORAF) in North Africa to address agricultural strategy for development.
Indian investors are training human resource of
Africa
and imparting knowledge in agricultural sector strengthening the overall food security. There is an active participation of Indian investors in
Africa
in agriculture sector and in related activities (Annexure-I).

Suggestions and Conclusion

Following suggestions will help to strengthen Africa’s development and their collaboration with the Indian partner reflects the following advantages of scientific agriculture such as:
1. African agricultural trade is controlled by the developed world. Africans should persuade for intra-African trade serving common man’s needs. The resource mobilization should be from the domestic, regional and international markets. African governments should be committed to raise the budgetary allocation to agricultural sector to shape economic growth positively. African

leaders should take commitments from all the investors for the adequate training of HRD including skilled labour in agriculture sector on the one hand and work for transfer of technology on the other hand.

2. As a result of population growth, there is a need to introduce more agricultural land and introduce applications of S&T in Africa. The S&T methods like better seeds, dwarf plantations, demand of less water crop, rotation patterns, minimum period of crop production and preference for the use of natural insecticides will help African agricultural system.

3. There is widespread inequitable land distribution biased against small farmers. The need of community farming under Collective Land System should be promoted, which will help in using scientific agricultural implements in Africa. It will strengthen market based land reform and give more bargaining power to the community farmers as it is successfully working in some states of India
.

4. The scientific agriculture system will persuade and promote the farmers to join agriculture education, literacy programmes and other awareness programmes. Moreover, agriculture extension is an important component of agriculture universities throughout the world, which will help Africa Agriculture Education System to strengthen in rural areas.

5. Different programmes like Diary Farms, Poultry, Piggery, fisheries, Sericulture, Horticulture, Floriculture and Shrimp & Prawn cultivations should be introduced in Africa as an alternate food resource. It needs commercial feed to save grazing areas and build Veterinary Hospitals accordingly. It will help in fulfilling the mutual needs and establish mutual cooperation among rural and urban areas.

6. Africa needs more agriculture scientist and practitioners, who will help African youth to get training in agriculture sciences and develop technology as per local needs. It will enhance field of research and teaching in Agriculture Colleges and University and generate self-employment among educated youth.

7. African governments should initiate the process of Rural Cooperative Banks. These banks may provide different loan schemes for modern mechanical support like tractors and other

implements, credit to farmers (to buy good seeds, fertilizer, pesticides, etc) insurance schemes on crops and subsidized technical guidance and other financial assistance (building concrete houses, potable water pipes, electricity, cooking gas stoves and kerosene oil stove, etc.) to rural society. The alternate sources of domestic energy (to avoid firewood) like bio-gas plants, energy saving stoves, solar pressure cookers and wind energy system need to be introduced in the rural areas and people should be motivated to use it. Also, they should be educated to plant private trees in their fields or surroundings for better environment. The banks will strengthen micro-finance and SHGs.

8. Importance of growing trees/plants needs to be communicated through PPP to the people that will help them become aware of soil erosion and land protection promoting Green Environment. The permission to cut trees be made stringent to save plants. The PPP and government should persuade farmers to receive agricultural training courses, awareness of information technology in agriculture sector, use of animal husbandry and building scientific civic society. The soil conservation awareness programme should be broadcasted on the national TV channels and all channels of Radio including FM stations in regional languages that give orientation, training and practice to farmers in their respective areas. The incentives should be given to those farmers who adopt scientific methods of cultivation.

9. Finally, the governments should adopt programmes such as food for work and cash for work programmes in the agriculture and related sectors. The related sectors involve road building network, dam construction, boring wells, small channels from river for irrigation purposes, installation of power projects (electricity), thermal units, etc. The infrastructure development, credit schemes to farmers and proper storage system will abolish the role of middleman. The direct government approach to farmers and market will maintain balance between demand and supply. This relationship between government-farmers-market-consumers will provide a right direction to agriculture sector that will fulfill the needs of African society & promote to day's Investment, tomorrow's Prosperity in true sense.

Today, the evidence is at best inconclusive on whether technology transfer contributes to growth and poverty reduction in Africa. There is a need to use appropriate technology as per the requirements of the people. Indian experience of using agricultural technology and its practice on African land will facilitate the way towards mutual socio-economic transformation. Along with it, the modern agriculture system breaks the tendency of Living for Bread Only, avoiding middleman in the market economy and leading their country towards self-reliance in food industry necessary for attaining sustainable development and growth.

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End Notes

1. Escorts, Sonalika, Eischer, HMT, International Tractors, Mahendra & Mahendra, etc. are the largest producers of Agricultural equipments in India.

2. Escorts produces sowing machinery such as post hole digger, paddy planter, seed drill for cotton seed, seed cum fertilizer drill, potato planter and multi row vegetables planters, irrigation systems such as sprinkler systems, drip system, irrigation pumps like centrifugal pumps, stationary diesel engine driven centrifugal pumps, engine set, electric pumps and submersible pumps, sowing & harvesting machinery such as maize combine, sugar cane combine, mowers, paddy combine, reaper, wheat combine, fruits harvester, onion harvester, potato digger, cotton picker and post harvest machinery like bailer, tipping trailer, sugar cane grabber, trailer, thresher and maize Sheller. Escorts, 2008, Improving Farm Productivity through Agro Machinery, Faridabad.

3. The author has visited 15 African countries and was a delegate right from the beginning (since 2005) and raised number of issues in agricultural sector during CII conclaves.

4. Right of full business awareness for foreign investors, Right to acquire real estate, land, forested land, industrial areas in addition to concession from government, Right to transfer capital and profits of any investor.

5. The small land holders having 1-2 hectares (or less) of agricultural land combine with other holders and form a village cooperative of 10-50 hectares. It helps in using modern agricultural techniques that produces good output providing direct benefit to the farmers.

6. Informal discussion of the author with Indian sugar industrialists in Addis Ababa and in his paper presentation on
Indo-Africa Trade & Investment in Agriculture Sector: Development & Mutual Partnership, 2nd

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Table 1: Cumulative share of outward FDI towards Developing (Southern) Countries

Outward FDI to Developing Countries

Country

Total FDI (1996-2008)

(Rs. Million)

Share of

Total FDI (%)

Cumulative

share (%)

Mauritius

175132.52

31.25

-

Russia

122381.55

21.84

53.09

Sudan

54528.93

9.73

62.83

China

37185.79

6.64

69.46

Egypt

32293.95

5.76

75. 23

Brazil

21946.94

3.92

79. 14

Liberia

7584.66

1.35

82.85

Kenya

6033.78

1.08

88. 90

Libya

5772.95

1.03

89. 93

Other Countries Vietnam

Total	560343.6349	100

* It does not require detailed information as the discussion is focused on agriculture.

Source: Ministry of Finance and www.icrier.org

Table-2 Irrigated Area Vs. Potential Agriculture land

Particulars(ha)
World

Asia
Africa
Total Area
13.4 Bn
3.1 Bn
3.0 Bn
Cultivated Area
1.5 Bn (11.3%)
560 Mn (17.6%)
200 Mn (6.6%)
Irrigated Area

277 Mn (18%)

194 Mn (34%)

13 Mn (6%)

Source: www.fao.org

Table-3 Approved FDI by Sector -Investment in Million Birr

Sector

Approved Projects

Operational Projects

% Share

Projects

Investment

Projects

Investment

Projects

Investment

Hotel & Tourism

8

236

1

1162

12.5

492.4

Agriculture

31

2711

4

1243

12.9

45.8

* Education & Health Services, Construction, trade, Mining & others

Total

276

13914

51

3285

18.5

23.6

* It does not require detailed information as the discussion is focused on agriculture.

Source: Ethiopia: Trade and Transformation Challenges Study, 2004.