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I would like to start by looking at the position of Asia today and in the future in terms of cooperation in the farm sector. Asia will become a net food importer by 2030, with China, India, Indonesia, Bangladesh and Pakistan all becoming net importers.

The Asian rice *Oryza sativa* was brought to Africa over 500 years ago. Within a short period, because of its high yield potential, it replaced most of the indigenous African rice, *Oryza glaberrima*, with a history of 3,500 years of cultivation, withstands these problems better than *O. sativa*. To combine the best traits of the Asian and African rice species, the challenge is to transfer into the heavy yielding but stress-prone *O. sativa*. African Development Bank, the Japanese government, and the United Nations Development Programme funded this major agenda item at the Fourth Tokyo International Conference on African Development (TICAD-IV) in 2008. Using conventional and molecular biology techniques, the scientists overcame hybrid sterility—the main problem in crossing the species. This also allowed them to reduce the breeding process from 5–7 years to 2 years or less. The fruit of this effort is the New Rice for Africa (NERICA), which presents several advantages over traditional varieties. NERICA is not just one variety; several hundred family lines have been generated. Finally, the NERICA was trademarked by Africa Rice Center (AfricaRice) in 2004 and Guinea, Cote d'Ivoire and Uganda. In Mali, Togo, Nigeria, Congo Brazzaville, Congo (DRC) and Kenya 5-10,000 ha (per country) is currently under NERICA production, while the group with up to 5,000 ha consists of 14 countries.

Kenema, the major town of Eastern Sierra Leone, was known as blood diamond but with the China projects, the rice cultivation along with the irrigation facilities is noteworthy.

India-Africa agrees to collaborate in the implementation of the Comprehensive Africa Agricultural Development Programme (CAADP) such as:

- Soil, Water and Tissue Testing Laboratories;
- Farm Science Centres; and
- Agricultural Seed Production-cum-Demonstration Centres

Context in which Asian-African Partnerships is built

1. China

The period of 1960s onwards, China constructed the kind of large, state owned farms that symbolized socialist orientation. But this approach was shifted because another mode of agriculture aid was available through the SAP of World Bank and Europe. The China agriculture research and cultivation is based on huge amount of labour but there is scarcity of local labour force in Africa.

The FOCAC summit now could use agricultural aid to help in a way to combine, getting and giving. The trials of hybrid seeds in Africa produce mixed results. China and Africa is looking a good potential in small and medium-sized farming equipments and hybrid seeds as recommended by China State Farm Agribusiness Corporation (CSFAC). This fits neatly into Beijing's global strategy for agribusiness. China's agro-planners center focuses on agricultural technology and seed cultivation in Africa in which China can compete in the global market.

China Development Bank, China EXIM Bank and Chinese Ministry of Agriculture has encouraged five major Chinese state-owned farming companies to obtain land abroad including Africa for agricultural use on a large scale. Chinese lease land on an annual rent payment basis to the African landowners.

2. Japan

Japan is the only non-Western conventional donor and is most familiar with East Asian development experiences. The Fungibility of Japan is originally a legal term meaning 'substitutability'. Fungibility means that the value of one unit

of a good is equivalent to something else, and thereby the former is substitutable for the latter, keeping their values unchanged even after substitution. Finally, in the 1990s, fungibility was highlighted again due to drastic changes in aid relations between donors and low-income recipients. The end of the Cold War, donors' strategic interest in aid for Africa and other low-income countries quickly weakened. In response, the international aid community was forced to redefine the meaning of aid. It had to convince policy-makers and taxpayers in terms of the effectiveness of aid for the policy makers and taxpayers in terms of the effectiveness of aid for the development of poor countries as the essential *raison d'être* (reason for existence) of foreign aid. Japan International Cooperation Agency (JICA) in Africa is working in different sectors including agriculture one.

3. India

Department of Agricultural Research and Education (DARE) of India was established in the Ministry of Agriculture in December, 1973. DARE provides the necessary government linkages for the Indian Council of Agricultural Research (ICAR), the premier research organisation for coordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country. India-Africa Institute of Agriculture and Rural Development has also been entrusted with the setting up of the University of Earth & Life Sciences at Ibadan, Nigeria. The details of the programmes are already circulated in the power point.

In what specific areas of agricultural development should the two continents forge dynamic ties?

The stakeholders should work for fetching the water from different sources and prepare the land for the agriculture having water management system. There is an increased opportunity for agribusiness stakeholders to invest in these areas such as:

1. Introduce Low and innovative technologies such as drought-tolerant crops, high-quality seeds, fertilizers etc. that will increase income for small-scale farmers.
2. Processing the goods through Value chain approaches and interventions that will increase productivity.
3. Provision of infrastructure and farm mechanization services.
4. Training to farmers and personnel in other allied activities.

How Asian and African agribusiness stakeholders could improve their actions?

Africa's main exports to India are in the form of raw materials that need to be further processed after entering the country. Processing within Africa would build higher income for the African farmers. It also enables the products to enter the Asian market at a higher level of the value chain. Cotton Technical Assistance Programme (C-TAP) of Asia in Nigeria, Uganda, Benin, Malawi, Mali, Burkina Faso and Chad. India has trained over 600 African scientists, technical and extension officers; offer capacity-building to over 2,500 farmers.

How can Asian stakeholders better assist their African partners in adapting and adopting the strategies that propel agricultural production and productivity?

The past experience of China development pattern is explained by a farmer in Africa and said, "If people see us working there and working well, they will copy. It is pride to me that they do come and look at my own swamp (rice field). But, like World Bank, which by its own count had a dismal failure rate of 50 percent for its rural development projects in Africa, the Chinese could not ensure that any of this would last after they left. Chinese agricultural demonstration stations are available in Mozambique, Liberia and Senegal and Chinese companies either using Chinese labour or using outsource/ out growers is not welcome by the local people in Africa.

The experience of India in Asia is a learning ground for stakeholders of Asia such as:

- ✓ India's experience in agricultural education has a lot to offer to Africa
- ✓ With 99 ICAR institutes and 66 agricultural universities spread across the country this is one of the largest national agricultural research systems in the world.
- ✓ Pan-African e-Network provides unique knowledge collaboration
- ✓ Set up 10 vocational training centres in Burkina Faso, Burundi, Egypt, Ethiopia, Gabon, Gambia, Libya, Mozambique, Rwanda and Zimbabwe.

How can Asia's increased investment in Africa be structured so as to maximize benefits with regards to: human capital development for Africa, farm technology development and the transfer of skills and technology to African farmers?

There is a fear that Chinese labourers would turn the land holders and their workers into labour tenants and subject them to exploitation along with the Chinese labourers. Xu Guoli, a senior official at the Ministry of Agriculture



observed, It is not realistic to grow grains overseas, particularly in Africa. There are so many people starving in Africa, can you ship the grains back to China? Development performances in Africa became more dismal, despite the expected effects of the SAP and massive input of foreign aid. Japanese Donors became more concerned about factors hindering the translation of more aid into better development result. A spotlight was cast on fungibility as a major factor in this context. It is often said that Japanese embassies or the African-based offices of the Japan International Cooperation Agency (JICA) just send junior officials to related meetings, who keep silent and are not effectively involved in the policy dialogues and discussions concerning Poverty Reduction Strategies (PRS) formulation/implementation and monitoring. The capacity building program of India focuses human capital development for Africa such as:

- ✓ Many big IT Indian companies, such as NIIT and Wipro, with ventures in the African IT market.
- ✓ Rwanda is welcoming investments in this sector in an effort to transform from low-income agriculture based economies to knowledge based service oriented economies.
- ✓ Ethiopia with high enrolment rates in primary education provides a ripe platform for investment in setting up universities including agriculture colleges. It attracts cross border students (Somalia and Sudan) to Ethiopia. Hence, the education sector in Africa merits special attention from Indian investors and it will attract human capital development.
- ✓ Moroccan government is going to lease 600,000 hectares land to local and foreign investors in agricultural sector. The priority is given to those foreign investors bringing the skill development and HR training in their packages.

Farm Technology Development

Africa is land-abundant and comparatively scarcely populated. With 36 people per square kilometer Africa's ratio of population to surface area is much lower than that of Europe (120 in the European Union [EU], East Asia (also 120) and South Asia (342). Africa is land-abundant and skill-scarce relative to other regions. Africa thus has a high land-to-skill ratio. Comparing regions over time, it shows that countries with high ratios of land to skills tend to export mainly primary products. Africa will probably never match the land-skill ratio of Asia or Europe. Africa needs all agriculture mechanization right from tractor to other implements.

As far as farm technology in land-skill ratio of Africa is concerned, it needs all agriculture mechanization right from tractor to other implements. As we know that most of the African states do not have the advance cold storage facility, it is a basic requirement for the farm development. The Public-Private Partnership (PPP) mode of investment may bring the farm technology for the development of agriculture sector. Private investors are buying land for farm development in Africa for agricultural purposes (70:30, 75:25). 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 in the farm technology development and transfer of technology.

The transfer of skills and technology to African farmers

There is a need to use appropriate technology as per the requirements of the people. India believes that technology should be accessed by all. India is leading a campaign to re-write intellectual property rights (IPR) in favour of all the developing countries to strengthen their financing and capacity building. India respects value addition in exploration, assisting in settling their different sectors and committed its partnership developing Africa's capacity building as per the need of African countries in policy analysis, planning and training in agriculture sector. The adequate training to the local people of Africa boosts the process in the transformation of skill to them.

How can this partnership help African agriculture to attain sustainability of growth through product diversification, value addition and better access to markets?

The agro-industry in Africa needs farm mechanization that will facilitate increase in productivity. The production boost in agriculture is the only way to initiate the product diversification through agro-industry in Africa. It should be remembered that once there will be surplus production of food in Africa, the agro-industry will get the input of raw materials to produce different food products, working for value addition and cater to the needs of urban as well as rural areas. China, Japan and India have different approach of farm mechanization.

China policy of farm mechanization is that the stakeholders are paying an annual rent to the African landowners. The complication here is that the Chinese companies are paying rent to the government and then it goes to the landowners committee and to the landowner in the last. Ultimately African agriculturist loses the patience.



Post 1990 fungibility of Japan was highlighted again due to drastic changes in aid relations between donors and African recipients. The donor's strategic interest in aid for Africa and other low-income countries quickly weakened. In response, the international aid community was forced to redefine the meaning of aid. It had to convince policy-makers and taxpayers in terms of the effectiveness of aid for the policy makers and taxpayers in terms of the effectiveness of aid for the development of poor countries as the essential *raison d'être* (reason for existence) of foreign aid. Careful examination is required to understand the cause of Japan's delayed and weak commitment to actions related to the Highly Indebted Poor Countries (HIPC)s debt relief and the Poverty Reduction Strategies/General Budgetary Support (PRS/GBS). First, the delayed and weak commitment can be explained by a lack of understanding by officials and aid professionals in Japan's Official Development Assistance (ODA) administration. The policy-makers are not equipped yet with a fully fledged research institute for development aid as of 2008. Also, Japan has been, to certain extent, isolated from interactions with Western donors, partly because of language, cultural and geographical issues.

Approximately 80 Indian companies have collectively invested US\$2.3 billion. India's development and mutual partnership will cover self-reliance schemes avoiding huge debt policy, nourish value addition and better access to markets and strengthen economic development. India and Africa participation in drawing up concrete solutions is essential to satisfy their policies that build up a debt free Africa and sustainable development.

What is already being implemented? Different Asia-Africa partnerships in the fields of technologies and expertise for agricultural growth, food security and rural development.

Japan and its stakeholder's dichotomy is clearly visible in the development of agriculture sector. Chinese investment is more evident in infrastructure activities than in capacity building in agriculture sector. India approaches towards agricultural growth, food security and rural development is explained here.

Expertise for Agricultural Growth

China State Farm Agribusiness Corporation (CSFAC), Japan International Cooperation Agency (JICA), The Indian Council of Agriculture Research (ICAR), the International Crops Research Institute for Semi-Arid Tropics (ICRISAT) and the International Agriculture Consulting Group (ICAG) are working having different approach of agriculture growth. Huge scope for Asian companies to build forward linkages like contract farming helping the agricultural sector in Africa to link agricultural supply chains with processing plants or retailing businesses.

Asian countries that play a very important role in the support of agriculture in different African countries.

If Japan can consolidate its intellectual capability and political will, it could transform this challenge into an opportunity. As China's neighbor and close economic partner, Japan can understand China's strength and weakness as an emerging donor. Japan understands the exogenous impact of economic development and political democratization through the dismantlement of neo-patrimonialism. This process could be aborted unless it is sustained by efforts generated from inside developing countries. Only the states and the people of developing countries should take the initiative in this process. One should characterize it as essential self-help required for development. Japan's own experiences and philosophy could help connect the West and the non-West in more productive ways.

Indian FDI in Agriculture Sector is vital for the agriculture and agro-infrastructure. Indian scientific and agricultural research institutions have assisted around 5,000 entrepreneurs for developing their business ideas in the African countries. 80 Indian Agriculture Companies invested £1.5 billion in Ethiopia, Kenya, Madagascar, Senegal and Mozambique and £500 million loaned from Indian government to these companies. \$2.5bn has already been invested by Indian Companies in Africa's agricultural sector alone, which has also enhanced the PPPs between government and Indian Agro companies. African regional approach will give the member states greater opportunities to attract foreign investment. The process of creating a free trade area that incorporates the 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.

What are the main results of India's Green Revolution that need to be shared with the African countries?

India's Green Revolution is shared with the African countries under PPP model.



- A. Technologies for smallholder farmers in Sub-Saharan Africa,
- B. International Crops Research Institute for Semi-Arid Tropics (ICRISAT) headquartered in Hyderabad has signed a Memorandum of Understanding (MoU) with the European Market Research Center (EMRC).
- C. ICRISAT launched a US\$18-million project for smallholder farmers in dry land areas to increase food security in Africa,
- D. ICRISAT Harnessing Opportunities for Productivity Enhancement (HOPE) of Sorghum and Millets in 10 Sub-Saharan countries.

Africa needs water pumping system and water management techniques from India. The requirement of little training to African Human Resource Development (HRD) will help installation of pumps for handling that will change the production pattern in agriculture. The opportunities for Indian investors in agriculture sector in this region are to provide better seed technology, irrigation, scientific techniques & instruments and infrastructure to strengthen their food security. African countries can benefit from Indian experts working in the different research institutions in the fields of water management and water harvesting to strengthen their agriculture set up. The implementation of Green Revolution in Africa needs triangular cooperation of farmers, private stakeholders and Africanists academia. The agricultural projects based on PPP easily dismiss the idea of production of these staple foods and state that these are "not scientifically or financially important cannot be a part of Green Revolution in Africa.

I already raised the issue of sharing of the total produce should be in the ratio of 70:30 or 75:25 or 85:15 where 70 percent should be reserved for the export & industry and only 30 percent should be used for domestic consumption for a successful green revolution in Africa. African Union's Comprehensive African Agriculture Development Program (CAADP) for Green Revolution is taken seriously by India and Indian Private Stakeholders. The intermixing of regional organizations is favourable for a cohesive development in African agriculture. The legal infrastructure around property rights and land titles are the prerogatives of the national governments in Africa.

Following suggestions strengthen the idea of Green Revolution in Africa such as:

If a long-lasting partnership framework for African development is to succeed, the Poverty Reduction Aid Regime should incorporate China and other emerging Asian donors, and it should be based upon far more respect for Africa's own efforts. Japan is in the most pivotal position as the country, could consolidate all of the important stakeholders under the new partnership framework. Japan philosophy of self-help, Japan can understand and believe that African people can decide the way towards development and democratization. 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 stakeholders 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.

1. Commitments from all the stakeholders for the adequate training of HRD and transfer of technology
2. Need to introduce more agricultural land and introduce applications of S&T in Africa.
3. The need of community farming under Collective Land System should be promoted, which will help in using scientific agricultural implements in Africa.
4. Promote the African farmers to join agriculture education, literacy programmes. 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. Dairy Farms, Poultry, Piggery, fisheries, Sericulture, Horticulture, Floriculture and Shrimp & Prawn cultivations should be introduced in Africa as an alternate food resource.
6. Assist African youth to get training in agriculture sciences and develop technology as per local needs
7. Open Rural Cooperative Banks to strengthen micro-finance and SHGs.
8. Importance of growing trees/plants and the soil conservation awareness programme should be broadcasted on the national TV channels and all channels of Radio including FM stations in regional languages in Africa.
9. African governments should adopt programmes such as *food for work* and *cash for work programmes* in the agriculture and related sectors.
10. the agricultural produce should be in the ratio of 70/30 for a successful green revolution in Africa.