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The resource-based exporting and industrialization – how to learn from the Nordic countries?

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Globalization is a modern word for a process that has been going on for centuries. Advances in transportation and communication have increased economic integration. Technologies as container systems and the Internet have lower trade barriers and eased the movement of goods, services and capital. The rapid growth in financial flows over boarders, particularly private equity and portfolio investments, is, one of the symbols of globalization. Globalization has also meant expansion, diversification and deepening of trade and financial links between countries, especially over the WTO-time. This is a result of multilateral tariff reduction and trade liberalization. As the crises of the 90s in Mexico and Asia demonstrated, globalization is threatening, not only to the UN and the WTO but to national market institutions and political systems. Since the 1960, the **growth of international trade in goods and services has been twice as fast as global output**. The positive result is that developing countries have increased their role in world trade to about **30 %**[1].

Globalization has brought lower prices to consumers, and investment and employment to newly industrializing countries. China and India have increased their exports rapidly. Other Asian countries follow the same pattern. In the near future, Asia is heavily industrialized and attracts jobs from other continents. This has raised a public concern of the **least developed countries, LDCs**[2], which lag behind as the rest of the world advances. Many LDCs locate in Sub-Saharan Africa. Many of LDCs in Sub-Saharan Africa are **logistically isolated from the world trade flows.** Global trade by goods is critically dependent on harbors" efficiency. In African LDCs, a small portion of population is living within 100 km of the coast or of a navigable river compared 89 % in high-income countries. Especially, agricultural exporters of African LDCs have a risk to fall behind of the global trade by 2030[3] without an efficient infrastructure.

[1] The Challenges of Globalization for Africa, Address by Alassane D. Ouattara, Deputy Managing Director of the International Monetary Fund at the Southern Africa Economic Summit sponsored by the World Economic Forum, Harare, May 21, 1997. http://www.imf.org/external/np/speeches/2001/011901.htm

[2] http://www.un.org/special-rep/ohrlls/ldc/list.htm

[3] The World Trade Report 2006

African LDCs are often landlocked countries and the average freight costs are many times higher than in high-income countries. An important area of development is, therefore, harbors, and efficienct transportation systems in general.

International trade in goods and services rose by **6.5 %** in 2005 and was as a whole **$10.159 billion**[4]. It is 10-times more than in the 1960s. Germany maintains the top of the list with $971 billion and 7 % growth. The US is second with $904 billion and 10 % growth. China's export earning is $762 billion with **28 %** growth, surpassing Japan's export of $596 billion with only 5% growth. India earned $90 billion with 19 % growth. The top countries dominate shares in world trade of commercial services which $2,415 billion in 2005, and 11 % as the annual growth. If we look at continents, the dominant player of world trade is Europe that represents **43 %** of both imports and exports. The second one is Asia with 25 % of imports and 27 % of exports. The third is North America with 22 % of imports, 14 % of exports and $0.8 billion trade deficit. Africa is lagging behind with **about 3 %** imports and exports. The world population is about **$**6.6 billion and Africa's population $0.9 billion. Africa's share of world population is **14 %** and of trade only about **3 %**.

The negative implication of international trade distribution is Africa's marginalization of in the integrating global economy.

In 2004, LDCs as a group accounted for only **0.6%** of world exports, **$61.8 billion** with **34%** growth. Growth figures mask the division of LDCs into three groups of exporters[5]. **Oil exporters** (Angola, Equatorial Guinea, Yemen, Sudan, and Chad) accounted for **47 %** of total LDC exports with the growth rate of **52 %** in 2004. Angola alone earned **$18 billion**[6] in 2005. However, the boom in oil exports

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http://www.wto.org/English/res_e/reser_e/world_trade_report_e.htm

[4] Source of trade statistics in this chapter:
http://www.wto.org/English/res_e/statis_e/its2006_e/its06_byregion_e.htm

[5] ECONOMIC OBSERVER, 35, World export and status of LDCs by Bijan Lal Dev. www.economic-observer.com/October-November06/article5.pdf

[6] This figure contains also mining. The World Trade Report 2006.

seems not to provide the development logic away from the poverty. Oil incomes fortunate few and ecological problems are escalating. The **manufacturers of goods** (Bangladesh, Myanmar, Cambodia, Madagascar, Nepal, Lesotho, Haiti, and Laos) are dependent on exports of ready-made garments. They have lost their positions in competition against China and India. The rest 37 of LDCs are **commodity exporters**, often dependent on primary agricultural products. They have difficulties to overcome trade barriers created by the subsidies in the EU and US. The weak export performance of LDCs is partly dependent on the unfairness of the commitments of their trading partners, particularly of multinationals. In average, the LDCs' merchandise exports have three distinct weaknesses[7]:

- **A narrow range of products,**
- **A lack of diversification of export markets and**
- **A low technology content**

The UN's aspiration[8] is the duty-free and quota-free market access to global markets on a non-reciprocal basis for all products originating from LDCs.

This is the issue of politics. The US treatment of LDCs has blamed to be dependent on its world politics. Japan favors oil importer LDCs. The EU's weakness is its unfair agricultural policy that has stopped imports from African LDCs. In spite of the good will that the leading industrial countries convince in the UN and in the Bretton Woods organizations, the **average level of preferential (reciprocal and non-reciprocal) imports from LDCs into these countries is marginal.** In terms of markets, the EU-15-countries absorbed about **40 %** of LDC exports in 1995. During the WTO-period from 1995, the LDCs' share has dropped to about **30 %**. The US has increased its relative share into about **23 %**. Japan has not yet its market open to LDCs, the share is **4.2 %** that is even lower than that of Thailand,

http://www.wto.org/English/res_e/reser_e/world_trade_report_e.htm
[7] ECONOMIC OBSERVER, 35, World export and status of LDCs by Bijan Lal Dev. www.economic-observer.com/October-November06/article5.pdf
[8] Millennium Development Goals. www.un.org/millenniumgoals

5 %. China has increased its relative share from **3.5 %** to **17.8 %**. China's politics is to favor LDCs both in trade and investments.

Share of major markets in LDCs merchandise exports, 1995-2004

Rank	1995	2000	2004
1 EU-15	39.6	31.1	29.2
2 US	20.5	26.4	22.7
3 China	3.5	10.7	17.8
4 Thailand	3.9	3.7	5.0
5 Japan	6.5	3.3	4.2
6 India	2.7	2.5	2.9

Source: UNSd, Comtrade data base and WTO.

The trade patterns of African countries are usually based on **crude or processed agriculture or mineral based products**. This kind of factor-based exports provide only a scare value added to firms in Africa that have the difficulty to utilize the modern technology. The technological gap between African firms and average global firms is major in technical know-how services. The result is that the industrial structure in Africa is polarized into big and small firms. Most industrial sectors are dominated by **big, diversified firms** that are the major end-users of raw materials and capital inputs in Africa. Because of their size and diversity, big firms are the basic structural element of industrial clusters. Small firms are a complementary structure. The weak development of pan-African markets of industrial goods and services is the main reason to the lack of innovative, medium-sized, growth firms. Without dynamics of growth firms, global economic turmoils affect African countries with severity.

Referring to Alfred Chandler's book "Scale and Scope", Africa has the same structural problem as the leading industrial countries a century ago. Because of the undeveloped inter-regional trade, the integrated, big firms do not need for subcontracting with medium-sized, growth firms.

If we look at the share of inter-regional trade of each region's total trade[9], we can find out that Europe share is **73.2 %,** in North America 55.8 % and in Asia 51.2 %. In Africa the same ratio is only **8.9 %**. Why inter-regional trade is so dominating? The answer is that firms are trading **differentiated goods and services**, not only commodities. Like Helpman and Krugman have found, countries are trading, not because they are different, but because they are similar[10]. This refers to the demand-driven explanation. Staffan Linder has hypothesized that **demand plays a more important role than comparative advantage in trade.** Demand-based international trade arises from consumers' taste of variety. This aggregate taste for variety arises because different individuals have a different specification of their ideal variety. Countries with similar preferences are expected to have the same structures of industries.

Africa needs differentiated goods and services as export articles. The basic strategic capability that is needed is strategic marketing. African growth firms should learn to utilize the diverse supply and demand curves. This selection is visualized in figure 1.

The demand-based benefits are the driver of international trade. Increasing trade of differentiated articles gives consumers in various countries a wider choice of goods and services to select. Africa needs export articles with high value added, because the prices of commodities are falling[11].

The challenge of globalization in African firms is to deepen the consumer or customer orientation in the near future.

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[9] This figure contains also mining. The World Trade Report 2006. http://www.wto.org/English/res_e/reser_e/world_trade_report_e.htm

[10] Helpman, Elhanan and Krugman, Paul (1985) Trade policy and market structure, MIT Press, Cambridge, MA.

[11] According to Unctad the decreases in prices from 1977 to 2001 has been: 2.6 % for foodstuffs; 5.6 % for tropical beverages; 3.5 % for oilseeds and oils, but only 1.9 % for metals, which, unlike food and beverages, are never produced by small producers. http://mondediplo.com/2007/01/03economy

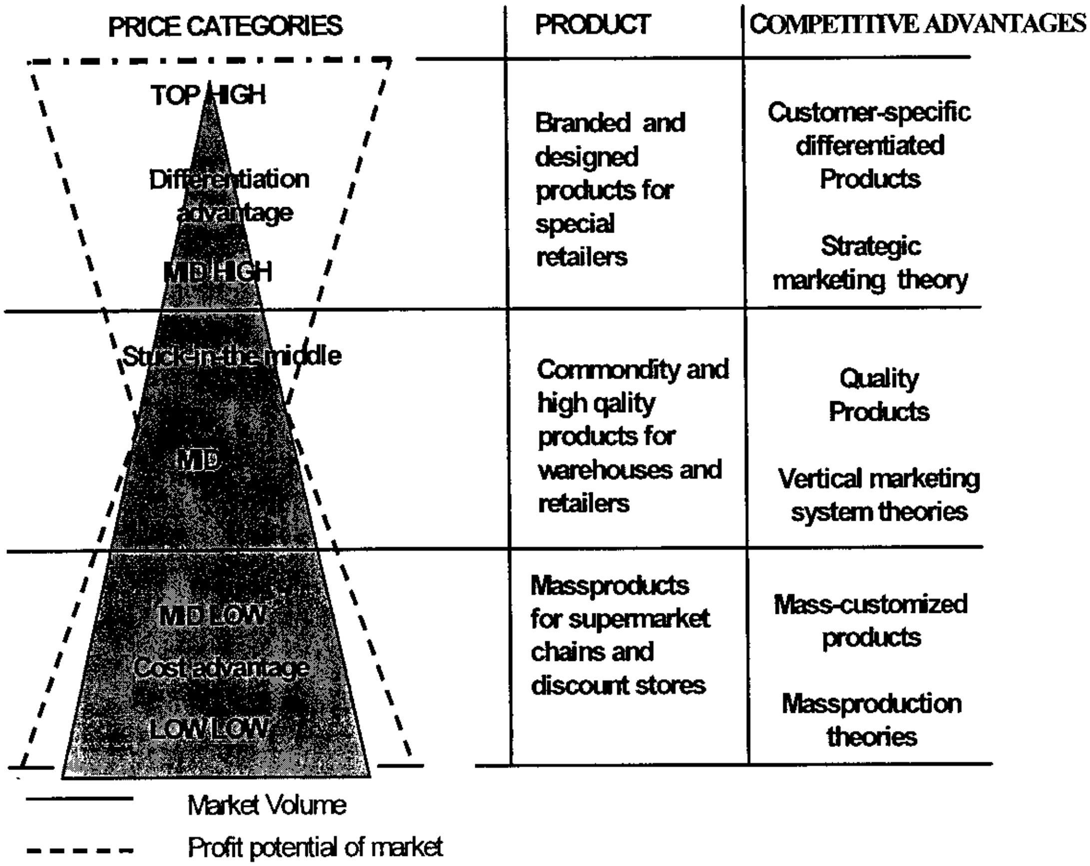

Figure 1: Differentation as the strategic marketing selection

Globalization spurs faster growth in average incomes in the next 25 years than during 1980-2005 and the global economy expands **from $35 trillion in 2005 to $72 trillion in 2030**. Global trade in goods and services rises **to $27 trillion in 2030 from $10 trillion today**. Trade as a share of the global economy will rise **from 1/4 to 1/3**. Roughly half of the increase is likely to come from developing countries. Developing countries will supply over **65 % of manufactured imports to rich countries**, compared with 40 % today. Some developing countries will play the central role, notably China, India and Brazil. Their growth rate is expected to be over 6 %, much higher than in average in developed countries. The positive scenario is possible only if the global economy succeeds to avoid the

most disruptive shocks like a severe environmental catastrophe[12]. Another premise for the positive scenario is more equal distribution of economic prosperities between countries. The report's prediction is that the number of people living on less than **$1 a day** could be cut in half, **to 550 million** in 2030, although the Earth's population is expected to rise to **8.0 billion.** [13]

Africa has a risk of disruptive human and environmental shocks. The only choice for the leading industrial countries is take seriously Africa's development obstacles.

The report[14] expects that continuing integration of markets will make jobs around the world more subject to competitive pressures. The global labor force will increase to **$4.1 billion**. When trade expands, technologies will rapidly diffuse to developing countries. This means that the supply-based theories of the comparative advantage in international trade should be completed with the demand-based theories. When the US and the EU dominate the global patterns of consumption of today, the **new ingrediences of global taste are most probably coming from the developing countries**, the new exporters, such as China, playing decisive roles. Like Robert Reich predicts, the middle class has a crisis in the developing countries, the most severe in the US. The report predicts the rebirth of the global middle class. In 2030 the new global middle class will be about **1.2 billion** people in developing countries, 15 % of the world population. This new middle class with a purchasing power of $4,000-17,000 per capita is exactly what African firms need. These new consumers are looking for differentiated articles with high value added. Their

[12]http://www.google.com/search?hl=en&q=Global+Economic+Prospects+managing+the+next
[13]The World Bank's Global Economic Prospects 2007
http://www.google.com/search?hl=en&q=Global+Economic+Prospects+managing+the+next
[14]The World Bank's Global Economic Prospects 2007
http://www.google.com/search?hl=en&q=Global+Economic+Prospects+managing+the+next

aggregated preferences for various goods and services are expected to be different from the ones in developed countries.

The new global middle class will enjoy access to advanced consumer durables and services, and play a major role in policy making and institution building in their own countries like China and India and in the world economy.

Industrial countries, especially the EU and the US, have not favored Africa's exports relative to Asia. Therefore, the global trade has failed to bridge the divide between the rich industrial countries and Africa. The basic reason is that the global market mechanism is biased for the good of big counties and multinationals. Referring to the new growth theory, the important catalysts of economic growth in Africa are **investments in education, infrastructure, technology, and entrepreneurship** with the help of international organizations (IGOs and NGOs). In addition to the economic aspects, the socio-political-environmental dimension is vital. Poor countries cannot deal with these problems on their own or through bilateral diplomacy. Tackling the dark side of globalisation demands international co-operation and multilateral action of a new kind. The dilemma is that the global markets cannot create the necessary institutions and organizations to nurture local entrepreneurship in poor African counties. There is a need to incorporate a theory of institutions into economics from poor countries point of view following the notion of Dougglass North.

The really frustrating side of the global economy is that the economic collapse of some nation states in Africa is to be expected, if African states cannot find out a fair foothold in the global markets.

The EU's mission of preventive crisis management policies is the right one. The economic dynamics if difficult to maintain in the countries where the major part of population lack the basic **global public goods**, especially pure water, medicines to infectious diseases and piece and security. The common denominator of the three Bretton Woods institutions is **their lack of transparency and democratic**

accountability. This is the essence of neo-liberalism. It claims that the economy should dictate its rules to society, not the other way around. Some of the leaders of poor countries have been claimed to be corrupt and/or incompetent. However, the new network-based world order has produced an impressive range of regional initiatives and small-scale cooperatives, industrial projects and even women's organizations that embody the realities of poor countries' road to development. These new institutions open up democratic, transparent, and participatory networks and can initiate methods by which **public, international investment funds** can meet human and environmental needs and ensure adequate global demand by channeling funds into sustainable long-term investment.

The poor African countries need to create agglomeration economies and social or trust capital between global clusters and local networks. Whereas the clustering of firms is a top-down perspective, the poor African countries should focus on bottom-up approaches to create social or trust capital between global markets and local entrepreneurs and communities.

Globalization reinforces the interdependencies of states in various continents. Africa should deepen the spatial linkages of states in a mutually beneficial way. The problem is demand structure. When China and India have large domestic markets, Africa with 54 countries is a difficult to reach. Finding the right customers and reliable business partners in the African market is a time-consuming process. Most of the business sectors in African countries are small and firms have established methods of procurement that differ from one sector to another. There are only few agents who serve a particular sector on an exclusive basis, but, because they are well established within the sector, they deal in many other sectors[15]. Pan-African markets are the best available home market for African firms to start globalization. Demand-based international trade arises from

[15] http://www.afritopic.com/afritopic-business-contacts.htm

consumers' taste of variety. Countries with similar preferences are expected to have the same structures of industries.

Pan-African markets are the ones that could enable African firms to learn global market demand in their own continent. Therefore, Africa needs market integration at the regional level. The first stage might be regional custom unions.

The region with opportunies and problems is **West Africa**, the 15 countries stretching from Senegal to Nigeria. Examples of problems are conflicts, corruption, brain drain, lack of investments and AIDS. West Africa is an important source of oil and gas, although the region's entire GDP is small. Infrastructure costs are high because the public water, electricity and telephone systems are inadequate. There is need for the **West African Union (WAU)** [16] to facilitate trade, limit corruption, promote entrepreneurship, and, and thereby, break the barriers of growth. For most African countries, a strong export sector is needed restructure the rest of the economy as the response to increasing competition and transparency. Most countries in West Africa are highly dependent on foreign markets. If the export growth stagnates and the inflow of resources from abroad is constrained, the economic progress of the production region is jeopardized. The WAU should work to get a more favorable access to foreign exchange, capital and technology. As to the distribution of economic power, it is the rich countries who determine the terms of trade because in the short run, the Africa needs products and services from rich countries more than the latter needs the output of Africa[17].

African countries are price takers in trade negotiations and trade policy formulations. The existence of great disparities and one-sided dependence reflect the moral of globalization. Even the oil rich countries are no exceptions in this regard. In that sense, the globalization of trade can be seen as a new

[16] The Challenge of Globalization in Africa, Remarks by Stanley Fischer, First Deputy Managing Director, International Monetary Fund, at the France-Africa Summit, Yaoundé, Cameroon, January 19, 2001.
http://www.imf.org/external/np/speeches/2001/011901.htm
[17] http://allafrica.com/stories/200706130610.html

world order of marginalization and recolonisation. Given the common history of Africa and the West it is ironic that the latter is propagating the virtues of freedom to Africans[18].

Conclusion

Africa can influence and participate in shaping the rules of global trading if it speedily works out its commodity production and marketing policy, before the continent runs the risk of being further marginalized. The options mentioned below based on a comprehensive industry analyses are some of the key factors Africa could use to influence the world trade.

Option one: Agriculture products: A fair trade policy is needed to help African countries!

World trade in agricultural products totals $674 billion in 2003[19], about 7 % of the whole. This trade is an important source of foreign exchange earnings for many countries. The dominant player is EU. Its intra-regional trade is $233 billion[20]. Africa, with near 900 million inhabitants represents only a marginal portion of world trade, only $9 billion in exports and $11 billion in imports. The share of agricultural products of total trade is, however, biggest in Africa, 13.9 % in exports and 15.9 % in imports. No African countries can be found in

[18] Former colonisers and ex-slave-owners have made a virtue of championing political and economic liberalization. Globalization (2002) Globalisation, Its Implications and Consequences for Africa by S.T. Akindele, T.O. Gidado, O.R. Olaopo, Department of Political Science, Obafemi Awolowo University Ile-Ife, Osun State, Nigeria. http://www.thecore.nus.edu.sg/post/africa/akindele1a.html
[19] http://www.wto.org/english/res_e/statis_e/its2004_e/its04_bysector_e.htm
[20] The second is intra-Asia with $70 billion and the third North America to Asia with $38 billion. The next ones are ($ billion): Intra-North America 34, Latin America to the EU 22 and Latin America to North America 20.
http://www.wto.org/english/res_e/statis_e/its2004_e/its04_bysector_e.htm

the list of top exporters[21]. Because of big population, Africa's own demand for various food products is large, more than $50 billion and is expected to double by 2015[22]. Only a part of this output is marketed and the rest is consumed in farms. The paradox in the Africa now imports about 25 % of its food grain and succeeds to export only marginal portion of the world trade in food products. There is certainly potential to increase Africa's production.

Processed forms of products of cereals, cocoa, coffee, fruit, vegetables, root crops, etc has been in growth in trade because of their functionality. Africa as the producer of has been pushed out of the increasing value added by the unfair trade policies of the US and the EU. Even cotton that could be article has stagnated to €87 million in 2005.

The total support to agriculture in the OECD countries is estimated to be over $300 billion[23] that is almost one half of the total value of world trade in the sector. According to the World Bank, West African cotton exporters lose about $250 million a year as a direct result of U.S. subsidies and this figure will rise sharply[24]. In West Africa, cotton-based textile and clothing manufacturing could be the growth driver but the farmers cannot compete against subsidies.

Taylor and Cayford[25] argue for a policy to help farmers in Africa to get access to patented biotechnology, while leaving

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[21] http://www.wto.org/english/res_e/statis_e/its2004_e/its04_bysector_e.htm

[22] Diao, Xinshen & Dorosh, Paul A. & Rahman, Shaikh Mahfuzur (2003) Market opportunities for African agriculture," DSGD discussion papers 1. ideas.repec.org/e/pdo121.html

[23] ftp://ftp.fao.org/unfao/bodies/ccp/ccp64/Y8318e.doc

[24] How agricultural subsidies in rich countries hurt poor nations, Wole Akande, columnist (Nigeria)/YellowTimes.org 19Oct 02. http://www.mindfully.org/WTO/Subsidies-Hurt-Poor-Akande19oct02.htm

[25] Taylor, Michael and Cayford, Jerry (2004) American Patent Policy, Biotechnology, and African Agriculture: The Case for Policy Change, Harvard Journal of Law, Science and Technology, Volume 17, Number 2.
Michel Taylor is a former vice-president for public policy at Monsanto, and Jerry Cayforth from Resources for the Future (RFF) in Washington.

intact the structure of the patent system. An element in their proposal is to establish a compulsory and nonexclusive license requirement for agricultural biotechnology. Segenet Kelemu stresses that agricultural biotechnology has the potential to improve the food security and reduce the environmental pressures in Africa, provided that the risks associated with the biotechnology are properly addressed. [26]

The Green Revolution in Africa could be the sales slogan that Africa needs in its agriculture. Part of it is the global concern about ecology. Africa's growth in agriculture is the only way to guarantee food for next decades. But this slogan should also include ambitious programs to make African ecologically the most sustainable continent. Prices and demand for products related to consumers' health have increased significantly in the OECD markets. These kinds of trend products are Africa's opportunity to get back its position in international trade.

<u>Option two: Textile and clothing: Africa needs to communicate through its own brands and product contents</u>

In 1974-1994, up to the end of the Uruguay Round, textile and clothing quotas were negotiated bilaterally and governed by the rules of the Multifibre Arrangement, MFA that was a departure from the basic GATT rules and the principle of non-discrimination. The MFA was meant to allow developing countries as the group to increase their low-cost exports to the developed countries and to force the developed countries to modernize their production of textiles and clothing. In 1995 when the MFA-time was over, China's clothing exports have risen to $24 billion when the world trade as a whole

[26] http://www.africabiotech.com/biotechinfo/reports/agbiodebate2003.pdf

was $158 billion and textile exports to $13 billion of $152 billion[27]. Since 1995, when WTO's Agreement on Textiles and Clothing, ATC, took effect, a large share of textile and clothing exports from developing countries to the industrial countries was subject to quotas. Under the ATC covering yarns, fabrics, made-up textiles and clothing, the WTO members committed themselves to remove the quotas and, thus, integrate their imports into the GATT until 31.12.2004. As expected, most WTO members started their integration from articles that are not "most sensitive". The "most sensitive" products, 49 % of quotas, had their momentum of integration in 31.12.2004. Turbulence in the international markets was to be expected. Before the momentum, the industry associations of the US and Turkey made an initiative, called Istanbul Declaration, to extend remaining 49 % of quotas for 3 years to which over 50 countries joined[28].

China was the only real winner of the MFA what was not at all the outspoken mission behind the MFA. The mission was more and less to give most of developing countries an avenue to international trade. Developing countries as a group account for over 50 % of world exports. China alone absorbs almost one half of this share. In the early 2005, China's huge economies of scale made it possible to win markets in "most sensitive" articles by the price war.

The traditional textile and clothing technology relies on cheap labor and hence the product quality has not been so important. They have been replaced by modern machines that produce high quality products. The automation of production at a reasonable cost and flexibility is possible in the near future. Technology investments are, therefore, as important for African countries as there are for Asia.

[27] http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2000/01/06/000178830_98101903374851/Rendered/INDEX/multi_page.txt
[28] www.igtn.org/page/628/1/

Well-know brands have huge marketing potential and they can easily be transferred over borderlines and be modified according to consumer preferences. Considering also that the sector is highly market-driven, when compared with other production sectors, buyers (retailers) are very reactive to the trends of season in their sourcing decisions.

Africa as the global brand has all ingredients of success. Quality systems are also needed to guarantee that the products fulfill the new, often hidden non-tariff barriers in the target markets. Global tailoring could be a big business opportunity. Africa needs a common body of intelligence to follow the internal registration of many different kinds of immaterial property rights.

Option three: Energy – a bottleneck or a huge opportunity

Africa is well endowed with oil and gas reserves. Africa's economically recoverable oil and natural gas reserves account for 10% of the world's total. Africa consumes 3.4% of global oil and 2% of gas but produces 12% of global production of oil and 5.9% of gas[29]. Africa consumes less than 30% of its oil and gas and exports the rest. The OPEC-members are dominating the energy sector in North Africa. Libya's crude oil reserves (41 billion barrels) are alone about 3 % of world reserves. Algeria's known oil reserves are important (12 billion barrels). The proven oil reserves in the Gulf of Guinea are about 50 billion barrels, when Saudi Arabia has alone 261 billion. The location of oil and gas fields out of the coastlines is an advantage for oil and gas extractors, often big multinationals. They have no need to build costly pipelines across countries. Big oil tankers can tank crude oil directly from oil platforms. Nigeria has huge oil and gas reserves.

[29]http:///www.africa-union.org/.../Conferences/Past/2006/November/infrastructure/doc/en/AU_EXP_OG_5_Fuelling_Eng.doc

Increased exploration in deep water is promising. The government expects that proven reserves are 40 billion barrels by 2010[30].

North Africa is well equipped to utlize the global energy boom. The diversification from the basic production towards an energy cluster is going. All nations in the region need FDI and technology transfers. The US, the EU and Asia are all increasingly reliant on the North Africa's oil because of its high-quality and low-sulphur. The North African nations have already revised oil laws to restore state-control to exploration projects and to motivate international actors to develop their business in the region from the long run perspective.

In the Gulf of Guinea, the marine pollution is a serious problem. This is unbelievable since the oil extractors are well-know firms. The key challenge for oil and gas exporting countries is to manage their oil wealth in a sustainable manner. Related to this is the issue of good governance, accountability and transparency in the oil and gas industry.

Most Africans do hope that other continents could partner on equal terms with Africa for mutual benefit, not for exploitation. The oil and gas wealth in the Gulf of Guinea region an in general in Arica is owned by Africans, not by any others. In our globe, the only choice for survive is collaboration over continents, ideologies, religions, etc.

The West African crude oil is ideal for refining and easily accessible by sea to the EU, the US and Asia. The high quality of the crude from West Africa makes it ideal for many Chinese refineries, which have not the capacity to refine heavy, sulphur-rich crude from the Middle East, etc. Assuming the oil barrel price above the $50 per mark, oil

[30]Commercial discoveries have been made by major oil companies including Triton, Chevron, Shell, Exxon-Mobil, and Texaco.
muse.jhu.edu/journals/mediterranean_quarterly/v015/15.1ndumbe.html

producing countries in the Gulf of Guinea will earn $1 trillion from oil exports until 2020[31].

This is only a conservative estimate. Having long and sad history of natural gas flaring in the Niger River Delta and looking at their good reputation, the well-know oil extractors should invest according the standards of the UN and other international organizations, including the ones of sustainable development. Following the example of the North African nations, the Gulf of Guinea nations should revise oil laws to restore state-control to exploration projects and to motivate international actors to develop their business in the direction what they themselves speak out.

Option four: African own metals and mineral deposits: A strong foundation for technology entrepeneurship

Africa has rich natural resources producing over 60 metal and mineral products. South Africa, Ghana, Zimbabwe, Tanzania, Zambia and the DRC dominate the African mining industry, whilst Angola, Sierra Leone, Namibia and Botswana rely heavily on the mining industry as a foreign currency earner. Although not carefylly explored, Africa may host even 30% of the world's mineral and metal reserves, including dominance in truly strategic metals: 25% of bauxite, the aluminum ore, 40% of gold, 60% cobalt and 90% of the world's PGM reserves. The South Africa holds 35% of the world's gold reserves, 55% platinum group metals, 80% manganese ore, 68% chrome ore and 21% titanium metals[32]. The South Africa is the world's biggest producer of gold and platinum and a big producer of base metals and coal and diamonds. The West Africa's belt from Guinea to Togo is the most diversely mineralized and includes chrome, asbestos, talc, nickel, manganese, gold, iron (or ferroalloys), tin, niobium and

[31] The Black Gold (OIL) Discovery in Ghana: It's Promise and It's Perils, By: Ofosu-Appiah, Ben, (2007-07-29)
http://www.time.com/time/magazine/article/0,9171,1626751-2,00.html
[32] http://www.britannica.com/ebc/article-37212

tantalum[33]. Almost the entire world reserve of chromium is found in South Africa. Africa contains a major share of world reserves of tantalum and germanium in the DRC and Namibia[34]. Manganese reserves are big in South Africa, Gabon (among the largest in the world) and Ghana[35]. Guinea has 24% of the world's largest bauxite reserves and over 90% of Africa's bauxite production. Africa's deposits of antimony, fluorspar, hafnium, manganese, phosphate rock, titantium, vanadium, vermiculite and zirconium are rich[36].

The most common metals in use are iron, aluminum, copper and zinc. The Hubbert's Peak in copper and other base metals will be approached. Africa's supply of base metals, some precious metals and widely used industrial minerals are critical for Africa's own technology entrepreneurship but in the use of outsiders. Mining in Katanga is a sad story of the "resource curse"[37]. The DRC has launched a review of the legality and fairness of over 60 mining licenses.[38] We all hope that the DRC and the whole Africa will succeed in that.

Gold and diamonds and some precious metals are really strategic in the global perspectice. Countries like Ghana needs fine-mechnics to ultize these minerals in the small-scale industrial activities. The value-added products as tiles and ornaments were sold all over the world at premium prices, with no benefit to the Namibian economy.[39]

In the 80s, when the globalization began, the most useful institution of our globe, the spillover of scientific knowledge, the driver in Solow's neoclassical growth theory was lost. The WTO/ the TRIPS[40] agreement legitimized the extended

[33]http://www.springerlink.com/content/nm17n45802406u53/
[34]http://www.britannica.com/ebc/article-37212
[35]www.britannica.com/eb/topic-394466/Mouanda
[36] us-africa.tripod.com/opportunities.html
[37] www.igac.net/pdf/publications_adb_manyfacesofcorruption.pdf
[38]http://www.reuters.com/article/newsOne/idUSL04590220071004
[39]http://www.north-africa.com/blog/?page_id=10
[40]Trade Related Industrial Property Rights

property rights. This glorious victory of the US declared the time of protectionistic policies opened. Today, multinationals own 90 % of international patents, valuable brands and control totally distribution of commodities globally.

As to the new growth theory, investments in education, infrastructure, technology, and entrepreneurship are vital. Without a strong educational system and health and safety services, the talented people necessary for the application of existing technical knowledge and the growth of new knowhow are not available in a society[41]. In order to get a better understanding of the dynamics of technology, Africa needs reassessment of science and technology organizations and institutions.

Most developed countries have reformulated their science and technology policies during the WTO. The emphasis is on processes, networks, knowledge and entrepreneurships, not in physical facitilies. This "dematerialization" of the economy means that the relative amount of natural resources used by unit of GDP is decreasing with the growth of economy. Most of African countries' view of manufacturing places too little emphasis on export-led growth.

China's industrial growth has been abnormally related to international trade for a country of its size, with a trade to GDP ratio in excess of 70 %[42]. This industrial development strategy is inspired by the notion of comparative advantage. China will be the next superpower in all areas of technology and sciece competition worldwide[43]. China uses the far-reaching intervention to discipline its industrial corporations.

[41] Black Star, Ghana, Information Technology and Development in Africa, by G. Pascal Zachary www.cspo.org/products/articles/BlackStar.PDF
[42]www.thesullivanfoundation.org/.../documents/GlobalImbalances-ChinasPerspectiveCASSJuly2006.pdf
[43]www.applygroup.com/China_Final.pdf

The Asian diaspora in Africa could play an important role in Africa's industrialization. Africa should play the "hard" policy in its trade relations to minimize other continents's influence on their own good. Africa needs increased export revenues and foreign direct investment inflows, along with better infrastructure and stronger institutions[44].

[44]The Africa Competitiveness Report 2007 www.weforum.org/en/initiatives/gcp/Africa%20Competitiveness%20Report/2007/index.htm