

The Vicious Circle of Socio-Economic Underdevelopment, How Can Sudan breakthrough?

Gassoum Khairi Bilal Khairi

Department of International Cooperation and Trade Agreements || Ministry of Economy & Commerce || Qatar

Abstract: The purpose of this research paper is to shed light on the problems of Sudan economy reflecting on, the lack of efficient strategic planning, and well planned policies that, may help achieving its objectives. *The use of the above title "Vicious Circle of underdevelopment" is merely denoting the continuous underdevelopment in all aspects of the economy and failure of policies to achieve any positive movement toward achieving sustainable development.

In this research and through analyzing the available statistical and other available data, we came out with finding that, highlight the inefficient policies applications followed in the agricultural sector which represent the spear head of the economy. The use of old technologies and lack of scientifically knowledge based methods of fertilizing, irrigation and pest control led to poor land productivity and low returns from exports. However, the policy chosen by the government to neglect the agricultural sector and rely completely on quick revenues from petrol and Gold sales proved to be disastrous to the economy. This policy option became useless with the session of Southern Sudan in 2011, carrying away 75% of the petrol reserves of the country and hence, the conclusion is that no policy option is left for the government other than to go back again and try to revive the destroyed agricultural sector. In the light of this situation and based on some initiatives raised by the private sector, through introducing scientific use of modern technology in agriculture, the same land generated a very high productivity level, that raised ambitions that, this sector can be the driving engine of the economy. That happened during the harvesting season of the year 2017.

On the basis of this successful efforts I thought of offering a new approach in terms of policy options that may help explode the capacities of the agricultural sector through agro-industrialization and new modern marketing techniques. This was supplemented with some salient recommendations that may contribute towards more successful achievements in this sector.

Keywords: Economic Problems. Productivity. Exports. New Technologies Policies .Agro-industrialization.

1- Introduction

Since its independence in 1956, Sudan has been confronted with a wide range of challenges that hinder its sustainable development. For instance, the social, economic and political costs of conflicts in Sudan have been extremely high. Neglecting the agriculture which caters for the livelihood of 60-80% of Sudan's population and 80% of its exports and instead depending heavily on oil and gold exports was a fatal policy that added a major factor to the already deteriorating economic situation in Sudan. Besides, the secession of the Southern Sudan as an independent state has brought two challenging issues before the Sudan government that would seriously affect the economic development of Sudan (Global Partnership:

UNDP,2016). The first challenge is the spread of armed conflicts in new regions of Sudan. The civil war and the regional tensions which were expected to cease by the Sudan Peace Agreement that led to separation of Southern Sudan have not stopped, rather strife and conflicts spread to other new regions (EU development Strategy for Sudan: 2015). The second challenge is the transfer of a bulk of oil revenues, which constituted (75%) of Sudan's oil from government of Sudan to the new emerged Southern Sudan State. All these factors compound together and caused drastic economic and social impacts. (African Economic Outlook AEO: 2018) In addition, Sudan is facing the challenge of how to overcome the inherited wide geographical disparities in development through adoption of an inclusive and broad-based growth, while facing the current economic sanctions imposed by the USA. Moreover, Sudan's economy is crippled with an unresolved debt problem and facing the challenge of how to deal with a massive population movement, including displaced, refugees and migrants caused by instability of the neighboring countries and the continuation of internal conflicts. Sudan is also facing serious environmental challenges resulting mainly from the existing extractive livelihood systems, climate changes and conflicts.

The issue of enhancing human and institutional capacities for better planning and implementation of development plans is quite crucial in post-conflict Sudan. This requires giving the due attention to the agricultural sector in terms of mobilizing investments, new technologies and better and fair use of research to increase agro-industrial production and to increase productivity to boost the economy. Last but not least, Sudan's economy is in dire need to adoption of effective strategic plans in partnership with multi development partners that would contribute effectively to meeting the growing development needs. This is the only way that would help Sudan to free itself from the shackles of the vicious circle of underdevelopment.

The main theme of this paper is to analyze the available data, in order to trace the root causes that destined Sudanese economy to remain underdeveloped. The study aimed at suggesting possible alternative policy options in terms of strategic planning and sound production and marketing policies of agricultural commodities. This was meant to enhance the performance of the economy through improved technologies and effective policies to mobilize the capabilities attainable in the agricultural sector so as to increase exports of cash crops. By doing so more hard currency revenues could flow into the economy to coffer the government which lacks the financial capital to utilize in financing major projects, and in improving the services and in increasing per capita incomes

2. The problem finding:

For the last 62 years since independence, Sudan was struggling to achieve its development objectives, but none of the objectives was realized. The situation became more challenging during the last

three decades, following the economic sanctions applied on Sudan by USA. (Bilal, G, The Third Path for Sustainable Development in Sudan, PP21-23)

During the last three decades, Sudan was engulfed with multi-faced challenges and problems. At the forefront of those challenges was civil strife and wars in some parts of the country which heavily taxed the budget of the central government. The war financing during these decades ultimately led to the failure of the government failure in meeting the economic and financial obligations of the state towards local and foreign creditors. Besides, the secession of Southern Sudan in July, 2011 has seriously affected the development performance of Sudan. The country experienced an unprecedented financial shortfall and high cost of living compounded by the spread of poverty. Moreover, the economic sanctions and the unresolved debt problem exacerbated the situation. To achieve optimal performance and progress towards achieving the MDGs, the country has been trying to overcome a wide range of challenges. These included lack of clear cut strategic plans and of sound production policies for agricultural commodities and their marketing

Although the country relies mainly on export of livestock and agricultural products such as cotton as the main source of cash crops, most of the food needs of the people are imported from abroad. This was simply because the government opted towards utilizing the fast and easy source of revenue after the discovery of petroleum in 1999 and totally neglected agriculture. It was a serious fault committed by the government when it turned Nelson's eye to agricultural sector which was responsible for production of 80% of its revenue sources and provided live and employment for about 60-70% of the work force in Sudan before the discovery of oil. This resulted in a high rate of unemployment as estimated by ILO to range between 12%-31 %, (ILO Report, 2017). Relying on oil and gold (Dutch Disease) catalyzed unemployment due to negligence of work in agro- industrialization and agricultural farms leading thus to further poverty across the board (Abu Afan (1980, 1981). As a result, most of those who neglected their farms joined the informal sector. (Bilal, G.. A published paper 1982). Eventually this policy led to rural urban and abroad migration, especially among professionals. (African Development Bank Report on Sudan Economic Outlook, 2018).

The study tried to investigate the reasons for the lack of vision and absence of sound strategic planning. There was no sound modern agricultural production and marketing policies that mobilize the abilities of the agricultural sector for more production. We tried to pinpoint some of the misleading policies, and the way resources has been mismanaged in the absence of suitable technologies and know- how.

The policies of the present government of Sudan led to the rise of many questions about the soundness of its policies, namely, why a country with all these resources and capable manpower was facing such a state of poverty and social unrest? Why the average land productivity is so low? Is it due to the used traditional technology? Or, was it the bad seeds or low land fertility or shortage of rain falls? Why our

agricultural products were sold at very cheap prices? How to break this vicious circle of backwardness? This is the context of the problem; which the study dealt with in this paper. Within the study we have been prepared to employ regression analysis if needed with supporting evidences while providing some suggested proposals for the way out of the problems encountered.

3. Objectives of the paper:

The objectives of this paper were, to highlight the main root causes of the low agricultural productivity, poverty, relying on petrol and gold which fused unemployment and negligence of agricultural products. We were trying to investigate the reasons for this poverty and hardships to explore what went wrong, and whether the reasons were a result of misunderstanding or misleading interpretation, or mismanagement of resources, or failure in policies, or lack of suitable technologies and know how or something else.

We have been trying to find out ways and means to overcome challenges. That was to suggest an alternative approach to alleviate Sudan's underdevelopment in all areas of the economy and social life.

4. The Importance of this study:

Since Sudan gained its independence, in 1956 and till 1989, the main sources of Gross Domestic Product (GDP) included agricultural raw products, such as cotton, sesame, gum Arabic, ground nuts, and other cash crops (Arab Organization for Agriculture report:2016). The economy of the country was performing very well and the standard of living for almost (60-70%) of its population who were engaged in farming and animal husbandry was reasonable. From 1989 and until present the government followed inconsistent and unstable set of policies that reflected lack of vision and absence of modern strategic planning. The policy approach of the government did not consider improving the quality and technological methods of production that utilizes the resources of the country in an appropriate manner. As well, the government followed very traditional marketing approach that led to the continuous decline in revenues earned from selling raw agricultural products.

The study meant to explore weaknesses in planning, production and marketing policies adopted by the government and to underline areas of failures. While doing so, the study suggested alternative useful methods and means to stop the continuous mismanagement of the resources, approaches for improving revenues to enhance the returns to the country's GDP. The importance of this study lies in the authentic analysis of the available data offered by the government itself to proof that there were always other ways to make things promising and better than they really are. This can be achieved through sound policies to enhance productivity and follow modern marketing techniques.

5. Basic Research Questions:

5.1. Sudan is a country endowed with plenty of natural and human resources. Major among these resources is the abundant fertile vast land area, with plenty of water sources, such as the River Nile and other rivers and water sources. Let alone the mineral wealth including petroleum and gold among other 13 valuable various minerals. Here the question becomes imperative what stops the government from utilizing these resources for the wellbeing of its population?

5.2. The technology used in farming has been in use since Sudan gained its independence, what holds the government from using modern technologies based on knowledge based economy to increase productivity of the land and increase the overall production of cash crops?

5.3. Why the government has neglected the agricultural sector, instead of utilizing revenues from gold and petroleum to vertically and horizontally expand its agricultural production and thereby raise the volume of revenues and offer more employment opportunities?

5.4. Why the government insists on using old traditional marketing techniques in the era of technology, whereby it could sell these products at higher prices through opting to agro-industrialization to generate value added to the economy?

6. Research Methodology:

To present salient ideas and useful information for the readers, the study followed a descriptive approach of analysis. The problem under consideration was mainly related to policies that were supposed to be based on sound strategic planning and prioritizing the problems that withhold the efficient use of modern applications to release the capacities of such a rich and promising economy. For analysis used in this paper both qualitative and quantitative approaches have been used and statistical modeling such regression analysis may be utilized after tabling the available data from primary and secondary sources whenever the need arises. The analysis was earmarked to prove or otherwise nullify the provided data and information and eventually would find answers for the research questions. Since the basic theme of the study was concerned with the production and marketing of the agricultural sector products, emphasis has been on the use of comparison of the methods employed so as to suggest what approach may be suitable. The study provided recommendations and highlighted the positive difference that would have been accrued had the suggested alternative approaches been followed. However, in addition to the data collected from primary sources, the data collected from international concerned organizations, academic sources and journals may as well, be used wherever possible. At the end of the analysis some possible recommendations were made. The study falls in three major parts. The first part provided mainly a review the underlying reasons for underdevelopment of the Sudan, as observed in the failure of the plans in general and with regard to the

production and marketing of agricultural products in particular. The second part underscored what can be done to tune the economic performance and break from this vicious circle. The third part emphasized on verifying the hypotheses and compare them with the findings. we concluded with the study findings and recommendations.

7. The Scope of the paper:

This paper has been written on the basis of information and data collected from readings and literature review. As well, available data in journals or books, on sustainable development were reviewed. This was followed by an outline of the main problems of the Sudan in terms of economic and social development policies. Issues related to the problems of the economy, such as poverty, unemployment, inflation, social backwardness, migration, low productivity, etc. have been addressed analytically, and proposals for a new and different approaches has been put in place.

8. Difficulties and Challenges faced:

8.1. One of the major challenges that faced this author, is the lack of a unified and accurate statistical figures related to Sudan economic performance. This dilemma of contradictory figures is a mere outcome of relying on estimates in preparing budgets in the absence of recent population census. This creates a real obstacle even for the planners and policy makers and leads to in appropriate outcome.

8.2. Also, one of the big challenges is to convince government officials to change their perspective of how to overcome the economic and administrative problems of the Sudan without coordination and sincere effort towards knowledge transfer, and improvement of capacity building policies and programs. The attitude towards new visions and transfer of knowledge among government and political leaders needs to be positive.

Paper layout:

This paper has been mainly laid out in three major parts. The first part of the paper was mainly earmarked to discuss the underlying reasons for economic and social backwardness and the continuous reproduction of failure policies since independence.

The second part of the paper investigated what happened in the agricultural sector with special emphasis on the two past decades. However, some bright points here and there glittering to give hope of a better future, but were they likely to inspire the main stream population to raise the roof of their expectations. Practical evident examples have been offered to justify the spread of optimism among the population in general and among some scholars in particular.

Part three of the study portrayed our findings and assessed the viability of those findings in the light of the future expectations. This has been done to verify whether our recommendations and policy implications were feasible to apply and make the expected difference.

10- Root Causes for underdevelopment:

In our effort to clarify the root causes for the long years of socio-economic underdevelopment in Sudan, we reviewed the available information. We believed, as many scholars did (Ali, Al/Gadir, Elbadwai, I. and others) that, the negligence of the agricultural sector which catered for 80% of the country's revenue and the source of income for 60-70% of its population, was the core of the problem of underdevelopment. The Situation was alarming, where poverty has been increasing, unemployment among educated youth escalating to reach (19%-31%) according to (IMF Report 2014). This was as well, compounded by the spiral inflationary rate of prices of everything which has been shooting up to reach 66% in 2018, according to recent reports on the media. The usual question that jumped to the mind was: what went wrong? Why a country with such endowments has been struggling for survival, though it should have been offering its people a prosperous life?

Before spreading accusations here and there, we reviewed what Sudan as a country has got in terms of natural and human resources. We came up with the following:

- The total area of the country after the session of the south was approx..728 square miles.

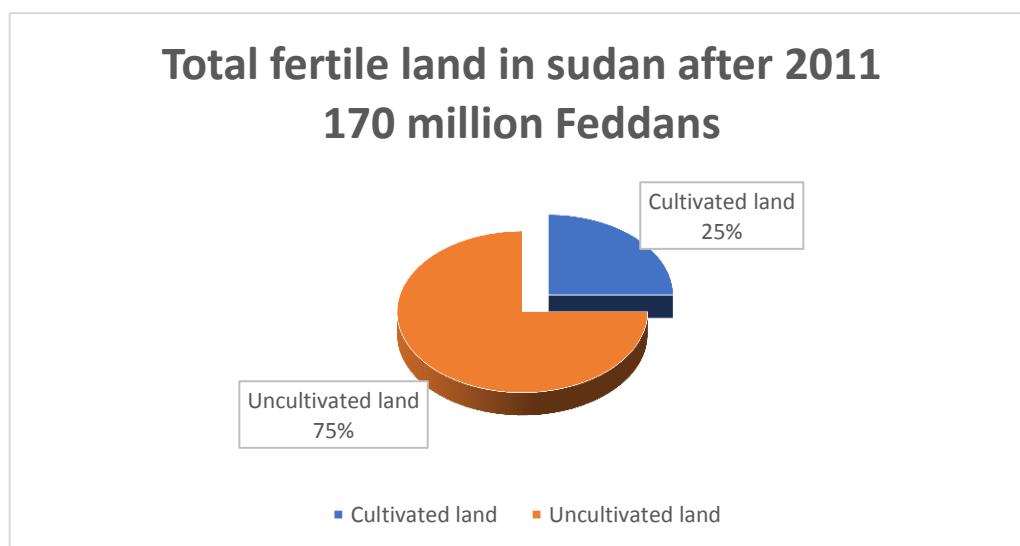


Figure No. (1): The percentage of Cultivated land as a percentage of the Total Fertile Land (Sudan Central Bank Report 2017)

- 170 million feddans (two thirds of the country land area) were suitable for cultivation. So far between 35-37 million feddans were rain fed agricultural projects while 3-4 million feddans were the projects of agriculture through irrigation schemes. However, all the used fertile land since independence was 25% of the total fertile land. That means 75. % of the fertile land were still unused and calling for production.
- In terms of water resources from the river Nile and its branches 31 billion cubic meters. While water from rain is estimated to be 300 billion cubic meters while the underneath water is about 5 billion cubic meters annually. This means in terms of water resources Sudan is very rich but unfortunately the rest of this water was utilized by our neighbors for free because we can't use it simply due to lack of vision, strategic planning and feeling of responsibility.
- In terms of animal wealth, the total number of livestock including: Camels, Cows, Sheep, Goats, were estimated to be 104 million heads.
- In this part I would refer to the Mineral resources in general without details because no one has authentic detailed information as yet, but we could safely say we have, petrol, Gas, Gold, and many other 13 different types of minerals.
- The most valuable part of the country's resources was the human capital. Sudan population has been estimated to reach between 35-40 million and the country's population has been described as a young nation. Those numbers of population who fall in the age group 15-64 represent the majority of the population (46%). That meant, there was quite a good number of able and productive workers.

With all these resources the country was never able to satisfy the needs of its people let alone to offer them a prosperous life. The country's economy has been described as a middle lower income economy according to IMF Reports (2018). When we looked at the records of the country, we found that: out of 170 million feddans of fertile land only 25% has been in use. Why that low utilization of resources? What went wrong? What stopped the government from utilizing the rest of this fertile land under a situation of inelastic international and regional demand for crops?

11- Manifestations of the failure policies:

Within our efforts to assess the causes of failure policies and answer the above questions, we observed the following facts:

- With due respect to all the above mentioned resources, the records of Sudan exports reflected a very poor productivity and production level in all agriculture commodities and animal production.
- The best productivity per feddan in Gezira Scheme was 4-7 Kg's per feddan. This was the situation throughout the years since independence due to the traditional technology used, poor seeds and irrigation techniques followed.

- However, that standard of low earnings from agricultural commodities, pushed farmers out of their farms, since every one of them was indebted to the banks, almost through all seasons. These low earnings have been one of the major pushing factors for rural urban migration.
- Rural – urban migration and external migration were net results of the deterioration in the agricultural sector from one side. The failure of civil service to design practical and fruitful economic policies has been accused as well, for escalating rural –urban migration on the other hand. This led to the rise of unemployment due to the negligence of the government to invest in new projects that may create jobs for those who left their farms.
- Another side effect of rural urban migration was the rise of and expansion of the informal sector, which reflected the mal-functioning of the economy. This led to the expansion of the parallel economy which was overtaking the traditional economy.
- Another by product was the rise of slum cities around the big cities, communities of unemployed poor people living below poverty lines. spread of crime, drug dealing, smuggling of goods across the borders and even human trafficking across the borders.
- It does worth noting that, all those scenarios were taking place under a situation of war and armed violence in several parts of the country due to unfair distribution of wealth and development opportunities. That led to the deterioration of the economy which was characterized by high rates of unemployment (19%- 31%), deficits in both the balance of trade and the balance of payments, deteriorating rates of the national currency in front of the dollar and other major currencies (See figure1 above).
- However, the picture was very gloomy and the country's economy as well as, the social life of the community was going down the cliff. On top of that, Sudan lost its shipping line, Sudan Airways, Sudan railway, Gezira and Rahad projects, White Nile agricultural Schemes (Agricultural projects in central Sudan) and Nuba mountain projects (Agricultural projects in Western Sudan), which were completely ignored because the government was suffering from the "Dutch syndrome" after the discovery of petroleum and the rise of fast revenues in hard currencies.
- Unfortunately, all the money earned was squandered in a very irrational manner as one have seen. While the government could have paid Sudan Debts, or imported new technologies for agriculture and industry, the money was rather earmarked to spend on non- productive employment of relatives and supporters of the ruling party.

- The peak of our losses came with the session of the south of Sudan as an independent Republic of Southern Sudan carrying with it 75% of the petrol wealth, 30% of fertile land and 30% of the able ever creative manpower.
- Sudan turned to be a consumer rather than a producer, Dependent on others rather than independent, **"because if you don't own your food you do not own your decision"**

To sum up this series of miseries, Sudan problems could have been summarized in the following:

- Low productivity in all sectors due to:
- Failure planning model that led to failures at both macro and micro economic levels.
- Lack of institutional management for the government machinery compounded with other administrative and social constraints.
- Lack of sufficient financing for agricultural projects simultaneously with absence of modern packages of technology, development in agricultural policies including new technologies through transfer of knowledge.
- Infrastructural problems such as lack of transportation between projects and seaports, and airports facilities, inconsistent supply of power to the factories that, were working under capacity. Added to that, were the problems of instability and consistency, which characterized policies of all government agencies plus lack of coordination and sustainability among these agencies.
- Lack of agricultural services (such as research, - follow up –immunization efforts) plus
- weak cropping innovations, low use of fertilizers, use of expired insecticides, and
- introduction of machinery in all agricultural processes.
- Lack of health and educational services (29% of children at schooling age were not attending schools). This constrained the aspect of human development and continuous supply of creative and innovative manpower.
- This was compounded with application of old fashion marketing policies, as well as the rigid investment laws that failed to attract local and foreign investments to boost the economy and create employment chances to enhance the export sector. To overcome all the above mentioned challenges Sudan was in need to address the following Pories through immediate interventions:
- High vulnerability of the economy to external shocks due to heavy dependence on oil and limited share of other productive sectors namely agriculture and industry.
- Lack of inclusive and broad-based economic growth as a serious threat to economic growth, peace and social justice.

- The large and rapidly growing public sector became an impediment to the development of a robust private sector, that was already functioning under conditions of economic uncertainty and unattractive investment climate
- High levels of unemployment associated with the limited absorptive capacity of the economy to accommodate the increasing numbers of job seekers remained a major threat to political stability and human security in the country.
- Wide spread of poverty associated with lack of inclusive growth and unequal income distribution induced corruption and nepotism all over the country.
- Concentration of poverty among rural households poses the challenge of enhancing investment in the traditional rural economy and investment in building the capabilities of rural communities with especial reference to human development.
- Regional inequalities have been a big challenge to peace and stability and the long-term sustainable development in the country.
- Challenges related to accessibility to basic social amenities due to the vastness of the country, shortage of facilities and personnel, inadequacy of infrastructure, mal- distribution of the existing facilities and cadre, increased costs of services, wide spreading of poverty, shortage of funds and prolonged conflicts and violence.
- In health, the important and pressing challenges to achieve an increase in service coverage to include the majority of the population particularly in the disadvantaged rural areas.
- The development agenda for the infrastructure sector were mainly maintenance of infrastructure, development of capacity and systems, and reform to improve safety, security and performance.
- Social protection and safety nets were challenged by the inability to cope with the growing number of the needy people and vulnerable groups. Finance and management issues remained among the main concerns.
- Addressing the complicated issue of IDPs and returnees constituted a real challenge.
- Accelerated rural urban migration with its negative impacts on both sending and receiving areas constituted a major challenge.
- Support to capacity development for effective implementation of the country's population strategy and policies remained highly needed
- Gender-based violence and gender-based inequalities in employment and decision- making needed more consideration.

- Population with special needs, especially the disabled, the homeless and street children required special attention
- Brain drain, especially of professionals and skilled labor, had been an acute problem inflicting present-day Sudan; this required paramount attention
- Institutional and human capacity development in planning, policy formulation, implementation and monitoring has been and will remain to be an essential development challenge.

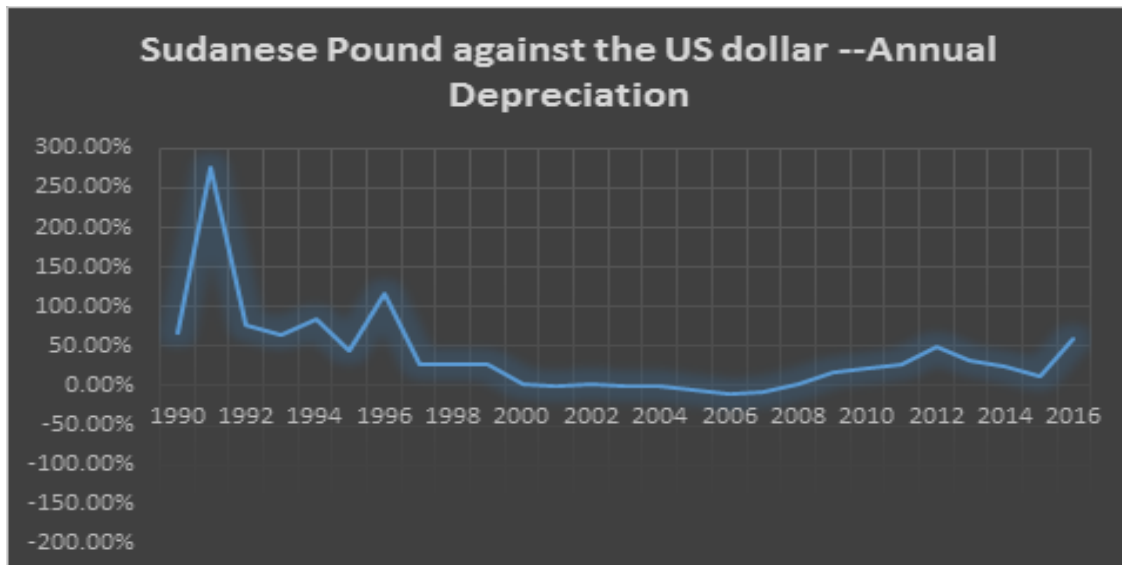


Figure No (2) The Value of Sudanese pound Against US Dollar.

Until mid of 1970s, there was hope that sustainable development could be attained if better strategic planning was followed, supplemented with better technologies. Most of the profiting companies and corporations of the public sector were privatized in a very unfair and irrational manner.

The outbreak of wars in the peripheral regions of Sudan, by those who believed they were marginalized, exacerbated the deteriorating economic situation, which started to be a consumer economy instead of a producer economy by relying heavily on the revenue flowing from selling the petroleum commercially from 1999. During that time, up to 2011 agriculture which was supposed to be the engine of the economy has been completely neglected. Most of the farmers under unfavorable circumstances left their farms and joined the ranks of the " Informal Sector" in the big cities. ((Bilal: On the Role of Informal Sector in Economic Development in Sudan; ESRC:1982)

Sudan experienced a hard situation where, exports deteriorated to the point that, imports became double the value of exports and the country faced a series of hardships in mobilizing foreign currency to cater for the basic needs of the people, let alone inputs for industry and fertilizers for agriculture. The peak of the

hardships appeared after the session of the south, where Sudan lost 75% of its petrol and mineral resources. The country began to live on loans and expatriate's remittances.

During the period following 2011 and up to 2018, pessimism was overwhelming over the whole country; because nothing showed that there was a way to stop the country from drifting into bankruptcy. Figure (2) above showed the deterioration in the value of Sudanese Pound compared to the US Dollar during the period ranging from 1990 to 2016. The drop in the value of the national currency was apparent and unprecedented.

12- How Could Sudan break through? What ought to be done and how?

The country needed to restructure itself in many sectors and review its policies:

- First The government needed to be restructured by reducing the number of government ministries and agencies to be only 20 major government ministries. This would help in reducing government expenditure and guarantee the efficiency of the government machinery by combating corruption and nepotism. Fortunately, this has been put in place during this month of September 2018.
- Secondly; capacity building became a must if efficiency and governance is considered important to achieve sustainable development. That meant:
 - Improving the content of the educational curriculum as regards the general education, improved teacher training, rehabilitation of school buildings and school's capacities of intake of children since 29% of children at the school age are denied access to education (EU report on Sudan 2015).
 - Higher education curriculums and teaching methods were calling for an update while being connected to the development priorities. That should have been tied with the work market requirements to guarantee employment. This would guarantee capacity building that would avail the necessary staff and work force to achieve development plans. (EU report, 2015).
- So far and in the light of the numerous agreements and accords signed between the government and rebel movements there are 3000 constitutional jobs for the government officials including the president. Most of these jobs were not adding to the productivity of the economy.
- The Majority of those constitutional employees who are employed as advisors, are not doing any kind of work that adds positively to the economy. They cost the government treasury a worth of US dollars 5 million a month in terms of salaries and other benefits.
- If the number of those advisors was reduced by half, this would save 2.5 million US Dollars which could be earmarked to cater for the budget deficit. By the same token such resources could have boosted the improvement of health and educational services or poverty combat programs, or directed to improve the agriculture sector technologies.

- All the Sudanese including policy makers, ought to change their attitude towards agriculture and treated it as an important sector in the economy, sparing more finances for it.
- Agriculture should have been treated as the "Growth Engine", since more than 70% of the population of Sudan earn their living from agriculture. (IMF Report,2013).
- If agriculture is well funded, then a positive spirit is going to spread all over other sectors of the economy and generate positive energy that would enhance production and productivity through the multiplier effect.

However, the harvesting season of the year 2017 carried a positive message across the country, through giving realistic and tangible examples. Nevertheless, a glimpse of hope and optimism was revived by the successful agricultural season of 2017. This was exploded by the successful effort of the Saudi Business man Mr. Suleiman Al- Rajihi who managed to utilize a neglected piece of the desert in North Sudan. This investor cultivated that land area using modern technology and mechanized processing in all his farming process and harvesting. This farmer cultivated 1500 feddans with wheat. He paid plenty of money to establish this fully mechanized farm for the first time in Sudan. At the harvest time he was able to reach a productivity level never heard of in Sudan; he produced 30 Kgs per feddan. This farmer made anew agricultural history in Sudan. He again repeated the same story during the harvest of this year 2018.

In Eastern Sudan the African Agricultural company (A branch of Mahgoub Awlad Company) also made a surprising record by achieving above 25 Kgs per feddan while, before using this advanced technology the productivity level of the same area was ranging between 3-5 Kgs per feddan. The same story happened in Gezira, Kordofan, White Nile, Blue Nile regions. This was achieved by using knowledge based technology and agricultural methods.

The African Agricultural Company mechanized all the process of agriculture from zero to the harvest whereby they.

- used improved seeds.
- Insecticides were scientifically used according to fixed measure.
- Fertilizers that matches each crop were used.
- Finally, mechanical harvesting and packing according to modern know how.
- Sufficient irrigation of the crops according to scientific methods and specific quantities of water.

Hence, with the use of modern technology vertical and horizontal productivity levels increased extremely high. This could be clearly seen from the figures below where it was apparent that the more fertilizers are used the more horizontal and vertical productivity increased. That reflected the valuable years wasted through sticking to the traditional methods of agriculture which produced very little. Now after

discovering the importance of the new technologies based on knowledge economy, our productivity would rise and our production would be increased so much.

That believe of the possibility of breaking through led to the overwhelming excitement and outbreak of new hope. Policy makers believed that the opportunity to break from the vicious circle of underdevelopment has come. Many scholars and policy makers started to look at things differently after comparing the present situation with the past. Everything seemed likely to happen if we used the right plans, followed the correct procedures, continued to think and behaved creatively. That suggested continuing the efforts of knowledge transferring, so that our future economy in general and agriculture in particular could be knowledge based. That should have been accompanied with a system of accountability and corruption elimination. In this case, yes we could make it and achieve sustainable development.

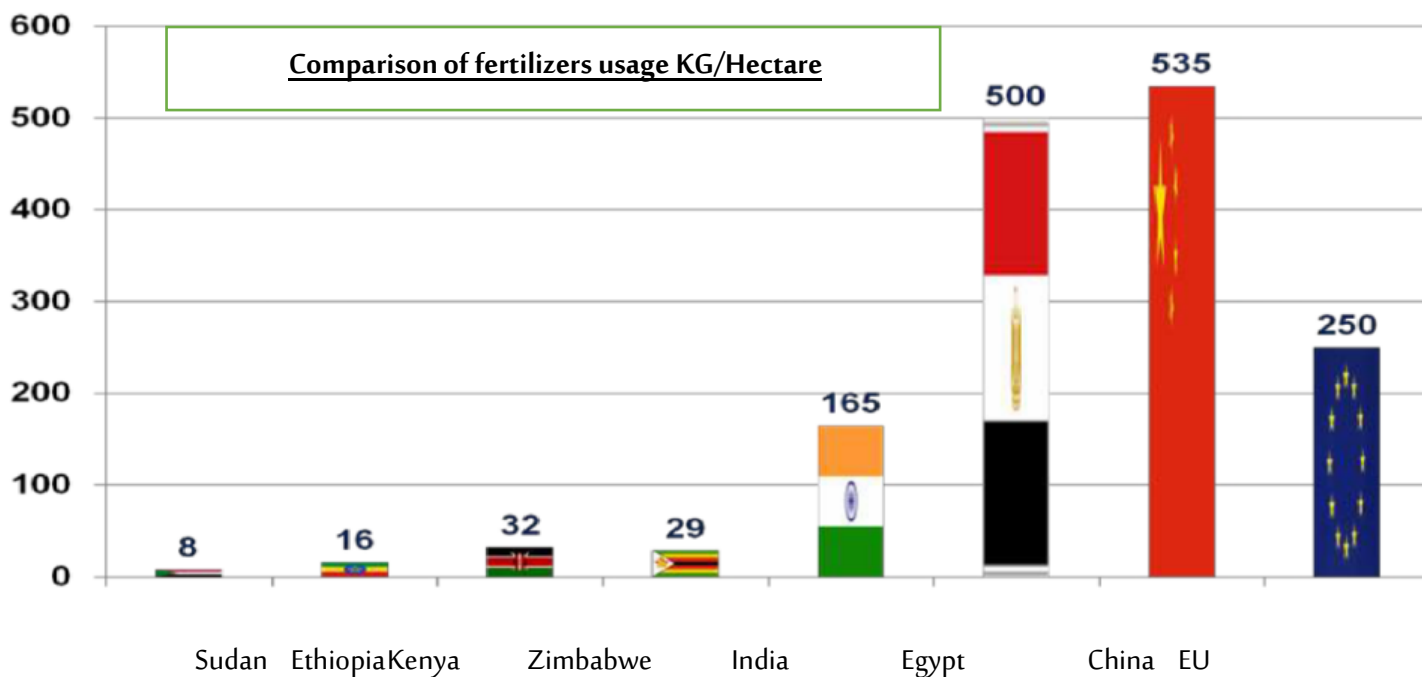


Figure No (3)_Comparison between Sudan and other countries in fertilizers usage KG/Hectare

Comparison of international Maize Productivity KG/ Hectare

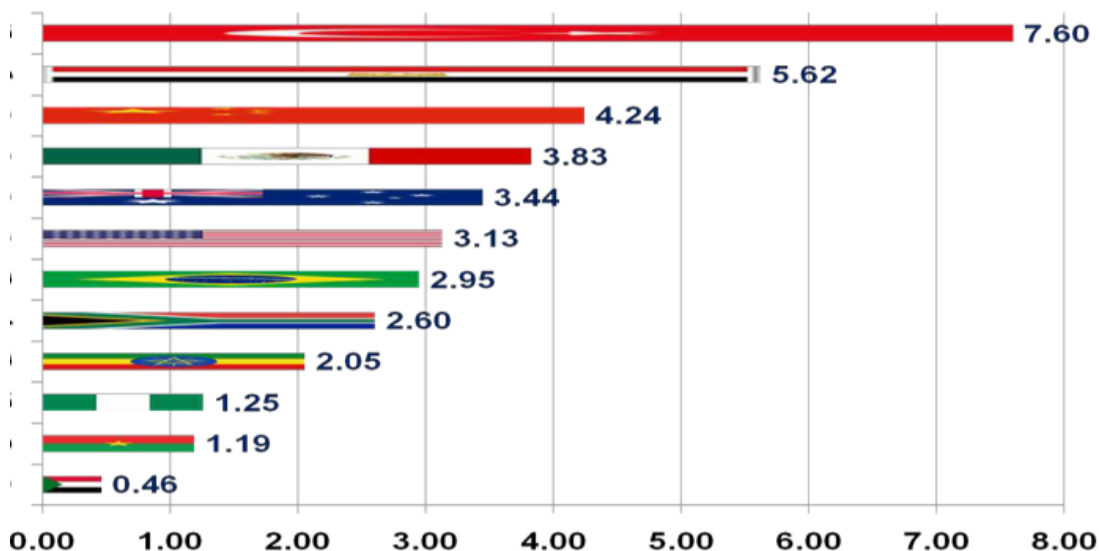


Figure No (4) Comparison of Sudan Productivity to international Maize Productivity KG/ Hectare

13- How Could Sudan break through: A New Suggested Approach?

Given the new approach followed by Private sector investors such as, the African Agricultural company, which is the agricultural branch of Mahgoub Awlad companies, in using full mechanized Agricore, based on scientific knowledge about the volume of fertilizers and the frequency of irrigation and grass and insects control, the results were surprising. The table below showed the net result of their action added to what has been done by the Saudi businessman Mr. Suleiman Al-Rajihi.

Table No (1) A comparison of productivity under two different regime methods

Maize Productivity	Traditional Methods	Knowledge based Method
The Arab Company	2 sacks per Fodder	10 sacks
The African Agricultural company	2 Sacks per Fodder	7 sacks
Pioneer Farmers – Gedarif	2 Sacks per Fodder	13 sacks
Industrial Farmers – Agadi	2 Sacks per Fodder	14 sacks
National Ministry of Agriculture :2016		

The comparison of both the traditional and modern methods suggested that, following the knowledge based approach would lead to increased productivity and hence more revenue from this product. The difference is surprising and suggested a lot of wasted revenues throughout the past years.

Table No (2) Use of Modern Technology in enhancing Agricultural productivity

Crop	Productivity per Hector	% Increase
Cotton	1680kg / HEC	350%
Maize and Sweet Corn	1300kg / HEC	325%
Sunflower	792kg / HEC	224%

Source: Arab Agriculture Organization, 2016

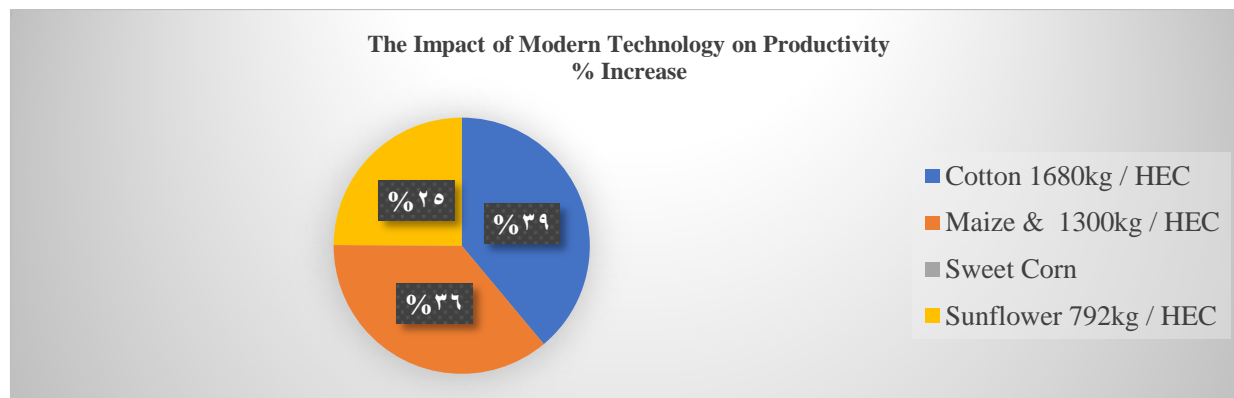


Figure No (5) The Impact of Modern Technology on Productivity % Increase

Sesame

Exporting sesame and ground nuts in their natural shape as a raw product has been a big loss for Sudan because there was a room for much more value added to be attained. The table below (table3) reflected the value added that could be achieved due to the use of modern technology and manufacturing methods.

Table No (3) Sesame Price and value added

	Natural	High Purity	Classified	Peeled	Manufactured (Tahina)
Price	1100	1155	1210	1375	1595
Value Added %	%	5% increase	10% increase	25% increase	45% increase

Source: National Ministry of Agriculture –Khartoum:2016



Figure No (6) A Comparison of Sesame selling prices

Table No (4) Ground Nut Price and value added

Raw	Classified	Manufactured (Oil)
Price 500 USD	900 USD	1400 USD
Value added zero %	Value added 80%	Value added 180%
Source: Annual report of Central Bank:2016		

This gave the green light for a new era in Sudanese Agricultural development policies. It as well, opened a new chapter in the economic history of Sudan. If the use of technology would enhance our production and as well, boost our exports, we should have aimed further ahead, thinking of moving a step further towards industrialization. This could be done by reforming our policy models, from exporting raw agricultural products to manufactured products. By doing so, we would make sure, that the returns of our exports were increasing. As well, the value added would be more if such products were transferred to manufactured rather than raw materials exported for less.

14- Promising Opportunities:

As we have already mentioned, that, 75% of Sudan's fertile land has been waiting to be utilized to explode our real agricultural capacity. There lies a great potential to enhance our agricultural production and introduce new crops that would generate more revenues. This could be done by exploiting the available promising opportunities especially in the Arab World and European Union. In both regions there has been a very high and inelastic demand for the mentioned crops.

Table No (5) Arab Countries Imports of Agricultural Products (2012- 2015)

Crops	201/2013		2013/2014		2014/2015	
	Quantity	Value	Quantity	Value	Quantity	Value
	In Thousand Tons	In Million Dollars	In Thousand Tons	In Million Dollars	In Thousand Tons	In Million Dollars
Maize	709	257	630	208	647	173
Sweet Corn	17,176,72	5,682,34	14,192,37	5208,34	18,052,32	5,574,47
Sesame	229	322	225	368	231	440
Groundnuts	110	146	112	151	136	157
Sunflower	148	164	173	195	173	183
Fodder	-	-	-	-	5,520,870	2,978,270,000
Oats	-	-	-	-	12,008,030	3,112,270,000
Soybean	2247	2,1	2,884	1,9	2,6	2
Source: Arab Agriculture Organization, 2016						

Table (5) above, reflected the quantities of agricultural products that the Arab world countries were importing. This volume of imports has been increasing year by year either for reasons to do with population growth or other reasons such as droughts or any other natural disasters.

As we looked at the share of Sudan in providing sufficient supply to meet these demands, we discovered that this share was very low and sometimes not available. Reviewing the records of the Arab Agricultural organization, we observed that, Sudan's share or contribution to meet the demanded commodities from agricultural products and poultry as the table above show could hardly reach 26% in Sesame, 9% ground nuts, 16% in maize, 4.5% in fodder, 18% in poultry. While highly demanded crops such as Oats and Sweet Corn were not produced in Sudan, these crops were badly needed and their prices have been always very high, i.e. the demand for them was inelastic.

However, with such a very little contribution to meet the demands of the Arab World Countries let alone the EU countries, and without forgetting to mention the unutilized 75% of our land, one believed that, there remained a golden opportunity to break through relying completely on our agricultural sector's ability to be the engine of the economy. Utilizing modern technologies and modern marketing methods would make it viable and more fruitful.

Table No (6) Quantity of Life Animal and Slaughtered (2012 – 2015)

Type	201/2013		2013/2014		2014/2015	
Cattles	Quantity	Values in Million Dollars	Quantity	Values in Million Dollars	Quantity	Values in Million Dollars
	734	750	1049	850	1372	958
Goats	13889	1,205	13243	1,394	14,708	1,487
Slaughter Meat	891 Ton	3,664	845	3475	1009	4430

Source: Arab Agriculture Organization 2016

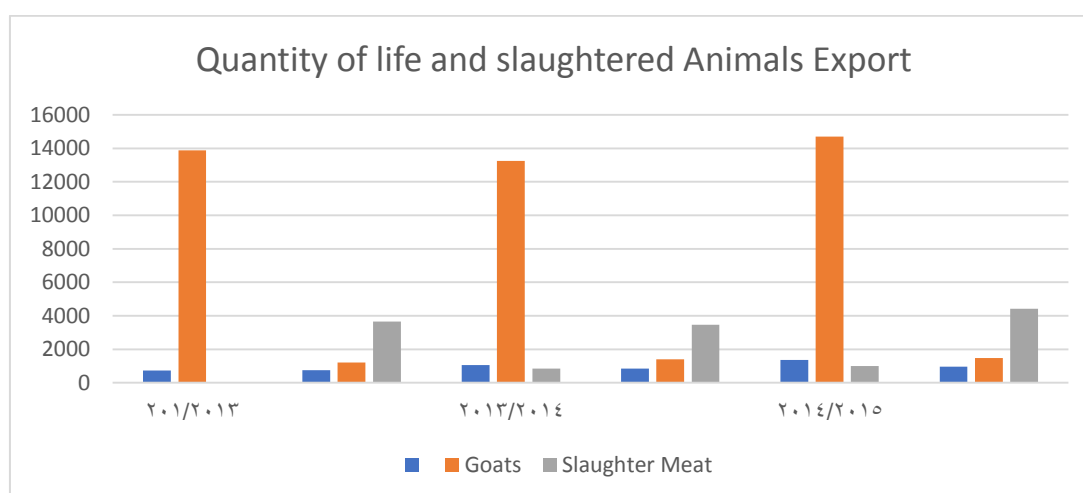


Figure No (7) Quantity of life and slaughtered Animals exported during years (2011-2015)

However, we have been much more optimistic with regards to the future of the Sudan, relying on its agricultural sector, provided that, we don't export raw products, and opt to export manufactured or at least half manufactured product to achieve value added to the economy.

That meant, we have to turn our products into more valuable products through industrializing the agricultural sector to process all our products into either half industrialized or fully industrialized by introducing modern technology industry. By doing so we could make a lot of revenue generated through the value added.

Simple examples could have been quoted. For instance, the added value of cotton when it was semi manufactured rose by 60% and when it was fully manufactured another 50% would have been added so the value added became more than 110% based on the price of the raw material.

By the same token refined ground nuts created a value added that mounted to 50%, when it was manufactured and transformed into oil, while another 75% of value added would apply. That meant 125% value has been added to the economy.

Table No (7) Sudan’s share in Covering Arab World Demand

Type	Sudan’s share	Potential available Opportunity %
Sesame	26%	74%
Groundnut	9,4%	90.6%
Maize	16	84%
Sweet Corn	Zero	100%
Fodder	4.5%	95.5%
Oats	Zero	100%
Poultry	17.6	82.4%

Source: Arab Agricultural Organization : 2016

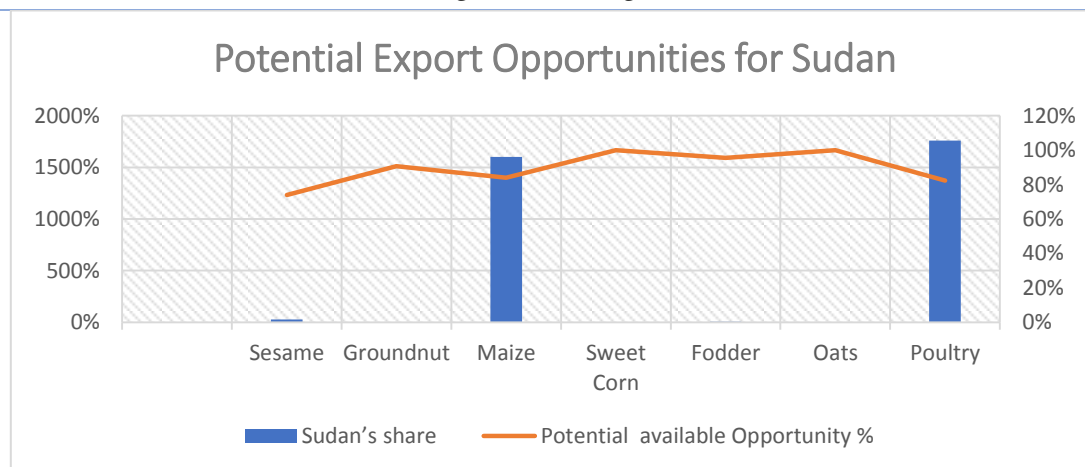


Figure No (8). The potential of Agricultural Production Export

Another very salient example was evident when sesame prices were reviewed. The price of raw sesame has been 1200 US dollar per ton. When sesame was classified its price would increase to 1290 (10.92%). If Sesame was peeled there would be more value added since its price would be 1470 USD. (28.4%) finally, when Sesame has been manufactured, its price would reach 1600 USD with (40%) increase. The remains of the production could be used to feed animals. So the benefits were compounded.

Gum Arabic

Sudan production of Gum Arabic reached 450 thousand tons of gum Arabic yearly. It may worth noting that, Sudan has been the prime producer of Gum Arabic and provided the world market with 80% of the product which has been used in most of the industries.

This product has been sold to Germany at the value of 3500 US Dollars per ton as a raw product. Germany refined the product using very simple technology to transform it into bubbles and sold to USA at the price of 15000 US Dollars per ton.

By simple calculations the difference would have been huge.

The total value of the quantity sold as raw = $450000 \times 3500 = 1,575,000,000$ dollars.

The value of the product after manufacturing was = $450000 \times 15000 = 6,750,000,000$

The difference between the two prices was 674,842,500,000 dollars.

This reflected the big loss of revenue for Sudan because it has been simply selling the product as a raw material losing 11,500 dollars in every ton.

What stopped Sudan from importing the technology and completed manufacturing the product at home and reaped the benefits to boost the revenues of the economy.

Another factor that would have enhanced these revenues could be achieved through planting more trees of the Acacia which may not require any nurturing since it grew up relying on rain.

Therefore, we have great potential chances through increasing production horizontally and productivity vertically. On top of that, by manufacturing our products we would have been able to create more value added. This would have generated furthermore revenues for our products, and boosted the balance of payments as well as, the trade balance.

15- What must to be Done by the Government:

If we were supposed to make the best of the available promising opportunities our government has a role to play. This role would include the fulfilment of certain important requirements that would help us to achieve our objectives of breaking through from the vicious circle of underdevelopment. These requirements included:

15.1 Handling the Spread of Conflict

Following South Sudan secession, disputes over the border city of Abyei continued and no agreement of border demarcation - that may have led to more armed clashes along the border – has been reached yet. The South Cordofan (Western county of Sudan) conflict has erupted out in June 2011 between the Army of Sudan and the Northern groups of SPLA, over the Nuba Mountains and Blue Nile areas. More

than 366,000 people remained either internally displaced or severely affected by the conflicts in South Kordofan and Blue Nile, and some 109,000 others have fled to South Sudan and Ethiopia.

As discussed earlier, conflicts destroyed accumulated physical and human capital, and forced replacement of labor and deteriorating institutional capacity. A country experiencing conflict could not secure long term returns for investments, in both its physical and human capital, which may have resulted in low investments in health and education. All of these factors eventually led to low levels of human development. A country with low levels of human development has more difficulty in improving institutions and in increasing productivity and potential growth. In turn, lower unequally distributed growth heightens the risk of conflict, potentially trapping a country in the loop. Therefore, the government ought to work hard in terms of negotiations with the rebel movements and would reach peace agreements that would enable stability and beginning of development projects to alleviate the social injustices and unfair distribution of wealth and power.

15.2 Rectifying the economic crisis

The consequences of the current economic difficulties facing Sudan on living conditions of the population were apparently quite serious. Real per capita income of the majority of the population has been affected by inflation and negative growth rates of the GDP. Unemployment rates, which were already high, were expected to increase further due to the contraction in the national income and the discouragement of investment decisions. Serious cuts in government spending adopted by fiscal authorities, in order to control budgetary deficit were going to affect pro-poor spending, particularly allocations to basic social services and subsidized goods. Hence, government ability to render adequate and accessible social services have been affected due to lack of adequate resources on the one hand and the steady increase in military spending - which was further induced by the spread of conflict to new areas – on the other hand. In the presence of high inflationary pressures and persistent inequalities, access to basic social services have been limited leading to low human development achievements. Moreover, low access to social services affected productivity, human capacities, and institutional capacities. Ultimately lack of/ and limited access to social services led to socioeconomic instability that contributed to the continuation of conflict-low human development trap. Therefore, much more effort needed to be done through reducing the government expenditure by reducing the numbers of disguised unemployed army of consultants and other constitutional jobs which added negatively to the economy. On the other hand, more pro- knowledge economy policies needed to be in place including the agro-industrialization as mentioned earlier, and the application of new technologies to increase productivity in both agriculture and industry to generate more jobs and more revenue, was needed to alleviate the shortages of foreign currencies. Furthermore, the government should have used more liberal

investment laws to attract foreign direct investments to enhance the chance of achieving fair and balanced development especially in the disadvantaged regions of the country.

15.3 Alleviation of the wide disparities in development

There were apparent disparities between Sudanese, by gender and regions in all the country. Historically Sudan's growth process has been unbalanced, with the majority of its manufacturing firms and irrigated land concentrated in the center with a huge disparity in development indicators between the best and worst performing regions in Sudan. Outcomes from the NBHS 2009 for a number of individual MDG-related indicators confirmed that the major challenge facing Sudan's progress towards the MDGs were the massive inequalities in outcomes and access to services. The significant development disparities between urban and rural areas and between regions contributed to growing inequalities and an increasing urban informal economy. This state of affairs aggravated migration from rural to urban centers that was believed to have weakened agricultural productivity.

The government was obliged to redirect more investments from the central regions of Sudan to the disadvantaged regions in the East and West regions. Creating opportunities for investments in the disadvantaged regions would have guaranteed more employment chances in these regions and improved the earnings of the people in these regions and that would have created some sort of stability and reduced labor mobility there by reducing rural –urban migration. This as well, may help reducing the aggravation of the excluded rural people and ease the social tension and enhanced peace efforts through offering better services.

15.4 Handling external debts

Sudan has been increasingly crippled with accumulated large unresolved external debts which would have a direct impact on its development. Current external debts reached the volume of US 50\$ billion in 2017 representing about 80.4 % of GDP. The bulk of the debt (69%) were from bilateral (Paris and non-Paris club) while multilateral debts represented only 13%. Commercial bank's debts and supplier credit represented 13% and 5% of total debts.

External debts servicing diverted considerable national revenue resources according to current debts service commitments that could have alternatively been directed towards development and social needs and hence poverty reduction. The burden of debts and the inability of the Sudan for access to concessional financing - directly undermined the prospects for economic feasibility on the short, medium and long-term. Similarly, its ability to attract FDI has been constrained.

According to the analysis conducted by World Bank, the IMF and the Central Bank of Sudan debts were unsustainable. That meant Sudan could not service the debts and make advancement on reducing poverty and achieving the MDGs. Sudan has been making payments in excess of obligations falling due to the IMF and small token payments to the World Bank and the African Development Bank. With the independence of the South, the Government of Sudan entered into negotiations with the Government of South Sudan (GoSS) over the apportionment of the stock of external debts. However, the burden of debts would remain heavy, likely to be heavier on a per capita basis and, with much lower export receipts, Sudan debts distress would be more severe. Pending the provision of debt relief from the creditors, Sudan would have maintained a prudent borrowing policy, with reliance on concessional borrowing. The Government of Sudan would also continue to monitor the external debts and publish the results. Therefore, instead of waiting for the unknown, one believed the government needed to exert more efforts in terms of importing new technologies, using modern and knowledge based agricultural and industrialization policies to increase productivity and production to generate more revenues and direct part of that revenue to pay part of the debts while, continuing negotiations with the donors. On the other hand, much more effort in negotiations with Us government was needed to lift the name of Sudan from those accused by protecting terrorism. This would have opened more avenues for attracting investments to boost the development process and ease the balance of payments shortages financial.

- Based on the above, and since we said the Agricultural Sector was supposed to be the engine of the economy, the government was obliged to take its responsibility by facilitating the solutions for the problem of financing through earmarking not less than 10% of GDP to finance importing advanced technology and knowhow to improve both production and productivity in agriculture and animal wealth.
- In this regard the Animal Wealth needed special attention by importing breeding and medical knowledge to improve this sector both in terms of quality and productivity. Also there remained the need to establish big ranches to breed various types of animals in Eastern Sudan and Western Sudan to improve the productivity and industrialization of meat exports.
- Financing for all agricultural operations should have been tied with the use of the following technologies
 - 1- Grass removing technology
 - 2- Improved seeds technology
 - 3- Improved quality of fertilizers subject to each plant qualities.
 - 4- Improved irrigation technologies used on scientific methods. 4

- Much more attention should have been given to SME's and small farms and individual farmers, due to the fact that SME's could help improving the performance in various sectors of the economy. This could have been done through establishing a government institution in partnership with the private sector to mobilize financing, training and nurturing the new projects until they reach the point of maturity to be independent and self-reliant.
- The government should have purchased or bought all crops from farmers at a reasonable price that, would induce more farmers to join agricultural SME's under the (Food Security Program).
- Also Agricultural insurance policies should have been considered, to minimize risks and hazards.
- All Industrial problems needed to be sorted out by the government so that, all projects should not face any logistic problems or transport or energy problems to enhance industrial production and productivity in line with the development plan. Also there were plenty of factories that needed some spare parts to operate again. That should have been given priority attention.
- Much more effort was needed to be done by the government to promote agricultural investment and attract foreign investors especially in agricultural industries and related services through joint venture projects.
- Policies of Tax and Customs exemption should have been applied on all agricultural projects and agricultural inputs.
- Private sector farmers should have been incorporated within the public-private sector relation to offer their experience and share with policy makers planning for the future of agricultural projects and technology innovation and knowledge transfer. This could have been done through establishing a joint bureau of experts from both private and public sector to plan for the agricultural rotation and export pricing and other related issues.
- New plans by the government to exploit more lands for agricultural projects to introduce new crops should have been applied so that, they may enhance our agricultural industrialization and improve the trade balance through improving exports and generate more revenues.
- The transfer of knowledge as regards agricultural, may impose on the government improving training of experts and policy makers in this field through, importing advanced know how training programs especially with the use of green technology.
- The Marketing Policy Models used earlier were obsolete and new marketing technique and policy models should have been introduced, to improve sales of our manufactured agro-products outside Sudan in the international markets. This could be achieved through the PPP as mentioned above.

- Economic Policy stability, consistency and sustainability remained conditional, especially those policies related with finance and exchange prices, if the objective has been to achieve a successful agricultural production to rescue Sudan from bankruptcy.

16- Conclusion:

The analysis of all the available data that we managed to collect proved that one of the major challenges that faced the government of Sudan has been the lack of clear vision and absence of strategic planning.

However, the low productivity of land as a result of low amount of fertilizers, poor seeds and inefficient old traditional agricultural technology resulted in low production and revenues below expectations of both farmers and of the concerned governmental authorities.

The traditional methods of marketing in the era- of technology and knowledge based economy led to high costs of agricultural productivity and production, leading thus to voluminous financial losses and hardships for both the farmers and the government. This made the agricultural sector an inhospitable sector.

The country lost a lot of what it should have been gaining from the added value, simply because the production has been sold as crude raw material, instead of being manufactured through agro-industrialization due to the lack of vision and strategic planning.

The study has provided sufficient evidence that agro- industrialization would have created exorbitant revenues that would have attracted more investments to the agricultural sector, and created more employment opportunities leading to better earnings for both farmers and the government.

Evidence was presented to prove that using new technologies of marketing would have created further demand for the manufactured agro-industrialized products, in a world that was short of agricultural products and in turn generation of more revenues to enhance Sudan's balance of payments.

Recommendations:

- 1- The government of Sudan needed to revisit its economic policy and followed a better approach of appropriate allocation of financial funds. For example, it should have opted towards importing modern technologies to improve land productivity and increase agricultural production, instead of earmarking the majority of revenues towards spending on nonproductive expenditure, by way of nepotism (appointing incompetent relatives, supporters and partisans in constitutional positions).
- 2- The government of Sudan ought to stop exporting raw agricultural products and life livestock and ought to invest on improving the quality of research that would have enhanced agricultural industrialization.

Furthermore, establishing pasturing farms for grazing animals for milk production and meat export at higher prices would have generated value added to the economy.

- 3- The government ought to stop the loss of huge amounts of revenue and should have adopted a new way of having one compiled unified modern marketing approach for all the manufactured agricultural and animal products through using the technological methods that would allow these products to be sold in the international rather than the local markets at higher prices.
- 4- More funds and attention ought to be directed towards production improvement and exploring much more efficient marketing policies through research studies and expert guidance. Sudan needed to follow the knowledge based economy approach for efficient allocation of all its natural and human valuable resources.
- 5- Following the above mentioned recommendations would have enhanced the economy and helped improving Sudan's efforts to alleviate poverty, and created more employment opportunities through attracting more investments to the economy. This would have eventually led to achievement of its objectives. By doing so, sustainable development would have been viable and inevitable.

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الحلقة المفرغة لحالة التخلف الاقتصادي والاجتماعي، كيف يستطيع السودان الخروج منها؟

الملخص: هدِّفَ هذا البحث إلى تسليط الضوء على المشاكل الأساسية للاقتصاد السوداني والتي تكمن في غياب التخطيط الاستراتيجي السليم والسياسات الكفيلة بتحقيق أهدافه. ويرجع اختيار العنوان أعلاه "الدوران في الدائرة المفرغة من التخلف للتعبير عن حالة العجز ومراوحة الاقتصاد مكانه بل والتدهور الى الأسوأ بدلاً من التقدم الى الامام وتحقيق التنمية المستدامة".

من خلال التحليل العلمي للمعلومات الإحصائية وغير الإحصائية التي توفرت لنا، تمكنا من الخروج بالحقائق الهامة التالية والمتمثلة في عدم كفاءة السياسات المتبعة في إدارة القطاع الزراعي الذي يمثل رأس الرمح للاقتصاد. إن استخدام التقنيات التقليدية وغياب الأساليب العلمية القائمة على اقتصاد المعرفة من حيث استخدامات الأسمدة وري المحاصيل المزروعة ومحاورة الآفات الزراعية لعبت دوراً مباشراً في تدني إنتاجية الأراضي الزراعية وتحقيق عائدات منخفضة كحصيلة للصادرات. وفي كل الأحوال، فإن خيارات الحكومة من السياسات القائمة على إهمال القطاع الزراعي والاعتماد على العائدات المالية السريعة من بيع النفط والذهب قد ثبت عدم جدواها، وأثرها المدمر على الاقتصاد. فخيار سياسات الدولة الاقتصادية المشار إليه قد أصبح عديم الجدوى عقب انفصال جنوب السودان عام 2011، حاملاً معه 75% من احتياطي نفط الدولة، وعليه لم يبق للحكومة أي خيار غير العودة مرة أخرى ومحاولة إحياء القطاع الزراعي. على ضوء هذا الوضع، واعتماداً على بعض المبادرات التي قادها بعض المستثمرين من القطاع الخاص فإن الاستخدام الواعد للأراضي الزراعية عبر استخدام أساليب علمية باستخدام التقنيات الحديثة في الزراعة، فإن نفس الأراضي ذات الإنتاجية الضعيفة قد حققت معدلات غير مسبوقة وعالية من الإنتاجية، مما رفع درجة التفاؤل بأن هذا القطاع قادر على أن يكون قاطرة الاقتصاد. حدث هذا أثناء حصاد الموسم الزراعي لعام 2017. على ضوء هذا الجهد الناجح، فقد فكرت في طرح أسلوب جديد من السياسات في هذه الورقة نعتقد أن من شأنه تفجير طاقات القطاع الزراعي عبر التصنيع الزراعي واستخدام أساليب تسويق حديثة ومتطورة. تم ختام هذه الورقة بتوصيات قد تساهم في تحقيق مزيد من النجاحات في هذا القطاع.

الكلمات المفتاحية: مشاكل الاقتصاد، الإنتاجية، الصادرات، التقنيات الحديثة، السياسات. التصنيع الزراعي