
**Sudan EPA
Negotiations and
Implementation
Support (SENIS)**

Final Study: Assessing
Sudan's Export
Diversification Potential
in Agricultural Products



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Acronyms and Abbreviations

ACP	Africa, Caribbean and Pacific
ASYCUDA	Automated System for Customs Data
CGA	Customs General Administration
COMESA	Common Market of Eastern and Southern Africa
CPA	Comprehensive Peace Agreement
DRC	Domestic Resource Cost
DTIS	Diagnostic Trade Integration Study
EAC	Eastern Africa Community
EBA	Everything But Arms Initiative
ECR	Export Competitiveness Ratio
EPA	Economic Partnership Agreement
EU	European Union
EUREP	European Retailer Produce Working Group
FAO	Food and Agriculture Organization
FOB	Freight on Board
FTA	Free Trade Agreement
GAC	Gum Arabic Company
GAFTA	Greater Arab Free Trade Area
GAP	Good Agricultural Practices
GATT	General Agreement on Tariffs and Trade
GSP	Generalized System of Preference
GoNU	Government of National Unity
GoSS	Government of Southern Sudan
ICM	Integrated Crop Management
IF	Integrated Framework
IMF	International Monetary Fund
IPM	Integrated Pest Management
ITC	International Trade Centre
LDC	Least Developed Country
MDG	Millennium Development Goals
MFN	Most Favoured Nation
MoFT	Ministry of Foreign Trade
OECD	Organization for Economic Cooperation and Development
OIE	World Organization for Animal Health
RCA	Revealed Comparative Advantage
SENIS	Sudan EPA Negotiations and Implementation Support
SHHS	Sudan Household Health Survey
SPC	Sudan Ports Corporation
SPS	Sanitary and Phytosanitary Standards
STDF	Standard and Trade Development Facility
TIC	Trade Information Centre
STP	Sudan Trade Point
SRC	Sudan Rail Corporation
SRCO	Strategic Reserve Corporation
TBT	Technical Barriers to Trade
TRQ	Tariff Rate Quota
UAE	United Arab Emirates
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
UNDP	United Nations Development Program
WTO	World Trade Organization

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Map of Sudan and Key Indicators



Currency Equivalence

US\$1.00 = 2.15 SDG (Sudanese pounds)

Weights and Measures

One feddan = 0.42 hectares = 1.038 acres

Key Indicators

Population 39.15 million (5th census, 2008)

Population average growth rate 2% (2000–06)

Life expectancy at birth: 55 (male), 58 (female)

Adult literacy rate, ages 15 and older 61% (2000–05)

UNDP Human Development Index rank 147 out of 177 (2007/08)

Executive Summary

Introduction

The overall objective of the SENIS project of which this Study is a part, is to promote better integration of Sudan into regional and world markets. The study aims at identifying the conditions under which Sudanese agricultural exports can increase their competitiveness and puts forward some options for achieving that objective.

The Study uses the supply chain notion as an analytical framework and therefore the issues emerging are not merely export specific but also production and marketing specific. Much attention is placed on strengthening the competitiveness of production itself as well as to sustainable livelihoods of farming communities that produce the exported agricultural commodities in the first place.

The scope of the Study also extends to import substitution crops, considering the increasing dependence of the country on the world market for key basic foodstuffs.

The undertaking of the Study was based on a participatory model, involving as much as possible stakeholders of both public and private sectors in the process.

OVERVIEW OF RECENT SOCIO-ECONOMIC DEVELOPMENTS OF SUDAN

From an agricultural exporter to an oil exporter

The Sudanese agriculture continues to be the backbone of the economy: it provides rich nourishment to a growing population, employment to two-thirds of the labour force in addition to employment generation in upstream and downstream sectors, supplies valuable inputs to domestic manufacturing and artisanal industries, contributes more than one-third of the GDP and the lion's share of non-petroleum export earnings.

Three main farming systems prevail in the country: rain-fed traditional (both crop and livestock production) providing livelihood to some 70% of Sudan's population; rain-fed semi-mechanized supports directly less than 1% of the population; and irrigated farming supports some 12% of the population of the country.

Sudan has a reputation of a major agricultural producer and exporter, although its export position has eroded substantially at present.

Sudan has not been able to produce the quantity and quality of commodities demanded by growing and discerning world markets and its export base has become narrower geographically and in terms of the commodities exported, especially lacking value-added products.

In view of several factors, including low investment in agriculture, the competitiveness of agricultural exports has suffered and agricultural export earnings stagnated, although remaining the dominant source of foreign exchange until the advent of petroleum exports in 1999.

From that time onwards, Sudan has turned from an agricultural exporter to a petroleum exporter, following the unprecedented boom of its petroleum export revenues.

Assessing Sudan's Export Diversification Potential in Agricultural Products

Changing composition of economic growth and consumption patterns

The effects of oil boom on the economy have been pervasive, including a high GDP growth rate, low levels of inflation and the financing of major public works projects, including building new highways, development of satellite and digital communication and power generation plants.

However, quick gains realized in construction and service sectors, compared to lower returns and higher risks in agriculture, surmounted most investment activities and commercial lending in the country, leading to further deterioration of the agricultural sector and its export prospects.

In parallel with the oil boom (or as a consequence of it) there has been a substantial change in consumption patterns of food and durable goods, fuelled also by skilled labour returnees for the oil and construction business. Dependence on imported foods increased.

Persisting severe poverty and disparity

Notwithstanding the impressive gains in national aggregate indicators, these gains have been unevenly distributed and agriculture and the people that depend on it have been bystanders in this process, with agriculture being accorded low attention in government finance.

Sudan continues to remain among the poorest countries in the world and poverty and food insecurity levels are increasing. There are great disparities between different regions, and across the rural-urban and gender space, a situation exacerbated also by regional conflicts.

Sudan experienced its first shock from the volatility in the oil market in 2008 as well as soaring food prices preceding that, which reminded policy makers of the importance of agriculture as an export earner and as the key sector for securing and improving the livelihoods of rural people.

Renewed impetus has been given to the implementation of the Agricultural Revival Plan (ARP) aimed at broadening the base of rural development and export earnings, with particular emphasis on reactivation and diversification of non-oil exports, an objective in line with the overall scope of the present Study.

PERFORMANCE OF AGRICULTURAL PRODUCTION AND EXPORTS

Cereals sector

The main cereal crops of Sudan analyzed in this study are sorghum and wheat, the first being the basic staple in the diet and the second being the main imported basic food commodity.

Sudan became a net importer of cereals in the beginning of the 1980s and its self-sufficiency declined from 90% then to 81% during 2000-09. A substantial part of imports are in the form of food aid (as much as 20-25% of total cereal imports in recent years) for meeting emergency needs of the displaced population groups.

Production of all cereal crops is highly variable and yields are generally low, whether compared to Sub-Saharan Africa or other developing countries, and only a fraction of yields attained in developed countries. Sorghum yields in rain-fed farming areas are often one-third of those under irrigation. Natural resource degradation from expansion of cultivated area into marginal lands, and mono-cropping practices may be the cause of declining yields in rain-fed farming.

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Food security for a large part of the population is very closely associated with sorghum. It constitutes the main crop in the national strategic food reserve managed by the Strategic Reserve Corporation (SRCO).

The target of the strategic reserve is for 600,000MT of grain, although at present the actual reserve is a fraction of that. Part of the problem relates to lack of storage facilities of adequate quality.

Notwithstanding the good intentions of the Government in marketing and storing a strategic commodity such as sorghum, the history of public stockholding operations is not very encouraging. **Care should be exercised in gauging the scale of SRCO operations in this area so that the positive role of private trade is not marginalized.**

Another important use of sorghum is as a source of feedstock for fattening cattle (some 13% of total supply used for that purpose during 2000-09). This may raise some ethical issues, although this use of sorghum could play a stabilizing role in the market (depending on relative price elasticities) but that **needs further investigation as well as the search for alternative sources of feedstuffs.**

Wheat production, although generally not favoured by climatic conditions in Sudan, has been a strategic choice by the Government by replacing large areas formerly seeded with cotton, in particular in the Gezira irrigation scheme. Yields have varied widely and on average well below those attained by developing countries as a whole by some 25-30%.

Agronomic conditions limit expansion in wheat production and thus there is rationale in Government's policy of partial reliance on domestic production and dependence on the world market to meet the growing wheat demand.

However, although in the past, under prevailing world market prices the profitability of wheat production in Sudan was questionable at best, the extra demand for cereals for ethanol production and the strengthening of world market prices experienced in recent years is likely to have a lasting effect and therefore Sudan's prospects in replacing some of its growing wheat imports may be better in the future.

Oilseeds sector

The main oilseed crops of Sudan are groundnuts, sesame and more recently sunflower. Groundnut production is the largest but also the most variable. Oil is produced from all three crops with groundnut oil representing the lion's share of the total. Nearly all oil produced from all seeds is now destined to the domestic market.

Groundnut yields are low and highly variable. From the mid-1980s they have been consistently below the average for Sub-Saharan Africa. Yields under rain-fed conditions have been responsible for this situation, while those under irrigation are 3 to 5 times higher, less variable and increasing.

The story is worse for sesame seed, where the negative trend in long-term yields is much sharper than that for groundnuts. Current yields are often one-fourth or even one-fifth of those attained in the early 1960s and considerably below those of Sub-Sahara Africa (about two-thirds of the latter). Most of output increases in sesame has come from area increase.

The situation is somewhat better for sunflower production. Yields attained consistent gains since the late 1980s when this crop was introduced and are now above the average obtained in Sub-Sahara Africa.

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Overall, Sudan continues to be a net exporter of oilseeds, although the gap between aggregate supply and domestic needs is narrowing and aside from sesame seeds, the bulk of production is consumed domestically.

Sesame seeds exports, ranging between US\$100 million to US\$140 million in recent years, have been well diversified geographically, destined to over 50 countries with Egypt, Korea Rep., Saudi Arabia, Syria, Lebanon and China topping the list. The top 10 importing countries account for nearly 80% of all sesame seeds exports of Sudan.

Productivity gains in sesame are **critical for the survival of this important crop** for Sudan, especially since the largest share of production is destined for the export market, unlike that of groundnuts. Beyond the need of sustaining export earnings, sesame cultivation is also very important for employment creation, as harvesting, in particular, is very much a labour intensive activity.

Cotton

Nearly all cotton production in Sudan comes from the irrigated sector and is produced mainly for fibre. Partly because of being irrigated, cotton yields although also variable, maintained a more or less steady long-term average, not different from what has been the case in Sub-Sahara Africa as a whole.

However, area under cotton has been reduced considerably over time, giving room to competing crops in particular wheat. In addition to its strong declining trend, area under cotton varied considerably from year to year.

The largest share of cotton lint produced is exported (over 85%) although in quantity terms much less is exported now compared to the past in view of the reduced output.

Sudan's cotton lint exports ranging between US\$70 million to over US\$100 million in recent years, have been destined to some 46 countries with Egypt, Bangladesh, Thailand, India and China topping the list. On average, the top 10 importing countries account for over 90% of cotton lint exports of Sudan by value.

Horticultural sector

Fruits and vegetables have been the most dynamic sector of world agriculture in recent years and developing countries are capturing the lion's share of that market, benefiting from on-farm and off-farm (processing) employment creation in view of the greater labour intensive nature of these crops.

Production, processing and marketing of horticultural products requires more discipline along the supply chain, in view of their perishable nature and the strict quality and safety standards that the market dictates, making it more difficult for smallholders acting alone to participate in these markets and giving rise to 'contract' farming and collective action by producer organizations. The private sector and the exigencies of the market are the driving forces in the horticultural sector, with specialized agribusinesses and supermarkets increasing their market power.

Climatic conditions in Sudan favour the production of a wide range of fruits and vegetables, including tropical fruits but also many temperate zone vegetable crops, attractive for export to the European market when these crops are not in season there.

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Horticultural crops contribute about 12% of agricultural GDP in Sudan, about the same share as the cereals sector, although they occupy 1.8% of total irrigated cropped areas.

Available production statistics indicate that productivity levels of fruits and vegetables are fairly good in Sudan, about double the corresponding levels attained in Sub-Sahara as a whole for both sectors.

However, as is the case in other countries, fruits and vegetables in Sudan suffer from poor post harvest treatment, outdated technologies for refrigeration, packaging and handling of fresh produce, all of which have an adverse effect on the quality characteristics of the produce, reducing marketability and price fetched in the market.

The processing of fruits and vegetables in Sudan has also been problematic with many failures since the late 1970s despite Government efforts to develop this sector.

Among the main fruits and vegetables exported by Sudan are mangos, grape fruit, bananas, melons, lemons and limes, green beans, onions and sweet peppers. Overall, export earning from both sub-sectors are modest, well below US\$ 5 million for most years and highly variable.

Individual commodities exhibit fairly similar patterns of export performance: high variability and a very narrow geographical destination, much more concentrated than that of the main crops discussed earlier. In most cases, 3-4 import markets account for over 90% of all exports.

European countries account for a very small share of fruits and vegetables from Sudan and although there are SPS issues that may contribute to that, the potential of Sudan, within these constraints, is far from being realized. For example, Sudan could benefit from seasonal exports during winter months when competition from other regular suppliers to the European market diminishes.

Beyond the European market, a more lucrative destination is the Middle East and Gulf States and in particular Saudi Arabia. **Greater attention needs to be paid to the characteristics of these markets**, how to resolve problems that have been encountered in the past and how to increase competitiveness vis a vis other suppliers.

Capturing and maintaining a sizable share of this market alone would be a major boost to Sudan's export market of fruits and vegetables.

A precondition for improving the prospects of fruits and vegetables exports is **better handling and shipping facilities at Khartoum airport** (more on this below). Delays in shipment, combined with inadequate storage facilities and lack of basic refrigeration at the airport render produce unfit for export.

Hibiscus

Sudan's hibiscus exports have been at times substantial as much 26,000 MT, earning US\$ 39 million in 2004.

The potential for expanding exports is high given the natural colours of the product, used also as a natural source of food colouring, as well as for perfume processing purposes.

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Gum Arabic

Sudan is one of the largest producers of gum Arabic accounting for 40-60% of world trade. Production has decreased continuously by almost 50% during 1970-08, mainly as a result of cyclical drought as well as unsuccessful marketing policies of the Gum Arabic Company which retained an exclusive export concession until 2009.

Comparing to Sudan's gum Arabic exports in the past, those attained since the early 1990s have been disappointing with exports barely reaching an average of US\$30 million during 2000-08.

Considering the dominant and historic role of Sudan in the gum Arabic trade, its exports are fairly diversified geographically, with some 43 destinations during 1997-06, with France, UK, USA, Germany and Italy topping the list. Overall, 10 countries accounted for over 90% of exports.

Livestock sector

The livestock population of Sudan is estimated at some 140 million heads and is the single most important component of the agricultural sector, accounting for nearly half of agricultural GDP and making an important contribution to food security, employment, export earnings, means of transport of goods and individuals, draught power, manure for soil fertilization and as a store of wealth.

The prevailing livestock production system in Sudan is traditional nomadic and transhumance, in addition to sedentary and semi-sedentary production. There are important differences between them and between small stock and cattle as regards contribution to livelihoods and off-take rates.

A general characteristic, especially of the prevailing traditional system, is the low level of commercialization due to inherently high risks from disease or drought.

Beyond the threats from nature other factors constrain livestock from achieving its potential, including, inter alia: expansion of cropping; scarcity of water; obstacles in seasonal migration; lack of animal feed during dry season; weak veterinary services; and numerous taxes, charges and fees along the supply chain.

Notwithstanding possible deficiencies in data due to outdated livestock census, available statistics show a generally strong performance for all three livestock products, namely meat, hides and skins and milk. Annual growth rates for every decade since the 1960s has been positive and at rates that would match that of population growth.

Cattle make the greatest contribution in all livestock products but especially for milk. In terms of meat production, the combined output of sheep and goats approximates that of cattle, while cattle hides alone are about equal to the total of the other three animals combined.

A notable longer-term development is the observed trade-off between milk and meat output, whereby the substantial increase in cow milk output may have been to some extent at the expense of meat output. Nonetheless, the increase in milk output is an encouraging sign, potentially freeing Sudan from its dependence on imported milk.

This **trade-off between meat and milk may require additional study**, including consideration of the economics of supplementing lactating cows so that meat output is not compromised.

Due to the remoteness of the main livestock producing areas, marketing chains for domestic and export destinations are fairly complex involving many intermediaries and high costs.

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In the case of live animals for export, transportation to Port Sudan, whether trekking or trucking, is the major constraint facing the industry. This includes, inter alia: costs for herding, trekking, watering and feeding; numerous taxes and fees; long delays for collection of fees, inspection and certification; losses due to diseases, mortality and weight loss; further shipping delays at Port Sudan; and margins of numerous intermediate traders and brokers, all leading to reduced competitiveness at the final destination.

Live sheep and meat are by far the largest livestock export earner, together amounting to between US\$110-140 million annually in recent years (85% live sheep), with Saudi Arabia importing nearly all of that.

Following the complete 12-month ban by Saudi Arabia of imports of sheep and goats from Sudan in 2001, rigid vaccination and inspection procedures have been put in place minimizing the possibility of such bans in the future.

While as in the case of fruits and vegetables, Saudi Arabia is a proximate and lucrative market, Sudan faces strong price competition from other suppliers, Australia in particular, despite the preference of Saudi consumers for Sudanese sheep.

The seasonality of Sudanese sheep exports is yet another issue that works in favour of the competition, considering the needs of the Saudi market for a regular supply of standard quality sheep meat throughout the year.

Agriculture-based manufacturing products

Among agriculture-based manufacturing products, those of export interest include sugar and molasses averaging about US\$10 million each in recent years, and hides and skins averaging about US\$20 million.

Sudan enjoys a preferential access to the EU sugar market; however, this situation is gradually changing in view of unilateral reforms of EU agricultural policies and in the context of the Doha Round.

Sugar, as well as other agricultural commodities have become much more integrated with the energy sector (ethanol production) and developments in that sector would be a determining factor for sugar prospects in the future.

Sudan has an interest in **following closely developments in this area and assess the implications for the use that could be made of sugar and its by-products**, taking also into consideration the growing needs for animal feed as discussed above.

Overall: negative and exploding agricultural trade balance since late 1990s

The tilt to negative agricultural trade balance followed the boom of petroleum export earnings from 1999 onwards.

Wheat and wheat flour is the main food import item largely as a result of changing food consumption patterns due to urbanization.

The observed sizable increase in imports of agricultural inputs is encouraging, potentially contributing to badly needed increases in crop productivity.

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Textiles and wood products have also seen large increases, also potentially increasing employment in labour-intensive domestic garment and furniture industry.

... and increasing geographical concentration of agricultural exports

Since the advent of petroleum exports in 1999, Asia (and China in particular) has become the single most important destination of Sudanese exports (86% of total merchandize exports in 2006 and growing).

The concentration of agricultural exports is less pronounced, with Middle East countries accounting for some 30-35% (Saudi Arabia alone 20-25%), Asian countries (with China and India on top of the list) accounting for some 40-45% and European and other industrialized countries for about 25%.

There is relatively little trade with African countries, including Sudan's COMESA partners (aside from Egypt).

It is only with Asia that Sudan has a positive trade balance and that is due to the huge petroleum exports to that region.

COMPETITIVENESS OF AGRICULTURAL EXPORTS

A variety of measures that have been suggested in the trade literature were used to assess Sudan's comparative advantage and competitiveness in agricultural commodities. These included Revealed Comparative Advantage (RCA), Domestic Resource Cost (DRC), and Export Competitiveness Ratio (ECR) in the context of Value Chain analysis. The analysis drew on already available numbers as well as freshly calculated ones.

Calculated RCA numbers do confirm that Sudan has a comparative advantage in the commodities it actually exports in large volumes. This is the case for both aggregate commodity groups and individual commodities within. Consistently high RCAs are for gum Arabic, live animals, sesame, cotton, hides and sugar. Meat barely makes it and fruits and vegetables are well below the mark.

Turning to the DRC measure, the picture is more clouded but it reveals some important changes over time. For example, deterioration of the DRC for groundnuts and sorghum from early 1990s to recent years; the same also for sesame although it still retains competitiveness; good DRC for cotton and also for several fruits and vegetables (onions, tomatoes, mango and lime) although the sample for the latter is very thin.

The ECR measure corresponding to value chains between different producing areas and Port Sudan showed competitiveness for sesame (better from El Obeid than Gedaref), for El Obeid groundnuts but not at all Gezira groundnuts, excellent competitiveness for El Obeid gum Arabic and Rosella, for El Obeid live sheep yes but barely so from Khartoum, either live sheep or sheep meat (though Khartoum airport).

What also became clear from the value chain analysis is the numerous taxes, fees and other charges levied along the way to the port (as well as in Port Sudan itself) which constitute a great burden to trade. On several value chains analyzed these charges were between 30% and as much as 80% of the total assembly and logistic costs incurred between the farm gate and the port of exit.

Wheat, an imported commodity, is in general not competitive although close to the borderline. Clearly, it all depends on the prevailing world market price and what is likely to be that price in the future. To the extent that the **strengthening of grain prices we have experienced in recent**

years continues into the future, the prospects of wheat production in Sudan are better than before.

CONSTRAINTS AND OPPORTUNITIES DUE TO EXTERNAL FACTORS

Ordinary market access barriers and opportunities

In terms of the traditional barriers to trade (border tariffs), Sudan does not face serious access problems. Only a handful of countries may constrain access in few selected products (India for gum Arabic and cotton, China for sugar and possibly meat and Korea Rep. for sesame).

Other African countries (outside COMESA) may also pose market access constraints for Sudan in view of their high bound tariffs (explaining perhaps the low volume of Sudanese exports to these countries). Also, **tariff escalation could be a potential threat** as Sudan moves to high-value processed products.

Conclusion of the Doha Round should reduce such threat somewhat, although other special instruments are envisaged which may dilute substantially the outcome. On its part, **Sudan could ally with other countries which have similar trade interests**, be informed of developments in the negotiations and indirectly have an input in the process for products that may be adversely affected.

Reciprocal preferential arrangements

Among Sudan's regional preferential arrangements, COMESA (accounting for a mere 1.8% of total merchandize exports of Sudan in 2001-06) has not been a very dynamic export destination, aside from Egypt (also a GAFTA member) importing live animals, sesame, molasses, and cotton (86% of Sudan's exports to COMESA).

Despite the reduction in tariffs within COMESA, member states are still grappling with non-tariff barriers, in particular administrative entry procedures, including customs valuation, rules of origin and pre-shipment inspection, as well as SPS and TBT rules and regulations.

GAFTA is by far much more important preferential trade arrangement (accounting for 12% of Sudan's total merchandize exports in 2001-06) with 40% share by Saudi Arabia, 27%by UAE and 14% by Egypt.

GAFTA should be a priority export market for Sudan, in view of the preferential market access Sudan enjoys as well as many other advantages, such as proximity (physical and cultural), and a large and increasing appetite for value-added processed products where the preferential margins are much greater.

As regards Sudan's imports from GAFTA countries, better arrangements are in order especially on custom valuation of imported commodities where Sudan has experienced certain problems adversely affecting domestic production of similar commodities which could have remained competitive.

Non-reciprocal preferential arrangements

Among Sudan's non-reciprocal preferential arrangements that with the EU is the most prominent. Sudan benefits from EU's Everything But Arms initiative where sugar enjoys a substantial preferential margin.

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Another potential commodity in the EU market is sheep meat for which the EU is a major importer. Sudan **could capitalize on the preferential access it enjoys in the EU market** and it would be important to explore and tackle problems constraining meat access to this market, aside from SPS issues.

Concluding an EU-Sudan EPA agreement, while in market access terms may not be important immediately (in view of the EBA), it could help the country's prospects for regional economic integration, which is important inter alia for a better rationalization on the part of the EU in providing trade-related assistance, for example on SPS compliance and to regional accreditation bodies.

Accession to the WTO

Sudan has been pursuing its WTO accession for some time and, despite political setbacks, it has invested considerable effort in preparing the necessary information.

By and large, new members have agreed to much tougher entry terms (even the acceding LDCs) than those applicable to existing members and Sudan is not likely to be an exception.

While there may some costs in acceding to the WTO, on the whole the benefits outweigh the costs and in any case the decision to join is no longer an issue for Sudan, despite the present impasse.

The process of accession is perhaps as important for the acceding country as the final outcome, presenting a unique opportunity for internal debates on domestic and trade policy. Sudan may **take advantage of the delay in this process to re-think the rationale and objectives of certain domestic support and export subsidy measures.**

The issue is not how much is allowed under the WTO but who receives that support, if the objective is poverty alleviation and sustainable agricultural and rural development.

Sudan can also **take advantage of the present impasse to build capacity in the different WTO agreements and processes, especially on SPS issues. In terms of accumulating knowledge Sudan could act as if it was already a member of the WTO.**

US embargo

The US embargo may not have had direct long-term adverse effects on commodity trade as Sudan re-directed its exports to other countries, but indirectly the effects could be important through restrictions on financial transactions.

Non-tariff Barriers

Although countries have a legitimate right to protect consumers, there is concern that resorting to NTBs is disguised protectionism, especially as they are less transparent than tariffs and not easily quantifiable.

Increasingly stringent food safety standards would impact on the competitiveness of developing-country suppliers, because of their comparably weaker administrative, technical, and scientific capacities to comply with new SPS and TBT requirements.

On the other hand, if SPS and TBT requirements are least trade distortive, apply basic principles of non discrimination (MFN and National Treatment), they could offer unique market opportunities to exporters that comply with them.

Meeting such standards may also have **agriculture-wide positive effects in terms of information externalities, reputation externalities and learning externalities.**

Standards are a reality in international trade and complying with them is often equivalent to survival in world markets.

Compliance with SPS and TBT standards

Sudan has had some bitter experiences in having its products banned from export markets because of non-compliance with established standards (groundnuts in EU and sheep in Saudi Arabia).

There is a **high payoff in building Sudan's capacity to meet SPS standards** and this is imperative for the country in its efforts to revitalize its traditional exports and gain access to the markets of value-added products.

Key sectors where SPS issues are most evident are livestock and horticultural products. Despite the systematic measures taken after the 2001 ban, for vaccination, quarantine, and testing of animals for export, the risks in moving live animals to great distances to Port Sudan are large and the costs of such operations even larger.

The alternative route of exporting refrigerated meat should be promoted and a **major effort is needed in developing high standard meat processing facilities, refrigerated storage and other related infrastructure, as well as effective decentralized surveillance and inspection facilities and certification services.**

Similar issues arise in the horticultural sector where improvements are needed along the supply chain from farm to market. SPS compliance would come from better farming practices, better post-harvest preparations and better access to laboratory and certification facilities.

SPS measures are only part of the problem. Non-SPS related quality characteristics of Sudan's exports have to improve, such as the appearance of horticultural produce destined for the export market; **careful grading, packaging and labelling could ensure a much better price of these products** in the markets where they are already accepted. Such **improvements can be made immediately and the payoff will also be immediate.**

In its efforts to upgrade its SPS infrastructure and related institutions, **Sudan should also seek outside assistance, in particular through the Standard and Trade Development Facility (STDF)**, a joint initiative of FAO, OIE, WHO, the World Bank and the WTO, which aims at increasing coordination in the provision of SPS-related assistance, and mobilizing resources to assist developing countries enhance their capacity to meet SPS standards.

While Sudan cannot participate in WTO meetings, it **can be an active participant in the international standard setting bodies** that feed into the SPS and TBT processes: the FAO/WHO Codex Alimentarius Commission for food; the International Animal Health Organization (Office International des Epizooties or OIE) for animal health; and the FAO's Secretariat of the International Plant Protection Convention for plant health.

Also, Sudan could be informed of the discussions taking place in the two relevant WTO Committees, that of SPS and that of TBT, in particular, the specific trade concerns being raised by members, which bring to surface issues being faced in exporting agricultural products, the degree of solidarity from other countries on the issues raised and eventually how they are resolved.

CONSTRAINTS DUE TO DOMESTIC FACTORS

A number of cross-cutting constraints affect all sectors of the economy of Sudan but agriculture in particular due to its dependence on transport and logistic infrastructure and facilities both upstream and downstream to produce the quantity and quality of produce that can compete in domestic and export markets.

Brief overview of macroeconomic and sectoral policies affecting agriculture

Sudan's present agricultural and trade policies have their origin in the liberalization program of the early 1990s.

The reform, meant also to prepare the entry of the country into the WTO, included liberalizing prices of goods, services and factors of production, reduction of subsidies, privatization of public enterprises, reforms of the tax system and monetary policies, as well as reduction of taxes and tariffs on exports and imports.

Despite the intention of such reforms, the agricultural sector received limited support for essential inputs and infrastructure, including for extension services, marketing facilities, marketing statistics and related information, quality control facilities and institutional capacity and development of human resources.

The vacuum that was created by the withdrawal of the state from direct intervention in agriculture was only selectively filled by the private sector.

Import tariffs

Despite the trade reforms since the early 1990s, Sudan's average weighted MFN tariff was 16.1% in 2006-08, among the highest in the world and high also in comparison with averages in Africa and elsewhere, including Sudan's immediate neighbours.

Agricultural imports face higher average tariffs than those of non-agricultural products, at 30.6% and 18.5%, respectively (2006 simple averages).

There is considerable variation across industries and stages of production and a **better rationalization of the tariff regime** is called for. Of particular concern are tariffs on imported inputs in view of the already high production costs in Sudan. High tariffs on such inputs raise further the cost of production, and reduce competitiveness.

Domestic taxes and fees

While the trade reforms of the 1990s abolished export and import licensing requirements and gradual elimination of agricultural export taxes, many government agencies at federal and state levels impose taxes and other levies which have exactly the same adverse effect on competitiveness as do export taxes, and importing countries' tariffs.

Assessing Sudan's Export Diversification Potential in Agricultural Products

Gum Arabic produced and transported from North Kordofan to Port Sudan is a good example, where some 37 types of taxes and fees are levied, representing some 20% of the floor prices of gum Arabic and about 15% of export prices.

The heavy burden of taxes and fees at all stages of the supply chain has been highlighted by the value chain analysis carried out in the previous section.

It is therefore imperative that a **better rationalization is made of the scope of such taxes and fees and on the need for continuing such practices**. Their contribution to government revenues is miniscule (at best 0.3% of current petroleum export revenues!)

Access to credit finance for agricultural production and trade

There is an uneven geographical distribution of banking institutions in Sudan and an even more uneven distribution in lending operations especially for agriculture whose share in bank finance declined from some 22% in 1999 to as low as 6.8% in 2007. Much of bank lending has gone to more profitable sectors: oil, construction and services during the booming years in the recent past.

The distribution within agriculture is also worrying, as for example out of the total finance provided by the Agricultural Bank of Sudan, the rain-fed semi-mechanized system received the lion's share of over 50%, compared with some 10% of the rain-fed traditional system, a distribution in reverse relationship to the farming population supported by these systems.

Constraining lending to agriculture is the absence of collateral in view of current laws governing the ownership, leasing and transfer of land rights which affect the ability of borrowers to use land as collateral.

Another constraint to lending is the paying-back method, i.e. in the form of the actual crops produced, adding transaction costs of banks and affecting their willingness to lend. **Changes in these loan payment methods as well as in laws governing land rights are needed** for agriculture to be able to claim a higher share of bank finance.

Turning to finance for exports, the situation is not much better, with a share of 2-4% (2005-08) compared to an average of 20% in the 1990s (and as much as 28% of total bank lending in 1990).

Complex and overlapping trade policy institutional structure

The organization and management of trade policy and trade promotion in Sudan is complex with responsibilities scattered in different entities throughout the government.

Ministry of Foreign Trade (MoFT) has an overall responsibility on policy formulation, implementation and coordination.

MoFT has to **maintain close links with other Ministries and government entities that play also a role in trade policy**. Of particular relevance is the Commission on WTO Affairs, in view of the authority of the latter to negotiate the terms of Sudan's accession to the WTO. Export Councils were set up in 1991 for each important export sector. Their role has been marginalized in recent years.

National Council for Exports Development (NCED), established in 2000 to conduct studies on factors determining export potential and provide necessary support to facilitate access to foreign markets, has not been very effective in practice in view of limited analytical capacity.

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... and shortcomings in policy implementation and trade facilitation

Commercial Attachés maintained in major export markets with a broad mandate to support trade promotion activities abroad, and to safeguard Sudan's commercial interests on both exports and import.

Customs General Administration (CGA) responsible to collect tariffs and export fees, protect the domestic industry from illicit trade and facilitate the movement of goods for export and import. In view of its key role in facilitating trade, it is **imperative that certain identified shortcomings are addressed without delay.**

Sudan Trade Point (STP) is an information center housed under the MoFT providing information about investment, trade opportunities, procedures and legislation in Sudan through the internet, connecting potential exporters and importers with their counterparts. Strengthening the STP by possibly merging the Trade Information Center (TIC) into it should be considered.

Sudanese Standards and Metrology Organization (SSMO) established in 1992 has a scientific supervisory role in national standardization issues, inter alia, protecting consumers against deceitful practices and health threats, providing quality control services to exported and imported commodities.

Because of the critical role of SPS compliance, and with the SSMO assuming the role of SPS and TBT enquiry point for the WTO, **stronger coordination with other related national bodies is needed as well as consolidation of overlapping responsibilities.**

Transportation and other logistics services

Sudan suffers from poor transportation and trade facilitation logistics mainly in view of its vast territory and the extensive nature of agricultural activity, making both the assembly of produce and their transportation to Port Sudan an expensive and logistically complicated operation.

Beyond these constraints imposed by geography and where improvements will take time, there are those imposed largely by man where improvements can be swifter. Port Sudan is a case in point, where charges are very high and import and export procedures involve lengthy delays largely due to multiple administrative procedures.

These constraints seem also to be contributing to dependence of Southern Sudan on Kenyan and Ugandan companies for transport services and diversion of trade through Mombasa.

Rail transport to Port Sudan is also another case where more reliability and lower charges could have compensated somewhat for the vast distances that otherwise have to be covered by trekking or trucking, both expensive in different ways.

Yet another constraint where remedy can be quick is in **developing cold storage and logistics facilities at Khartoum airport, a critical requirement for perishable agricultural commodities such as fruits and vegetables and meat.** The modest cold storage facility presently being completed is a step in the right direction.

CONCLUSIONS AND RECOMMENDATIONS

The health of the Sudanese agriculture is not good and, with an ailing agriculture, Sudan's agricultural exports are no longer what they used to be.

The Study has confirmed and re-enforced the diagnosis arrived at by previous studies on the many constraints facing Sudanese agriculture and the specific issues that have to be addressed to put agriculture back on track. The **challenges in revitalizing the agricultural sector to compete in regional and world markets are enormous and the tasks multi-varied, spanning the whole supply chain.**

Improving productivity at the farm level and reducing related production costs is the *sine qua non* in prioritizing action. Unless there is a strong gain in commodity yields and reduction in production costs, competitiveness of Sudanese agriculture will remain a mirage.

In formalizing a **strategy** for more concrete action, the Study identified three categories of agricultural products with export potential:

- **traditional export commodities**, that Sudan exported successfully in the past (e.g. sesame and cotton) and in which it has lost market share or has become a lesser exporter;
- **perishable high-value products**, that Sudan has the potential to produce competitively (e.g. meat, fruits and vegetables, cut flowers) although presently a minor exporter; and
- **processed agro-industrial value-added products** (e.g. jams, canned meat, fruit and vegetables, leather, etc), derived from agricultural raw material that Sudan produces and presently underutilizes.

These three categories of commodities are characterized by distinct features and hence require different strategies for export promotion. The Study outlined the basic elements of these strategies, as well as related risks and likely returns.

Beyond these strategic commodity-specific choices the Study identified several **cross-cutting issues** that need to be addressed, including, inter alia:

- reforming macro-economic and trade policies,
- strengthening physical and institutional capacities at all levels (producing, grading, storing, transforming, transporting, marketing, certifying, promoting, exporting),
- pursuing land reform policy leading to more clarity about land ownership,
- addressing the high costs of production faced by Sudanese farmers through, for example, selective time-bound "market-smart" subsidies on key inputs to production,
- abandoning certain long-standing practices penalising agricultural production and trade,
- streamlining government regulatory institutional framework affecting trade,
- mobilizing and empowering the private sector,
- strengthening policy making and trade-promotion institutions.

The Study has also highlighted certain broader pertinent issues that are in the minds of policy makers and on which more reflection may be needed, also in the form of additional analytical work. These included:

- The importance of being able to **compete in the domestic market** in addition to the search for export opportunities;
- The importance of **prioritizing regional markets** in view of evolving demographics, consumption patterns, the dynamics of regional economies and Sudan's cultural affiliations;
- The significance of **employing a holistic approach** in assessing the prospects of different agricultural commodities and not simply the narrow commercial export interests;
- The importance of considering the **increasing integration of agricultural and energy markets** in making production and trade choices;
- The urgency of **lifting the heavy burden of taxing agriculture**, considering the damage it causes to the sector and the insignificant budgetary implications it may entail;
- The imperative of **reversing investment trends to agriculture**, considering its pivot role in sustaining livelihoods and poverty alleviation;

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- The value in **using the WTO accession process astutely**, to reflect on the rationale of certain agricultural support policies and to take advantage of facilities and mechanisms available to build needed trade-related capacity;
- And, the imperative of **using oil to transform agriculture**, taking advantage of the unique opportunity available to Sudan to lift people out of poverty and offer them sustainable livelihoods.

The Study recommends the development of a time-bound **training programme** on trade policy and effective export promotion practices, the scope of which to be decided after careful consideration of needs in relation to what is already being offered under existing multilateral trade-related capacity-building programmes.

Finally, the Study proposes that the Ministry of Foreign Trade sets up an **Action Committee** with a mandate to work out how best to follow-up the specific recommendations made in this Study and how and in what capacity to involve other government entities, private sector stakeholders and bilateral and multilateral partners.

1. Introduction

1.1 Background

During the last 15 years the government of Sudan has undertaken an ambitious economic liberalization programme, including of its foreign trade regime. The country has experienced an impressive growth rate in aggregate GDP during the past decade. With the discovery of petroleum in 1999, Sudan has become a substantial oil exporter and this sector alone has been the driving force of the economy.

Substantial petroleum exports together with a more liberal overall trade policy, has allowed Sudan to begin a rapid integration into the world economy. However, this integration has been very uneven, both sectorally and regionally. Modernization of the agricultural sector and improvement of livelihoods in rural communities have been slow¹. It has been well recognized by national policy makers that while the petroleum sector would continue to be the driving force of the economy and the major source of aggregate economic growth, the sector provides little prospects for increasing employment directly. By and large, employment creation and sustainable poverty alleviation in the rural areas would have to come from the revival of the agricultural sector.

Not only the agricultural sector would continue to be the backbone of the economy² in terms of employment creation and contribution to equitable growth, but it would also have to regain its place as a source of foreign exchange. While prior to the discovery of oil, agricultural exports contributed the lion's share of the country's export earnings, their share has declined to some 50% by the end of the 1990s and to well below 10% in recent years. However, the high oil price swings in the last couple of years, has made it clear that dependence on oil export earnings alone entails large year to year variability in government economic planning and thus diversification of export should be a priority.

Sudan has a strong commitment to several regional trade initiatives (COMESA, GAFTA, etc.) and has also been eager to conclude its multilateral negotiations and become a full member of the World Trade Organization (WTO). While these initiatives are certainly an essential prerequisite for expanding exports, export growth requires a concerted effort at all fronts, including regaining lost shares in its traditional agricultural markets as well as export diversification, which would come about by the promotion of non-traditional exports. Sudan has benefited little from the main drive in world agricultural export growth in recent years, which comes almost exclusively from value-added processed products. Thus, it is clear that if Sudan is to improve its performance in the agricultural export market, there is no alternative but to seek also opportunities for diversification into higher value non-traditional export commodities and markets.

¹ Sudan is rich in agro-climatic diversity and the River Nile and its tributaries traverse it across large areas of productive soil, pasture and forests providing conditions for growing a wide variety of crops and for sustaining a large livestock population. However, several factors complicate the prospect of exploiting fully the country's large agricultural potential, among them high climatic variability and regional conflicts. Permanent migration from ecologically marginal areas to the towns is the usual consequence of a prolonged drought. Protracted conflicts in the South and in Darfur add to the numbers of displaced people and undermine the potential contribution of these regions to the country's economic growth. A population that provided for itself before becomes increasingly dependent on the market for its basic food needs.

² The agricultural sector, including livestock and forestry, contributes some 30-40% of the GDP, provides employment to 65-70% of Sudan's population and 50% of the raw material for the industrial sector.

1.2 Scope

The overall objective of the SENIS³ project of which this study is a part, is to contribute to the establishment of an EPA between the EU and the ESA States which will allow the latter to pursue effective and sustainable economic development and poverty alleviation strategies. A key objective of the EPA is to promote better integration of Sudan into regional and world markets⁴. In this context, it is imperative to analyze the conditions under which Sudan would be able to gain greater share of regional markets as well as increase its trade with the EU and other trading partners under more competitive terms than the preferential trade regime that enjoyed in the past.

It is well understood that central in Sudan's overall strategy to revitalize its agricultural sector and compete effectively in regional and world markets is to address the numerous constraints along the supply chain of agricultural products. Many of these constraints have already been identified by stakeholders and policy makers alike and efforts are being made to address some of them. Also, there is a good understanding of the sectoral and economy-wide benefits that would accrue to the country both in the short and longer term by strengthening the competitiveness of agricultural production and exports. What is often not fully appreciated is the concerted action that is needed along the whole supply chain (from the farm to the market) not only in terms of cost reduction but also in terms of quality, timeliness, consistency and reliability of supply, for agricultural products to compete in world and local markets.

In identifying and analyzing these constraints, the starting point is agricultural production at the farm level. The supply chain commences at the farm. Unless the farmer can earn a living, there would not be any commodities to export. Therefore the constraints discussed in this study are not simply *export constraints* which start at some point of the value chain. They are in addition, and primarily, *production constraints* and unless they are recognized as such isolated efforts to address strictly export-specific issues will fall at a vacuum.

Thus the notion of supply chain and value addition is central in this study. It is both a qualitative and quantitative framework, to the extent that data permits. It helps to identify key factors and constraints primarily responsible for problems encountered along the supply chain resulting in lack of competitiveness in the final destination, be it the world market or the domestic market. Examining all stages of the supply chain helps to identify problematic areas in the process and where interventions are needed. Also, this is important information in deciding which enterprises have potential for improvement and should be promoted, how best to allocate scarce investment resources, as well as in identifying promising areas where new policies or process innovations could have the greatest impact on competitiveness.

The scope of the study also extends to import substitution crops, considering the increasing dependence of the country on the world market for key basic foodstuffs and recognizing that Sudan may not be competitive in the world market in some products but it could compete in its domestic market⁵. Even in this cases however, the same exigencies and concerted actions along the supply chain are crucial for these products to compete against imported commodities.

³ Sudan EPA Negotiations and Implementation Support.

⁴ Strengthening the capacity of Sudan to participate effectively in the EPA negotiations and to implement and monitor the EPA, when concluded, is also an objective of the project.

⁵ Even assuming that the country has the capacity to finance imports of basic foodstuffs by petroleum export earnings, such trends may be unsustainable in the long term. In the absence of alternative employment to generate the purchasing power to procure foodstuffs and other basic necessities, rural communities in Sudan would have to produce most of the food they consume. Their self-reliance may be better served not necessarily by producing for the export market but, at least in the early stages of development, producing for self-consumption.

1.3 Approach

The undertaking of the Study was based on a participatory model, involving as much as possible direct stakeholders of both public and private sectors in the process. An International Trade Expert had the overall responsibility of the study and a National Team of Experts contributed inputs in their respective areas of expertise.

A large number of stakeholders from public institutions, the private sector including the export community, academia and the donor community were interviewed (see Annex 1). They expressed their perceptions of problems and constraints affecting individual commodities, and provided their views on how to address them. Cross-cutting issues affecting export trade in general were also discussed. This provided also an opportunity to verify certain hypotheses as well as to identify gaps in data and knowledge where additional research was needed.

The Study and its conclusions were presented to a Seminar in Khartoum attended by stakeholders from the public sector, the export community, academia and the donor community in Sudan and comments were solicited. Comments and suggestions made during this review process were incorporated into the draft and a final text was agreed upon.

Beyond the immediate objective of the study in providing broad guidelines to Sudan in its export diversification effort, benefiting from potential market access opportunities is a long process and necessitates a sustained involvement of relevant public and private institutions and agents. The participatory approach in carrying out this Study would need to continue beyond this initial stage in order to tackle the critical commodity-specific and cross-cutting constraints that have been identified and those that are likely to emerge in the future. Periodic evaluations and assessments of actions taken or to be taken would be necessary and, inevitably, corrective measures would be needed.

2. Overview of Recent Socio-Economic Developments of Sudan

2.1 From an Agricultural Exporter to an Oil Exporter

Foreign trade is an engine of growth and development. The exporting activity necessitates the mobilization and streamlining of different economic producing and service sectors for the provision of products in quantity, quality and price demanded by foreign buyers. In turn, the foreign exchange earned enables the country to procure capital goods, intermediate inputs, consumer goods and services that, in turn, make the national economy more productive and more competitive in world and domestic markets.

Sudan is well known for its huge natural resources and had a reputation of a major agricultural producer and exporter in the past, exporting a wide range of products, including gum Arabic, cotton, sesame, groundnuts, livestock, hides and skins as well as perishable products such as meat, fruits and vegetables. Its export markets were well diversified, including a large share to several European countries. Over the past three to four decades its market share in all these traditional exports has been substantially eroded, and its export base has become less diversified both in terms of commodities exported and export destinations. In a climate of increased globalization and greater trade liberalization everywhere, the country became increasingly vulnerable to global competition.

Sudan was not able to produce the quantity and quality of commodities demanded by the growing and increasingly discerning world markets. Many of Sudan's traditional export crops such as the long staple cotton, the white varieties of sesame and the Barberton groundnuts have lost their original prominence in world markets and were replaced by more competitive exporters even in Sudan's well-established markets. The bulk of Sudan's agricultural exports now come from a small number of primary commodities and is narrowly diversified geographically to a limited number of markets, mainly in the Middle East and Asia. Without much investment in agriculture (see below), low productivity and high cost of production, poor quality of packaging, high internal taxes and fees as well as high transportation costs to the port, the competitiveness of Sudanese agricultural exports has taken its toll. In recent years, the appreciation of the Sudanese currency has also undermined further competitiveness of its agricultural exports.

Notwithstanding the remarkable performance of some individual sectors, livestock in particular, by the 1980s and 1990s Sudan had turned from a dynamic and diversified exporter to a stagnant agricultural exporter with a very narrow export portfolio, in terms of markets and commodities. Nonetheless, its stagnating agricultural exports (hovering between US\$ 300 and US\$ 600 million for most of the 1980s and 1990s) still remained the dominant source of foreign exchange⁶ until the advent of petroleum exports starting in 1999 (Fig. 2.1.1).

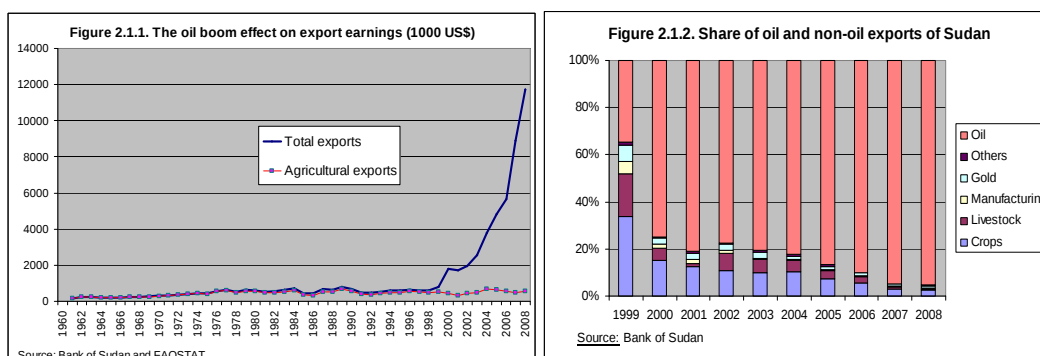
In aggregate national terms and from the single perspective of securing foreign exchange revenues, the demise of Sudan's agricultural exports may not seem important in view of the unprecedented boom of its petroleum export revenues. In absolute terms, while non-oil exports (mainly agricultural) remained stagnant, those from petroleum exports skyrocketed, to over US\$ 11 billion during the oil-price boom year of 2008, thus representing some 96% of total exports (Fig. 2.1.2).

Nonetheless, although the source of export earnings may not seem significant from a purely statistical viewpoint, the process of generating export revenues is fundamental from the perspective of equitable, broad based and sustainable economic development and poverty alleviation of the country. And while this concept has been well understood in Sudan all along, the trigger for

⁶ About four-fifths of non-oil exports came from agricultural products and the remaining from industrial sector exports.

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registering its importance came with the sharp drop in oil prices towards the end of 2008 and most of 2009 which reminded the government of the need to revise its policies on agriculture production and exports.



2.2 Changing Composition of Economic Growth and Consumption Patterns

Despite the sluggish performance of agriculture, the key sector of the Sudanese economy, the economic performance of Sudan during the past decade portrayed the ability of the country to contrive socioeconomic resilience and regain economic strength. Sudan had adopted and swiftly implemented sweeping macroeconomic policy reforms during the early 1990s which was a major step in putting the economy on a market oriented track. The reforms included laying out large numbers of employees and civil servants, privatization of public enterprises and deregulation of government marketing monopolies. However, only with the expansion of petroleum exports starting in 1999, the macroeconomic policies began to show any effects.

The effects of oil on the economy have been pervasive. The economy achieved a high growth rate of 6% to 10% of GDP during 2004–08 (Annex Table 6.1). Inflation rate dropped from more than 130% in 1996 to 4.8% in 2001 and continued on same level throughout the decade with some signs of a slight increase from 2007. The country indulged in a variety of public works projects, including building new highways of more than 700 km length, bringing the total road network to about 3000 km, as well as in the development of satellite and digital communication and optical fibre transmission. The new realities generated also the possibility of affording the importation of capital goods, inputs and intermediate goods, essential ingredients for reducing the cost of production and providing possibilities for increasing the competitiveness of Sudanese commodities in world markets.

While with the oil boom overall GDP increased rapidly, this has not been accompanied by an equitable distribution of wealth among the Sudanese people. Largely due to the expansion of the industrial and service sectors (Table 2.2.1), the share of agriculture has dropped from 50% to 35% of the GDP from 1999 to 2007. The orientation of the Sudanese economy on services and construction activities surmounted most of investment and commercial lending in the country. This change could be explained by the ease and quick returns of the service sector which attracted increasing attention by national and foreign private investors. Lower returns and higher risks of investment in agriculture have been acting as a limiting factor against expansion of private involvement in this sector. The whims of the Dutch Disease appeared to have trapped the economy of Sudan⁷.

⁷ In the classic economic model describing the *Dutch Disease* (see Corden W.M., Neary J.P. *Booming Sector and De-industrialisation in a Small Open Economy*, *The Economic Journal* 92, December (1982)), there is a non-traded sector

The return of Sudanese working abroad associated with needs for skilled foreign labour working in oil and construction businesses in Khartoum and other major towns and cities changed the patterns of food and durable goods consumption. There has been a major shift in food consumption in favour of imported wheat at the expense of domestically produced sorghum and millet⁸; demand for fast foods in cities increased rapidly; the importation of cars, building and furniture materials has been at an unprecedented scale. Even with the large increases of foreign exchange from petroleum exports, the much larger increases in imported goods exerted pressures on the balance of payments of the country.

Table 2.2.1. Share of agricultural sector in GDP of Sudan (%)

Sector	1999	2000	2001	2002	2003	2004	2005	2006	2007*
Agriculture	50	46	45	46	46	39	40	37	35
Industry	9	15	17	23	24	28	28	28	31
Services	34	32	32	31	30	33	32	36	34
Total	100	100	100	100	100	100	100	100	100

* Preliminary figures

Source: Bank of Sudan

2.3 Persisting Severe Poverty and Disparity

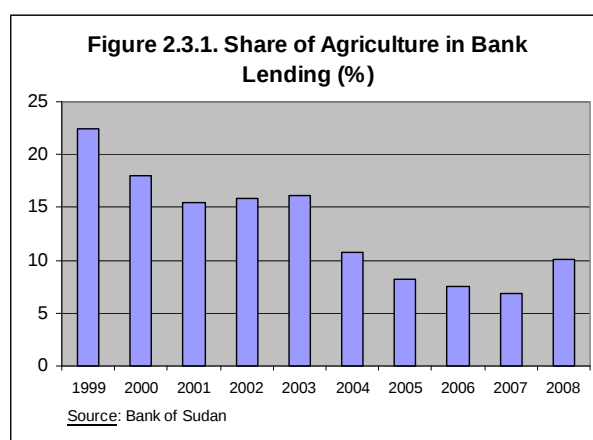
Despite the seemingly robust performance of the Sudanese economy in aggregate terms in recent years, the agricultural sector, which plays a critical role in the alleviation of poverty, has been ignored in the process. The development of agricultural sector has been accorded low attention in government finance. In the distribution of bank finance by sector during 1999–08, the share of agriculture averaged 9.7% and had declined to as low as 6.8% in 2007 compared to 22.4% in 1999 (Fig. 2.3.1). It comes as no surprise that this has led to a slow and uneven economic development and limited gains in terms of poverty reduction in Sudan, where most of the poor and food insecure live in rural areas and depend on agriculture for a living.

Sudan continues to remain among the poorest countries in the world and poverty and food insecurity levels are increasing. A large part of the population (50–70 %) lives below the poverty line and the country ranks 147 out of 177 countries in UNDP's most recent Human Development Index (HDI)⁹. Sudan is classified as Least Developed Country (LDC), with a per caput income of about \$600 in 2005.

(services) and two traded good sectors: one booming (usually extraction of petroleum) and one lagging (manufacturing or agriculture). A sudden boom in petroleum revenues increases the demand for labour in the services sector, shifting labour away from the lagging sector (manufacturing/agriculture). As a result the price of non-traded goods will increase, however, those of traded goods (manufacturing/agriculture) will not as they are set internationally. This process leads to an increase of the real exchange rate which makes the manufacturing/agriculture sectors less competitive in world markets; at the same time and public services become entangled with business interests. There are also other harmful effects often associated with the *Dutch disease*, such as corruption and protectionist policies for affected lagging sector industries, together described as 'resource curse'.

⁸ With the sluggish performance of domestic food production, growing food gaps in both the cities and rural areas were filled by increasing wheat imports and food aid.

⁹ *Human Development Report 2007/2008*, UNDP, 2008.



There are great disparities in the level of human development between different regions, and across the rural-urban and gender space¹⁰. Most of the poor are to be found in the traditional farming areas where small-scale farms are the norm (see next Chapter). Large disparities in malnutrition are evident, with incidence of under nutrition ranging from 4% in Khartoum to 17% in Jonglei. While under-five mortality has decreased in Kassala, Red Sea, Khartoum and White Nile it increased and remained high in Gedaref, West Darfur, Warab, Blue Nile, Central and West Equatoria. Overall, only some 60% of the country's population has access to improved water sources and some 31% use improved sanitation facilities. However, access to the former ranges from 22% in Jonglei and 80% or more in Northern, Khartoum and Sennar States. Similarly, access to improved sanitation facilities ranges from as low as some 5% in Jonglei to about 78% in Khartoum and 83% in River Nile States.

Health conditions improved in the central and northern states, particularly in the urban areas, but remained poor in other states and in rural areas. In Southern Sudan, the health indicators are grim and disproportionately worse. Infant mortality is high at 102 deaths per 1,000 live births compared to 71 deaths per 1,000 live births in Northern Sudan.

Finally, there are substantial gender inequalities. For example, under-five mortality rates for Sudan overall are 106 and 119 per 1000 live births, for male and female children, respectively. Services specific to women, such as prenatal and antenatal care, remain underprovided, and maternal mortality is persistent. Women enjoy less access to credit, land, and education – critical factors for improving their living standards as well as for contributing to the country's economic growth.

With the signing of the Comprehensive Peace Agreement (CPA), the country began to revise its socioeconomic policies and to consider more seriously wealth redistribution and regional development. However, Sudan experienced yet another setback in 2003 with the eruption of a conflict in the Darfur region, an issue which is still under negotiation in the search for a lasting peace settlement.

The large influx of internally displaced persons (IDPs) into cities and towns (mainly into Khartoum state), due to wars, drought, floods and economic hardship, create additional problems for poor services in the urban areas and their absorption in the labour force is problematic, in view of poor skills and limited job opportunities. Moreover this migration has deprived the original homelands from active labour for agricultural production and other livelihood activities to the detriment of the rural economies.

¹⁰ *Sudan Household Health Survey (SHHS) and Millennium Development Goals (MDG) Indicators*, (SUMMARY TABLE OF FINDINGS), Sudan, 2006. <http://www.irinnews.org/pdf/pn/SHHSreport.pdf>

The soaring food prices in 2007/08 and the drop of petroleum prices in 2008 forced the government to realize the importance of agriculture as an export sector, based on renewable resources, and as the key sector for securing and improving the livelihoods of rural people. A supreme body was organized under the direct authority of the Vice President to implement the Agricultural Revival Plan (ARP) designed for the development of the agricultural sector and poverty alleviation in the country. The Plan aimed at broadening the base of rural development and export earnings, with particular emphasis on reactivation and diversification of non-oil exports.

2.4 Agricultural Revival Plan: Impetus to Strengthening Agricultural Production and Exports

The vulnerability of Sudan's dependence on a narrow base of primary agricultural exports has long been recognized by the Government and efforts were made since the early 1990s to cushion the economy from adverse terms of trade and instability in export earnings¹¹. The latest effort is enshrined in the Green Mobilization (GM) plan of 2006, subsequently turned into the Agricultural Revival Program (ARP) in 2007¹². The key focus of the GM/ARP is on the development of appropriate technologies, the transfer of which would be assisted with timely provision of location- and crop-specific agricultural inputs, extension services and credit facilities, to reach most producing areas of the country. The Plan also focuses on the development and protection of animal resources, and of natural resources in general, as key strategy to sustainable economic growth and poverty alleviation. Strategies in the Plan for diversifying export earning are envisaged for both the short and longer term.

To ensure implementation, a number of advisory commodity boards have been established involving relevant stakeholders to advise on solutions for removing marketing, legislative and other policy constraints limiting growth in agricultural production and exports. Active boards so far are those related to livestock, meat and sesame exports. Other boards envisaged are yet to become functional.

The 'partnership strategies approach' adopted by the ARP to expand agricultural exports of the Sudan has had mixed results so far. The expected participation on the part of Arab investors from Saudi Arabia and the Gulf Countries has yet to materialize. The volume of the current Arab investments in Sudan is still weak involving the development of some 50,000 feddans in Al Raghi project and 10,000 feddans in Zaid Al Kheir project in the Northern, River Nile and Gezira States¹³. These investments are expected to grow wheat, vegetables, dry fodder and fatten cattle and sheep for exports to Arab countries.

The wild fluctuations of petroleum prices over the last 2-3 years reinforced the need for strengthening agricultural exports to alleviate the inherent risks of depending on exports of oil alone. The recent soaring world prices of food has also provided yet another strong motivation to the Government of the necessity of pursuing vigorously the Agricultural Revival Plan, both to broaden the export base but also to contain Sudan's growing dependence on imported foodstuffs. Thus the ground is fertile on the part of the Government for supporting agriculture and revitalizing the country's agricultural exports, and the present Study is well placed in providing more impetus to this effort by fine-tuning export promotion policies and identifying strategies and interventions that could be most promising.

¹¹ For a review of such policies see, for example, Nasredin A. Hag Elamin, *Export Performance in Sudan: Recent Trends and Policy Impact*, Journal of Economic Cooperation Among Islamic Countries 18, 4 (1997). This paper contains a good overview of the successive economic development programmes from 1973 onwards and the reasons of failing to achieve their objectives. It focuses in particular on the outward-oriented trade strategy of the 1990s and notes that none of the adopted policies appear to have created a clear improvement in price incentives for exports.

¹² *Agricultural Revival Program (ARP)*, Khartoum, 2007.

¹³ Ministry of Agriculture and Forestry

3. Performance of Agricultural Production and Exports of Sudan

This Chapter first provides an overview of the agricultural sector in Sudan in terms of its main farming systems and their importance in the economy of the country. It then addresses in detail the production performance of individual commodities, their importance for the domestic market and their contribution to exports. It analyses factors that have been responsible for observed trends.

3.1 Profile of the Agricultural Sector

Sudan is endowed with arable land of about 209 million feddans (87 million hectares)¹⁴, and forests and natural pastures of about 279 million feddans (117 million hectares). The Sudanese agriculture produces the main food crops and animal products for direct human consumption, provides employment to two-thirds of the labour force in addition to employment generation in associated facilitating services, contributes about 35% of the GDP and about 80% of non-petroleum export earnings, and supplies essential inputs to domestic manufacturing and artisanal industries. Cultivated area in Sudan increased from 18.3 million feddans (7.7 million hectares) in 1989 to around 40.5 million feddans (17 million hectares) in 2007.

Agriculture in Sudan consists of three main farming systems: rain-fed traditional farming, rain-fed semi-mechanized farming and irrigated farming.

- **Rain-fed traditional farming** areas cover some 18 million feddans in Kordofan, Darfur, Sennar in the North and the Blue and White Nile areas in the South and grows staple food crops (sorghum and millet), oil seeds (sesame and groundnuts) and non traditional crops (melon seed and Karkade). These farming areas provide the livelihood of small-scale farms averaging about 24 feddans¹⁵ who also have access to considerable communal grazing areas that accommodate also most of the extensive **livestock production** in the country. Both crop and livestock production in rain-fed traditional farming areas is estimated to account for about 66% of agricultural GDP (average 2000-05). They also provide livelihood to the some 70% of Sudan's population. It is by far the most important agricultural system in the country.
- **Rain-fed semi-mechanized farming** areas cover about 14 million feddans in high rainfall areas, ranging between 400-800 mm annually in Gedaref, Blue Nile, White Nile, Sennar and Southern Kordofan (Nuba Mountains) areas. It produces sorghum, sesame, sunflower and little of short stable cotton, under mechanized conditions for ploughing and seeding and manual labour when it comes to weeding and harvesting. This farming system does not support livestock production. It accounts for a small share of agricultural GDP (about 1%) and supports an even smaller share of the total population of Sudan (less than 1%).
- **Irrigated farming** areas comprise some 4-5 million feddans of land suitable for irrigation within the Nile basin in Northern Sudan, River Nile, Khartoum, Gezira, Sennar, Blue Nile and White Nile States¹⁶. The Gezira irrigation scheme accounts for almost half of that area with a gravity-fed command area of 2.1 million feddans (about 882,000 hectares)¹⁷. Three other schemes along the Nile (Rahad, Suki and New Halfa) have a total command area of one million feddans (420,000 hectares). All these schemes are government-owned managed on tenancy basis where each tenant is given between 22.5 and 40 feddans. The main crops grown are cotton, groundnuts, wheat, sorghum, sugarcane, sunflower and vegetables. The vegetables area is 2.5 feddans per tenant. The irrigated farming system accounts for about 26% of agricultural

¹⁴ One feddan is 0.42 hectares or 1.038 acres

¹⁵ General Administration of Planning and Agricultural Economics, Ministry of Agriculture and Forests, "Crop Production Costs and Returns to Family Labor in the Traditional Farming Areas," July 2006.

¹⁶ The Nile and its tributaries provide the main source of irrigation water. The share of Sudan from the 1958 Nile Agreement between Sudan and Egypt is about 20.5 billion cubic meters at Sennar and about 18.5 billion cubic meters at Aswan.

¹⁷ Babiker Idris, *The Exports of Horticultural Products*, TCP 2904 (A), FAO, April 2004.

GDP and supports some 12% of the population of the country.

Sudan has an estimated 140 million heads of **livestock** composed of cattle, sheep, goats and camels. The livestock sector retains its top rank in terms of its contribution to agricultural GDP (about one-fifth). It is to be noted that the largest share of livestock production is under nomadic and agro-pastoral systems, predominantly in the rain-fed traditional farming areas. The sector provides livelihood for between 14-20% of the Sudanese population and has contributed about 20% of agricultural export revenues during the 1990s¹⁸.

The country is endowed with fresh water and marine **fishery resources**, with an estimated annual catch of 55,000 MT, estimated to represent some 30% of the potential catch. Gum Arabic and Senna Mekka are two **forest** and pastures products that fetch good markets abroad. There are also significant teak and mahogany forest areas in Southern Sudan, which supply domestic needs and also exported.

Table 3.1.1. Shares of agriculture sub-sectors in the GDP (%)

Sector	1999	2000	2001	2002	2003	2004	2005	2006	2007*
Irrigated	13	13	13	13	12	11	11	10	11
Mechanized	0	0	0	0	0	0	0	1.4	1
Traditional	9	8	1	8	7	0	5	6	6
Forestry	0	0	0	0	0	0	0	2	2
Livestock	22	22	22	21	21	20	19	17	15
Agriculture	50	46	45	46	46	39	40	37	35

* Preliminary figures

Source: Bank of Sudan

Potential lands for expansion and diversification of agricultural production and exports are found in many parts of the country. The Qoz lands are suitable for pastures and rain-fed crop production; the central clay plains are suitable for irrigated and rain-fed crop production and natural grazing pastures; the Jebel Marra lands at 1000 altitude above sea level are suitable for Mediterranean rain-fed and irrigated crops and pastures; the Nuba Mountains are suitable for crop production; the Southern clay plains are suitable for rain-fed and irrigated crop production, pastures and forests; the south-eastern lands are suitable for production of tea, coffee, tobacco, fruits, timber forests and pastures; and the rocky and stone lands are suitable for tropical crops and pastures, except in the south-eastern part of the country where biting flies restricts raising of livestock.

3.2 Cereals Sector

3.2.1 Increasing Import Dependence

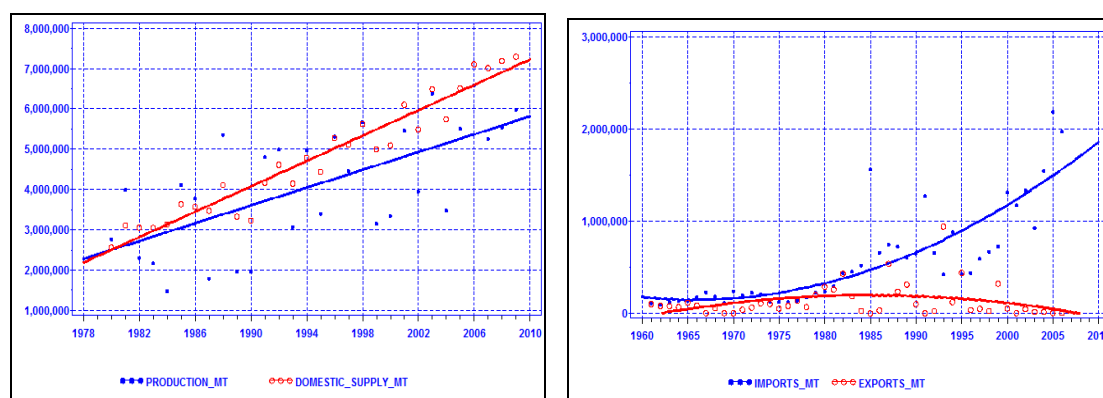
Starting in the beginning of the 1980s, Sudan became a net importer of basic foodstuffs (Fig. 3.2.1). Domestic needs for cereals were increasing faster than aggregate domestic production and the difference was made by increasing imports which have now reached an average of about 1500 thousand MT per annum, with wheat accounting for about 80% of the total throughout the 2000-09 period. Part of these cereal imports was in the form of food aid to cover structural and particularly emergency needs. Food aid flows increased from an average of less than 100 thousand MT in the 1980s to an average of 330 thousand MT in 2000-09. As a result of these trends, the self-sufficiency in cereals of Sudan has declined from an average of 90% in the 1980s and 1990s to an average of 81% during 2000-09 (Table 3.2.1).

¹⁸ Ministry of Animal Resources and Fisheries.

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Among the five cereals produced in Sudan, maize and rice continue to remain minor crops with a combined share in total cereal production of less than 2%, while wheat had made significant gains in the 1990s to average over 12% of total production during this period before retreating to below 10% in the 2000s. Millet has registered consistent gains over the whole period, increasing its share in total cereal production to over 12%. However, the bulk of cereal production continues to come from sorghum which alone is responsible for over three-quarters of total cereal production, notwithstanding a decline in this share from over 80% in the 1980s. It is because of this paramount importance of sorghum for the food security of the country, and also because it has been exported periodically, that this commodity is being analyzed in more detail in what follows. Also, discussed in some detail is wheat in view of its importance as the main imported foodstuff.

Figure 3.2.1. Increasing cereal import gap of Sudan (MT)



Source: FAO

Table 3.2.1. Sudan: Cereal Production and Consumption

	1980-89		1990-99		2000-09	
	Production	Share	Production	Share	Production	Share
Crop	(MT)	(%)	(MT)	(%)	(MT)	(%)
Maize	29200	1.0	39800	1.0	61600	1.2
Millet	321100	10.8	467700	11.2	630900	12.2
Rice	4478	0.2	2550	0.1	31130	0.6
Sorghum	2420400	81.4	3164500	75.7	3961600	76.7
Wheat	199500	6.7	508500	12.2	481300	9.3
Total Production	2974678	100.0	4183050	100.0	5166530	100.0
Total Consumption	3306450		4643514		6400960	
Self-sufficiency ratio (%)	90.0		90.1		80.7	

Source: Cereal Commodity Balance Sheets, FAO, Markets and Trade Division.

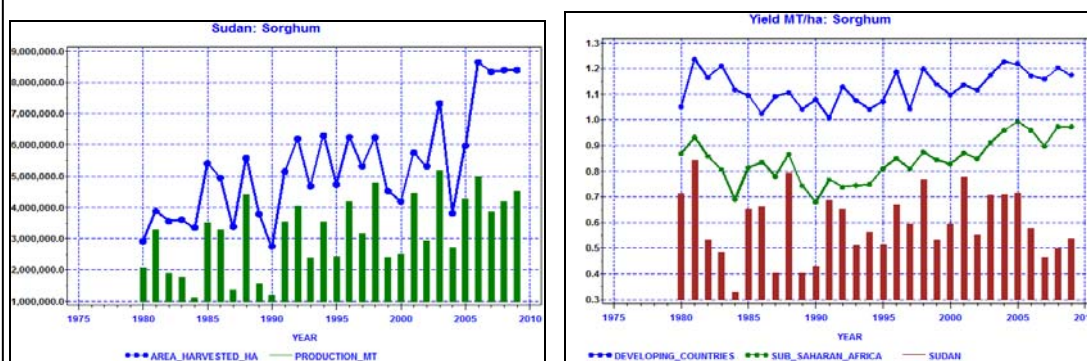
3.2.2 Sorghum Production and Utilization

Because of the large share of sorghum in total cereal production of Sudan, food security for a large share of the population is very closely associated with sorghum production. All three production systems are producers of sorghum. The semi-mechanized farming system is responsible for about 42% of output, about 35% is produced in the rain-fed traditional farming areas and the remaining 23% is produced under irrigated lands.

Assessing Sudan's Export Diversification Potential in Agricultural Products

Sorghum production is highly variable from year to year and this is partly due to the area harvested as well as variability in yields (Fig. 3.2.2). Yields are generally low compared to Sub-Sahara Africa and all developing countries taken together. Sorghum yields averaged some 0.61MT/ha in Sudan during 2000-09, compared to 0.92MT/ha for Sub-Saharan Africa and 1.17MT/ha for all developing countries. The corresponding average for developed countries is 3.66MT/ha which is six times the average yield of Sudan. Based on the distribution of sorghum yield for all countries in the world, 94% of countries had a yield greater than the average of 0.5MT/ha attained by Sudan in 2008. What is also notable is that while other regions registered some gains in yields during the past two decades, Sudan's average yield has been static.

Figure 3.2.2. Sorghum area harvested, production and yields



Source: FAO

The origin of the poor trends in sorghum productivity is due to the crop under rain-fed conditions, both in semi-mechanized systems and the traditional farming systems, where yields are often one-third of those under irrigated farming. In comparing these yields with those under irrigated farming systems over the past 34 years¹⁹, a positive trend of 14.5 kg/feddan per year for irrigated sorghum and a negative trend of 4.5 kg/feddan per year for rain-fed was found. It was noted that yield improvements under irrigated farming were largely attributed to variety and plant nutrition technologies undertaken by the Agricultural Research Corporation and fertilizer supply by production schemes. On the other hand, the declining productivity under rain-fed farming may have been due to natural resource degradation from expansion of cultivated area into marginal lands, and mono-cropping practices, especially under semi-mechanized farming in eastern Sudan. Such problems would have to be addressed by offsetting management practices such as appropriate crop rotations, water harvesting techniques and use of drought-tolerant varieties.

As shown in Table 3.2.2 while Sudan used to be a significant net exporter of sorghum in the 1980s (net exports amounted to 10% of domestic supply), this position had weakened considerably in the 1990s (net exports amounted to only 4% of domestic supply) and Sudan turned into a net importer during 2000-09. The strategic importance of sorghum in Sudan's food security is evident by the fact that carry-over (or closing) stocks have been a significant share of domestic supply. Their share was even much larger in the 1980s when on average carry-over stocks amounted to one-third of domestic supply. Stocks contribute to stabilizing domestic market threatened by the considerable variability in production as discussed above.

¹⁹ Hamid Faki, *Agricultural productivity in Sudan*, Background Paper to the DTIS World Bank Study, December 2006.

Table 3.2.2. Sorghum balance sheet

	1980-89		1990-99		2000-09	
	Quantity	Share	Quantity	Share	Quantity	Share
	(MT)	(%)	(MT)	(%)	(MT)	(%)
Production	2420400	111.9	3164500	104.7	3961600	98.9
Exports	303800	14.0	232000	7.7	175000	4.4
Imports	90900	4.2	108840	3.6	184560	4.6
of which: Food aid	8700	0.4	63840	2.1	180810	4.5
Closing Stocks	714000	33.0	656000	21.7	425000	10.6
Domestic supply	2162500	100.0	3021340	100.0	4006160	100.0
of which: Feed use	90500	4.2	338400	11.2	520000	13.0

Source: Cereal Commodity Balance Sheets, FAO, Markets and Trade Division.

Sorghum, being the main staple crop and being produced widely under all production systems in Sudan, has been and continues to be the main food security crop of the country. Sorghum is stored in periods of good years and is released into the market in periods of lean years. It constitutes the main crop in the national food reserve of Sudan managed by the Government.

In line with the objectives of the national strategic food reserve, administered by the Strategic Reserve Corporation (SRCO), the Government plays an important role in the marketing of sorghum. The Government enters the market as a buyer to replenish the reserve and as a seller of sorghum mostly during lean years but also in other years to 'roll over' old stock. Supplies from the strategic reserve can also be exported in cases of surplus production and such exports took place twice in the recent past in 2006 and 2007²⁰.

The target of the strategic reserve is for 600,000MT of grain, although at present the actual reserve is a fraction of that, some 60,000MT. Part of the problem is related to lack of storage facilities of adequate quality. While the intentions of the Government in pursuing an active role in the market for such a strategic commodity as sorghum are well placed, the history of public stockholding operations is not very encouraging. It is also to be noted that up to now the role of bridging the gap between lean and good years has been played largely by the private sector, naturally at a profit, but serving the country well as evidenced by the large size of stocks carried forward. The question therefore arises whether a Government agency can do better than that and at what cost for the society. It has happened in other countries that when the Government enters the market of a commodity, the private sector retracts. On balance the outcome would depend on how well the strategic reserve is managed but in any case it would appear that more careful analysis may be warranted about this issue, including on the scope of the wide-ranging activities that have been assigned to the SRCO²¹.

Another important characteristic of sorghum is its role as a source of feedstock for fattening cattle before they are delivered for slaughtering. An increasing share of total supply is used as feed (Tables 3.2.2). It amounted to an average of some 4% in the 1980s and has grown since then to an average of 13% during 2000-09. This trend is surprising considering the high cost of sorghum in

²⁰ SRCO, personal communication, June 2009

²¹ The main objectives of the SRCO include, inter alia: building and managing strategic commodities, mainly food crops, and make available related finance for the purpose; undertake functions related to storage facilities, including expansion of storage capacity in line with increasing production and to satisfy the needs of the market; sell stock to local markets in periods of shortage and export in periods of surplus; replenish commodities in a reasonable time; and provision of strategic commodities to relevant agencies as the needs arise. In addition to sorghum, the strategic food reserve may hold smaller quantities of wheat and millet, as well as maize for animal feed.

the domestic market and, in turn, it explains somewhat the high costs of meat in the country. At the same time it raises ethical issues in view of the competition in the use of a key food security crop between food for direct human consumption and feed for meat production. To the extent that feed use contracts when prices are high, the extra quantity that otherwise would have been used for feed could be available for food consumption and this could have a stabilizing effect on the market²². But that would not happen unless alternative cheaper feeds are available and this raises the issue of exploring appropriate policies for increasing the production and utilization of alternative sources of livestock feed, including by-products from other crops such as cakes from the oilseeds sector (see below), with due respect, of course, of the necessary mix of the two sources to meet both the protein and carbohydrate requirements of the animal. It would appear that this issue also warrants further study.

3.2.3 Wheat Production and Utilization

Wheat is not an export crop of Sudan but an important import substitution crop, considering the rapidly growing wheat imports as already noted. In that respect the national effort in increasing wheat production has been a priority. Before 1960, apart from small areas in Darfur and Kordofan, Sudan grew wheat only in the northern section of the Nile valley, and even there only on limited scale. Because of shortage of suitable land and the large cost of irrigation water in the north, the Government then decided to grow wheat on the Gezira scheme, although environmental and climatic conditions there are less favourable for wheat than they are in the north. At the same time wheat cultivation was extended to the New Halfa Agricultural Production Scheme in the east, on the Atbara river²³.

Of the three wheat growing areas, the Gezira produces the largest volume. By the 1990s the area planted with wheat had supplanted a third of the land formerly seeded with cotton and wheat production increased by 2-3 times the level of the 1980s. However, this level could not be sustained and production fluttered by the late 1990s to recover again during the past 4-5 years (Fig. 3.2.3). Fluctuations in productions followed closely those of the area harvested. Yields have also varied considerably, sometimes below 1MT/ha but more often well above 2MT/ha, especially in recent years. Nevertheless, they are below the average for developing countries as a whole by some 25-30%.

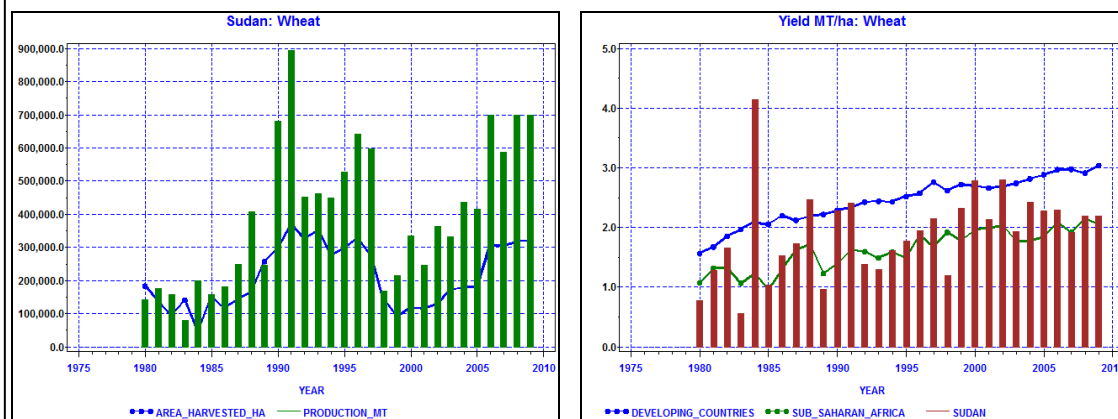
Water and climate have been a limiting factor. Wheat has to be grown in winter, but the Sudanese winter is too short. Even then, the temperature in most of Sudan is too warm to realize large yields. In addition, wheat yields are very sensitive to planting dates, irrespective of the varieties used²⁴. In the long term, yield increases will largely depend on improvements of heat-tolerant and short-duration wheat varieties.

²² A critical factor determining whether there is a stabilizing or destabilizing effect of sorghum use as feed is the elasticity of the demand of beef. If the demand for beef is highly elastic, feed use would contract in years of high prices, resulting in more availability of grain for direct human consumption. On the other hand, in years of low prices, more sorghum would be used as feed thus preventing the prices from dropping too low. The former effect is good for the consumer and the latter good for the farmer. Considering the importance of sorghum for the country's food security, this issue of food/feed competition should be a topic for further study.

²³ *Wheat production potential in Sudan*, FAO wheat database, Rome.

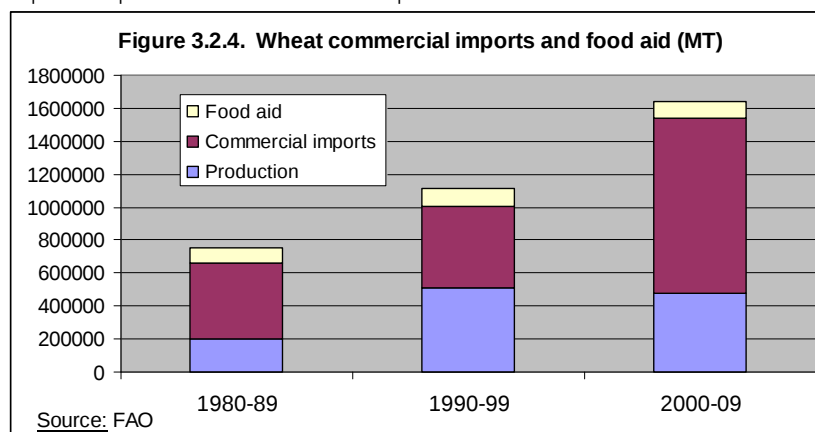
²⁴ Trials at experimental stations show that the maximum yields of semi-dwarf Mexican wheat varieties sown between mid-October and mid-November are 3.57 tons/ha in the Northern region, 2.85 tons/ha in the Gezira and 1.9 tons/ha in New Halfa; when planted between mid-November and mid-December, yields on farmers' fields are only a third of those attained on the experimental farms. This gap shows where the potential lies for increasing production.

Figure 3.2.3. Wheat area harvested, production and yields



Source: FAO

Wheat imports have increased considerably, especially since 1999 (Fig. 2.2.4), and on average three-quarters of the wheat consumed during 2000-09 was imported. Food aid also continues to be an important part of the total wheat imported into Sudan to meet the needs of displaced people.



Source: FAO

3.3 Oilseeds Sector

3.3.1 Production and Utilization

The main oilseed crops of Sudan are groundnuts, sesame and sunflower. The first two have always been important crops for the country while sunflower emerged from mid-1980s onwards. In quantity terms, groundnut production is the largest but also the most variable (Fig. 3.3.1), while sunflower has remained relatively of minor importance in quantity terms. Overall, Sudan continues to be a net exporter of oilcrops, although the gap between aggregate supply and domestic needs is narrowing and aside from sesame seed, the bulk of production is consumed domestically (see below). Oil is produced from all three crops with groundnut oil representing the lion's share of the total. Nearly all oil produced from all seeds is destined to the domestic market.

Oilseeds are produced in all three farming systems. The bulk of groundnuts is produced by the traditional rain-fed farming system, particularly in the areas of North Kordofan and South Darfur, and smaller but important quantities in the irrigated schemes such as Gezira. Production of sesame takes place mainly in the semi-mechanized rain-fed farming areas and to a lesser extent in the traditional areas. Sunflower is produced mainly in semi-mechanized rain-fed areas. It was

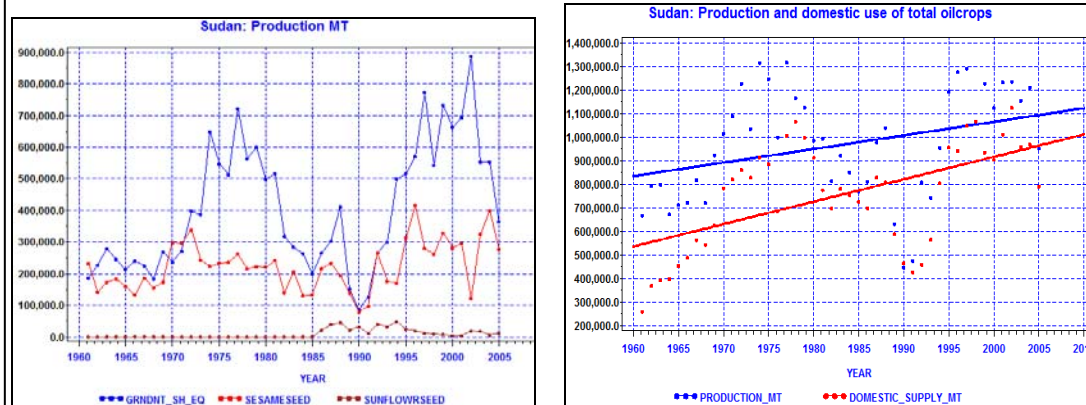
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introduced to the farmers in Damazine area at early 1980s and by 1985 sizable quantities were traded and subsequently sunflower oil production followed. Sunflower oil was accepted by the Sudanese consumer and its usage is increasing progressively²⁵.

Aggregate groundnut yields are low and highly variable (Fig. 3.3.2). While groundnut yields in Sudan were above the average for Sub-Saharan Africa up to the mid-1980s, they have been consistently below since then and as a result there is a widening gap between the two, with those of Sub-Sahara Africa having a positive growth and those of Sudan a strong negative one.

As for other crops there are substantial differences in productivity between irrigated and rain-fed yields. Groundnut yields under irrigated conditions are substantially higher than those under rain-fed (from 3 to 5 times higher²⁶) and the latter were also much more variable than the former. Also, the observed declining trend in overall groundnut yields of Sudan is due to those of rain-fed areas while yields under irrigation have been increasing.

Figure 3.3.1. Oilseeds production and utilization



Source: FAOSTAT

It is clear that the modest long-term increase in groundnut production has come from increases in area under cultivation and not from productivity gains (Fig. 3.3.2). For this crop to turn around and become important in meeting the growing domestic needs and also to produce surplus for export, yields would have to improve particularly under rain-fed conditions.

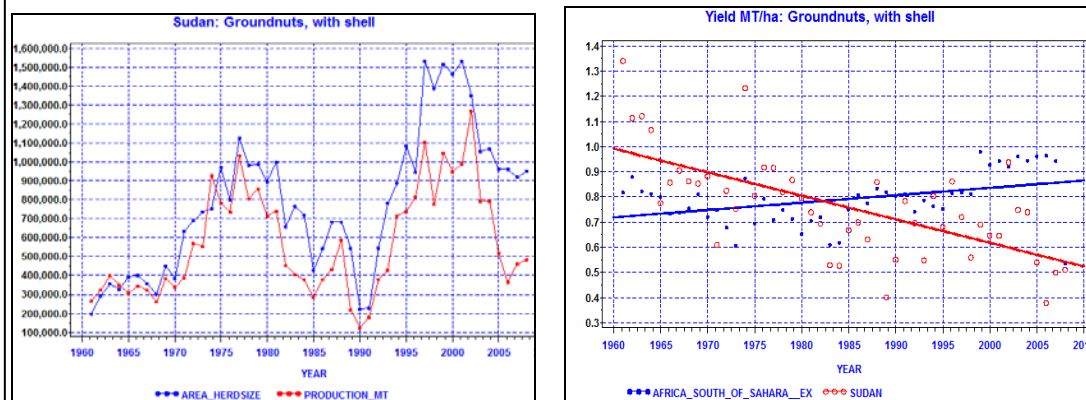
The story is worse for sesame seed, where the negative trend in long-term yields is much sharper than that for groundnuts (Fig. 3.3.3). Current yields are often one-fourth or even one-fifth of those attained in the early 1960s. Yields were at par or above those of Sub-Sahara Africa up to the end of the 1960s, but consistently and considerably below since then, so that yields of Sudan are now about two-thirds and often less than half those of Sub-Sahara Africa. There are no major differences in the trend of yields between the two rain-fed farming systems where sesame is produced, although on average yields of semi-mechanized areas are slightly higher than those of traditional farming²⁷.

²⁵ Sunflower is expected to lead the world plant oil production in the future because of its low content of saturated amino acids. *Strengthening National Capacity in Agricultural Trade Negotiations of the Sudan: An analysis of Sudan's Export Potential of Oil Crops in the Sudan*, TCP/SUD/2904(A), FAO, 2004.

²⁶ Hamid Faki, op. cit.

²⁷ Hamid Faki, op. cit.

Figure 3.3.2. Groundnut production and yields



Source: FAOSTAT

What is more pronounced in sesame production compared to groundnuts is the substantial growth in the area planted, partly to compensate for the sharply declining yields (Fig. 3.3.3). Thus area under sesame cultivation more than quadrupled from the 1960s to the present while production barely doubled and at times has been even below the levels attained in the 1960s. It is superfluous to conclude that productivity gains in sesame are critical for the survival of this important crop, especially since the largest share of production is destined for the export market, unlike that of groundnuts. Beyond the need of sustaining export earnings, sesame cultivation is also very important for employment creation, as harvesting, in particular, is very much a labour intensive activity. This is due to the very careful care that needs to be exercised in harvesting the seed heads to avoid the shattering and consequent loss of the sesame seeds. However, this is largely a seasonal activity and often not an adequate incentive to keep the labour force in the rural areas and consequently substantial losses do take place due to lack of adequate labour at the right place and time.

The situation is somewhat better for sunflower production. Yields attained consistent gains since the late 1980s when this crop was introduced and are now above the average obtained in Sub-Saharan Africa (Fig. 3.3.4). Nevertheless, again, sunflower yields are very variable, as is the area under cultivation and by implication the final production. As in the case of the other two oilcrops, the profitability of this crop would depend on efforts to stabilize yields and attain sustained level of output.

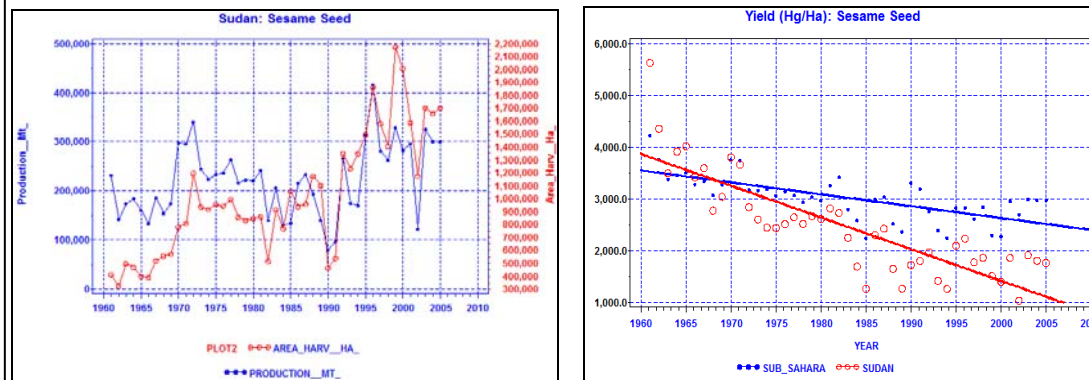
3.3.2 Exports of Oilseeds

As already remarked, aside from sesame seeds, nearly all oilseeds and derived oils are now consumed in the country (Table 3.3.1 and Fig. 3.3.5). The remarkable change over the longer term has been the nearly complete withdrawal of groundnuts from the export market. Exports of groundnuts declined drastically during the 1980s and 1990s and the loss of the European market because of aflatoxin infection of Sudanese groundnuts was a final blow to an already ailing sector (more on this at a later Chapter) ²⁸. Because of the still low production of sunflower seeds, not much is exported although there is great interest from the private sector and concrete plans for increasing production considerably in the future.

²⁸ The block of aflatoxins infected groundnuts by the EU has not been specific to Sudan but affected many countries where aflatoxin levels exceeded the strict European threshold levels.

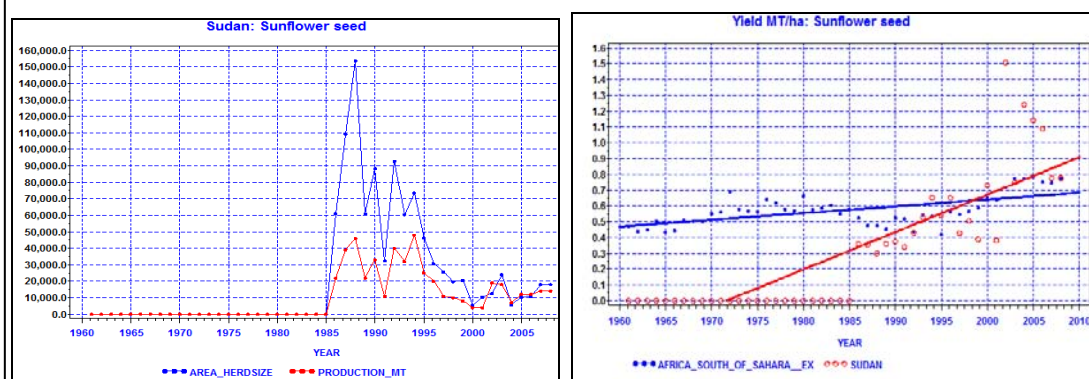
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Figure 3.3.3. Sesame production and yields



Source: FAOSTAT

Figure 3.3.4. Sunflower production and yields



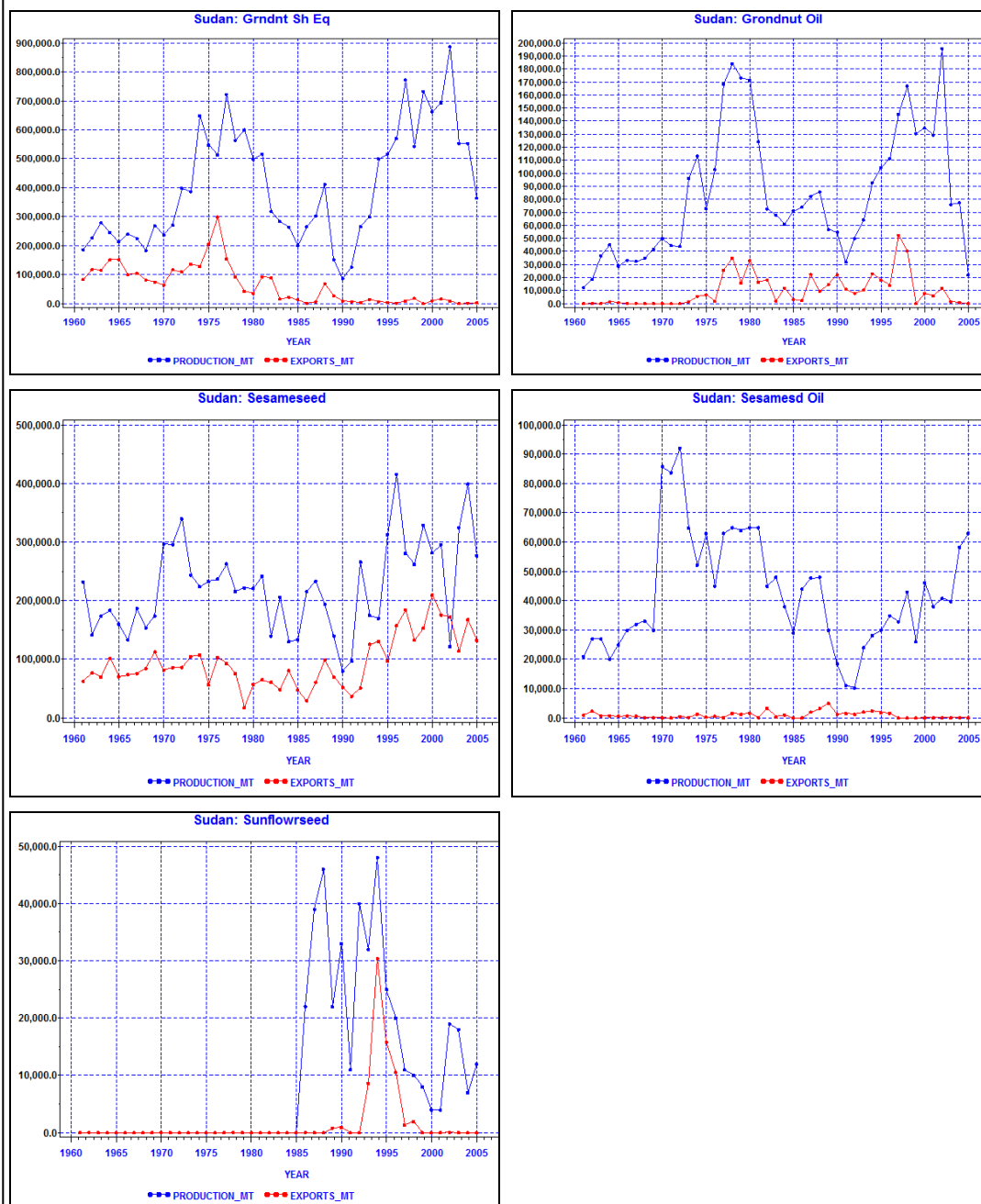
Source: FAOSTAT

Table 3.3.1. Export shares of oilseeds and derived oils

		1961-63		1971-73		1981-83		1991-93		2003-05	
		(MT)	(%)	(MT)	(%)	(MT)	(%)	(MT)	(%)	(MT)	(%)
Ground nut seeds	Production	230,947	100	352,100	100	372,867	100	230,533	100	490,000	100
	Exports	105,525	46	120,866	34	65,611	18	8,088	4	1,638	0
Ground nut oil	Production	22,606	100	61,562	100	88,320	100	48,667	100	58,454	100
	Exports	51	0	523	1	12,190	14	9,800	20	833	1
Sesame seeds	Production	182,633	100	293,333	100	196,000	100	179,333	100	333,667	100
	Exports	69,890	38	92,579	32	58,228	30	71,250	40	138,186	41
Sesame oil	Production	25,000	100	80,186	100	52,667	100	15,100	100	53,700	100
	Exports	1,361	5	257	0	1,317	2	1,567	10	86	0
Sunflower seeds	Production	-	-	-	-	-	-	27,667	100	12,333	100
	Exports	-	-	-	-	-	-	2,878	10	6	0

Source: FAOSTAT

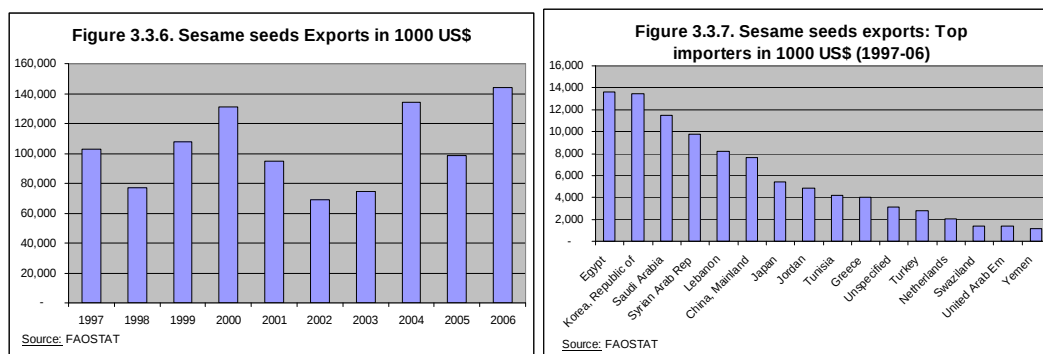
Figure 3.3.5. Production and exports of oilseeds and derived oils



Source: FAOSTAT

A substantial share of sesame seeds is exported, amounting to over 40% of production in recent years. Sudan's sesame seeds exports averaged over US\$100 million during the 10-year period 1997-06 (Fig. 3.3.6). Of the 53 countries that imported any sizable quantities over the 10 year period, one-third of them imported in every single year and some 60% of the countries in at least half of the years. Top of the list are Egypt, Korea Rep., Saudi Arabia, Syria, Lebanon and China, and the top 10

importing countries accounted for nearly 80% of all sesame seeds exports of Sudan (Fig. 3.3.7)²⁹. This distribution is not very unusual however and can be observed in many exporting countries.



3.4 Cotton

Nearly all cotton production (99%) in Sudan comes from the irrigated sector and the small balance from the semi-mechanized rain-fed sector³⁰. Cotton is produced mainly for fibre and not for cottonseeds, which are considered a by-product. Cottonseeds are processed domestically to produce cooking oil. Also cottonseed oil is used as a substitute of imported fats for domestic production of soap in Sudan. Cotton-cake, the by-product of cottonseed oil production is an important feed product, especially for fattening animals for export.

In the past area under cotton cultivation was substantial, sometimes at par with than under groundnuts and sesame, but in recent years it is only a fraction of the latter, giving room for competing crops including in particular wheat (Fig. 3.4.1). In addition to its strong declining trend, area under cotton varied considerably from year to year. Overall, and considering the experience with other crops where substantial productivity losses were registered over the years, cotton yields although also very variable, maintained a more or less steady long-term average and not different from what has been the case in Sub-Sahara Africa as a whole.

The largest share of cotton lint produced is exported (over 85%) but, together with the reduction of production, the quantity of cotton exports has also followed the downward trend (Fig. 3.4.2). In addition to the reduced area under cultivation, several other external reasons have also played a role in Sudan's decline in cotton exports, including the decrease in demand of extra long and long staple cotton in world markets. In the past Sudan used to export some quantities of cottonseed and cotton oil but that has ceased long ago. Also until the mid-1990s Sudan used to export cottonseed cake, but that is also absorbed domestically now.

Sudan's cotton lint exports ranging between US\$70 million to over US\$100 million in recent years, have been destined to some 46 countries during the 10-year period 1997-06 (Fig. 3.4.3 and 3.4.4). Top of the list are Egypt, Bangladesh, Thailand, India and China. On average, the top 10 importing countries account for over 90% of all cotton lint exports of Sudan by value³¹. Of the 46 countries that imported any sizable quantities over the 10 year period, 10 of them imported consistently every single year and 17 of them at least in half of the years.

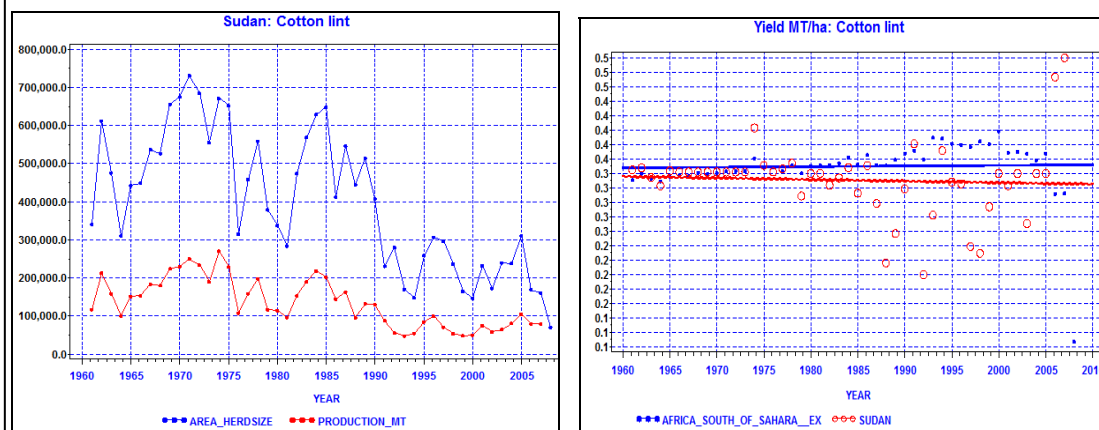
²⁹ Yearly statistics do indicate a skewed distribution (with a median much less than the mean value implying concentration of exports to a few countries) and the skewedness becomes stronger with time.

³⁰ FAO, 2004, op. cit.

³¹ Yearly statistics do indicate a distribution much more skewed than that of sesame seeds exports, however without any further increase in the concentration of importers over time.

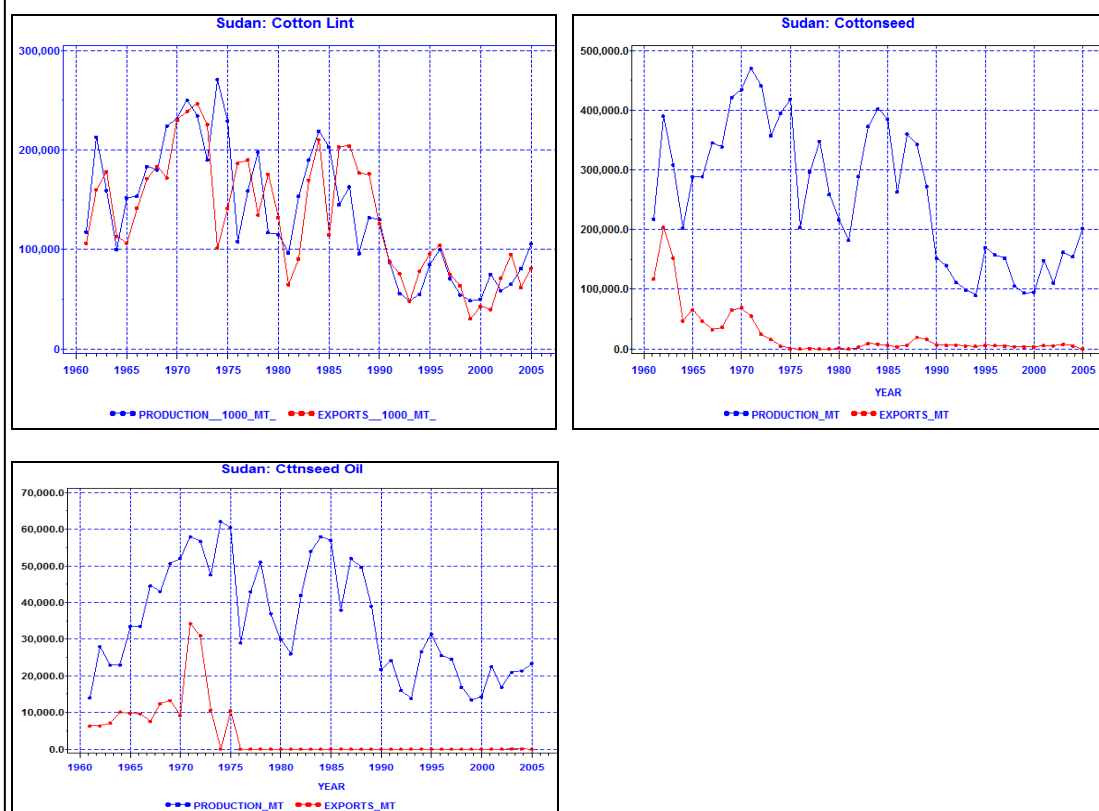
Assessing Sudan's Export Diversification Potential in Agricultural Products

Figure 3.4.1. Cotton production and yields

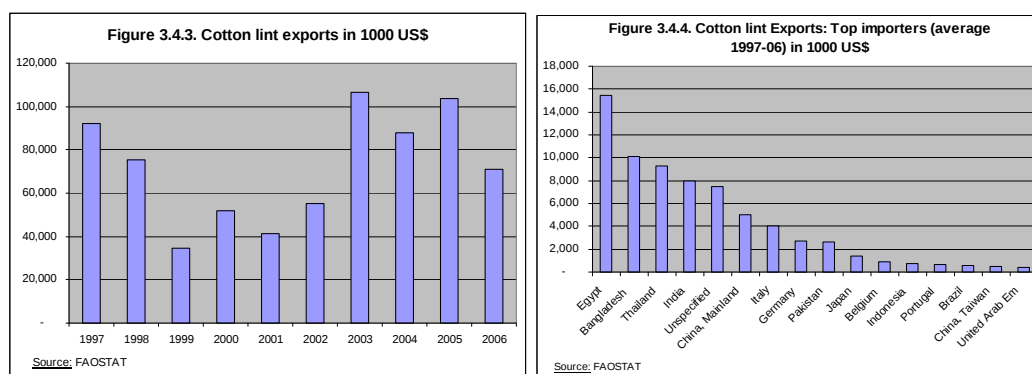


Source: FAOSTAT

Figure 3.4.2. Production and exports of cotton and derived products



Source: FAOSTAT



3.5 Horticultural Sector

Fruits and vegetables have been one of the most dynamic sectors of world agriculture in recent years and developing countries are capturing the lion's share of that market³². There are many benefits from this horticulture revolution, in particular its contribution to increasing incomes and employment. Horticulture production increases returns on land by about 10-fold compared to cereal crops and employs twice as many workers per hectare. It also generates many more jobs, especially for women, in off-farm activities associated with horticulture production, i.e. for processing, packaging and marketing of the produce. However, the production, processing and marketing of horticultural products requires more discipline along a supply chain, in view of the perishable nature of these products and the strict quality and safety standards that the market dictates.

Green vegetables and fruits are perishable with uncertainties on the demand side and high price instability. Production for export requires high value inputs and infrastructure to ensure compliance with foreign market quality and sanitary and phytosanitary (SPS) requirements. Strict adherence to grades and standards make it more difficult for smallholders acting alone to participate in these markets, giving rise to 'contract' farming and collective action by producer organizations. In turn, this has implications for the organization of value chains, with specialized agribusinesses and supermarkets increasing their share in these markets, especially in the urbanized countries. Unlike the green revolution, the horticulture revolution has been driven largely by the private sector and the exigencies of the market.

3.5.1 Productivity Trends

Climatic conditions in Sudan favour the production of a wide range of fruits and vegetables, including tropical fruits but also many temperate zone vegetable crops. For example, Sudan produces Galia (type of melon similar to a cantaloupe), green-beans, green pepper and other temperate crops during January-March period, which make them attractive for export to the European market when these crops are not in season there. Though horticultural crops occupy 1.8% of total irrigated cropped areas, they contribute about 12% of agricultural GDP, about the same share as the cereals sector.

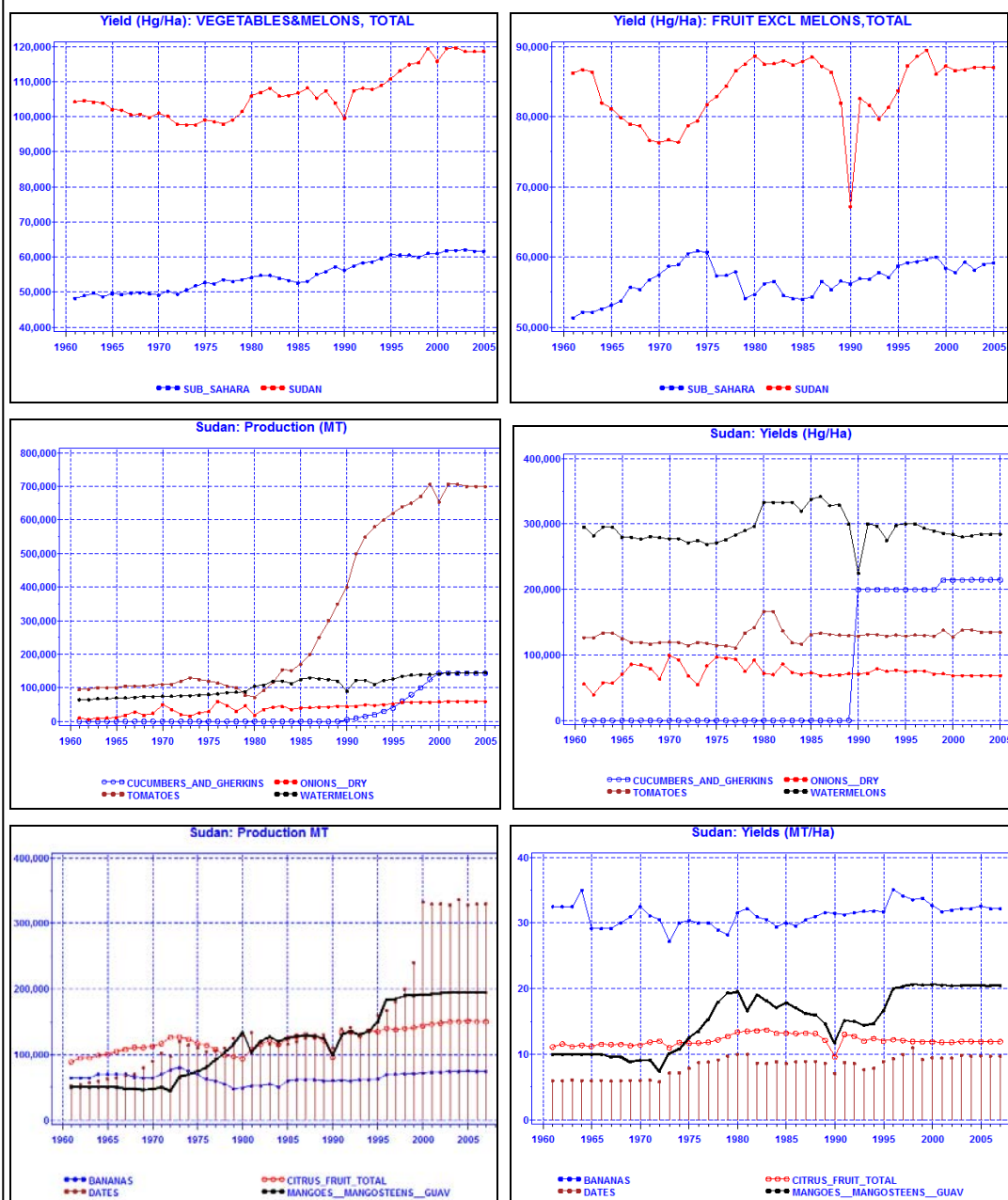
Under the climatic conditions of the country, in theory fruits and vegetables can be grown all over Sudan where there is enough water and adequate nutrients in the soil. However, in practice they are generally grown in the main irrigated areas along the Nile and in other areas where there is enough underground water for irrigation. Available production statistics on fruits and vegetables indicate that productivity levels are fairly good in Sudan, about double the corresponding levels attained in Sub-Sahara as a whole for both sectors (Fig. 3.5.1). In general, there is more variability for fruits

³² *World Development Report*, World Bank, 2008.

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yields than it is for vegetables yields and that appears to apply both in the aggregate and for individual crops. Among the different products there has been a remarkable growth in tomatoes production and also for dates. Tomatoes production nearly quadrupled since the mid-1980s.

Figure 3.5.1. Production and yields of horticultural products



Source: FAOSTAT

Notwithstanding such remarkable quantitative gains, in general fruits and vegetables in Sudan suffer from poor post harvest treatment, outdated technologies for refrigeration, packaging and handling of fresh produce, all of which have an adverse effect on qualitative characteristics that reduce their marketability and the price they fetch in the market.

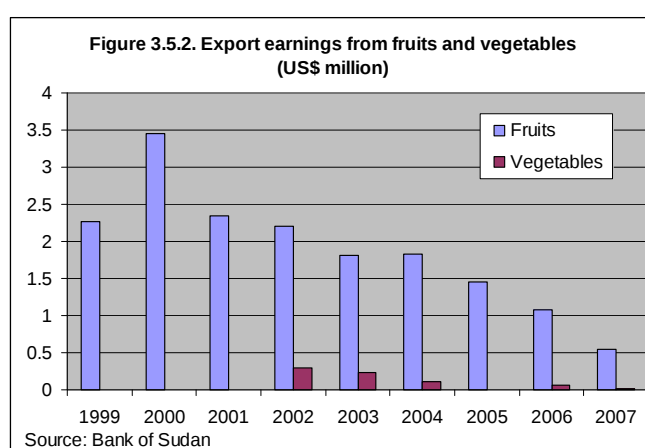
The processing of fruits and vegetables in Sudan has also been problematic, despite Government's efforts to establish processing factories in different parts of the country since the late 1970s. It has been reported that in 1995 there were five processing factories for fruits and vegetables, however only two of them were operating. The designed capacity for all factories was 6,916 MT tomato paste, 5,300 MT of jam and 10,800 MT of fruit juices. The operating capacity was, in 1995, 14% for tomato paste, 10% for fruit juices and 18% for jams mainly because of raw material and managerial problems³³. Similar problems hamper the fruit and vegetables processing industry till today.

3.5.2 Exports of Fruits and Vegetables

Among the main fruits and vegetables exported by Sudan are mangos, grape fruit, bananas, melons, lemons and limes, green beans, onions and sweet peppers.

An indication of the export earnings from fruits and vegetables exports is given in Fig. 3.5.2. Compared to other agricultural exports, values are modest, and exports of fruits are by far much more important than those of vegetables. Looking at some selective individual commodities we find similar patterns of export performance (Fig. 3.5.3). For most of them there is a high variability in performance from one year to the next. Take for example mango export earnings which dropped from US\$ 1 million in 2003 to less than US\$ 400,000 in 2006³⁴, or that of lemons and limes which dropped from US\$ 1 million in 2000 to less than US\$ 100,000 in 2003, 2005 and 2006. Similar situations can be seen for the other commodities examined here such as watermelons, dates, grapefruit and green beans.

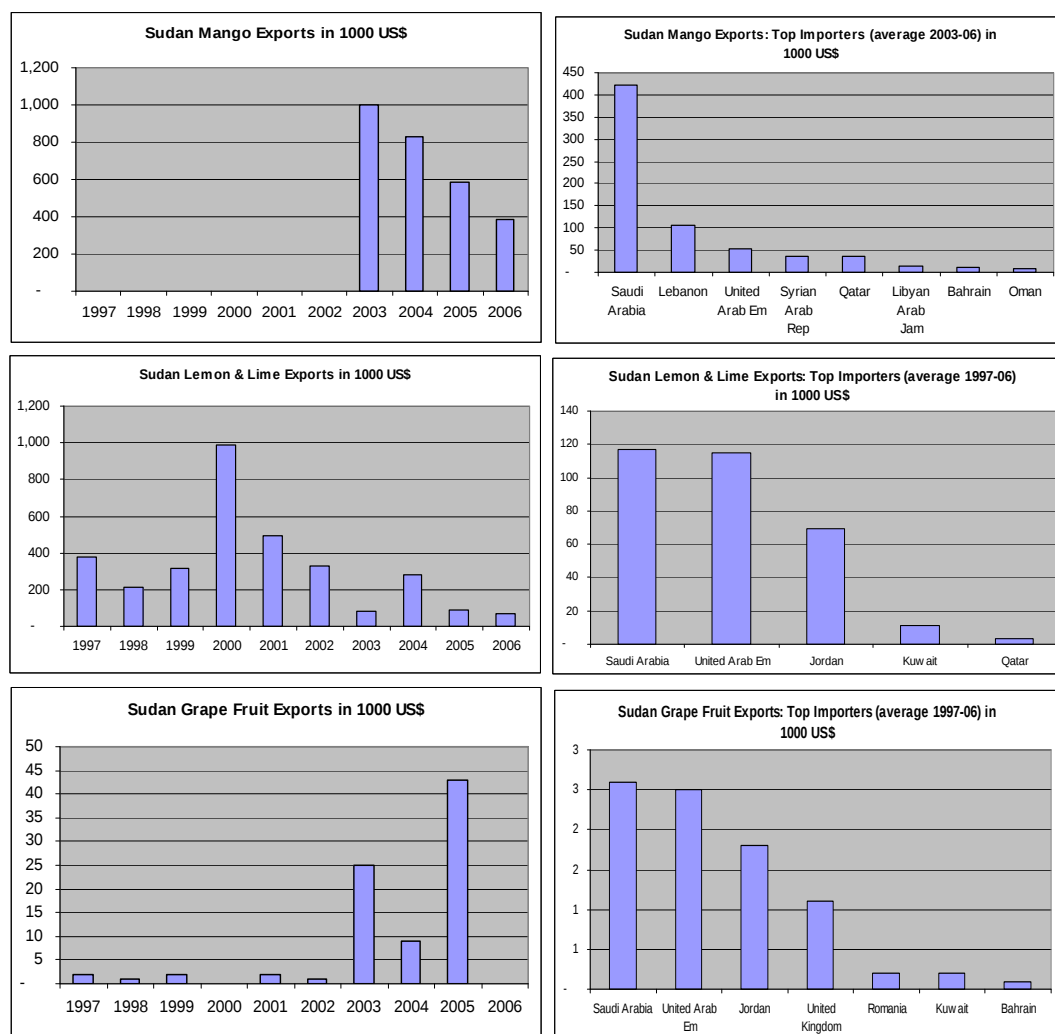
Looking at the destination of exports of fruits and vegetables, it is surprising how geographically narrow these exports are. In most of the cases, 3-4 import markets account for over 90% of all export for that commodity. For example, in the cases of mangos and dates, one single country accounts for over 60% and 72% of exports and no more than 5 countries for 93% and 95% of export earnings, respectively. European countries import insignificant amounts of mangos from Sudan as consumers there prefer the non-fibre types. The geographical spread is somewhat better for grapefruit and green beans exports in the sense that exports are not concentrated in a single market but spread over a few more destinations (Fig. 3.5.3 and 3.5.4).



³³ Babiker Idris, op.cit.

³⁴ It has been estimated that mango exports do not exceed 4% of total production of Sudan which suggests that the problem is not a quantitative one on the supply side. It also suggests that the export potential of this commodity could be enormous.

Figure 3.5.3. Values and destination of mango, lime and grapefruit exports



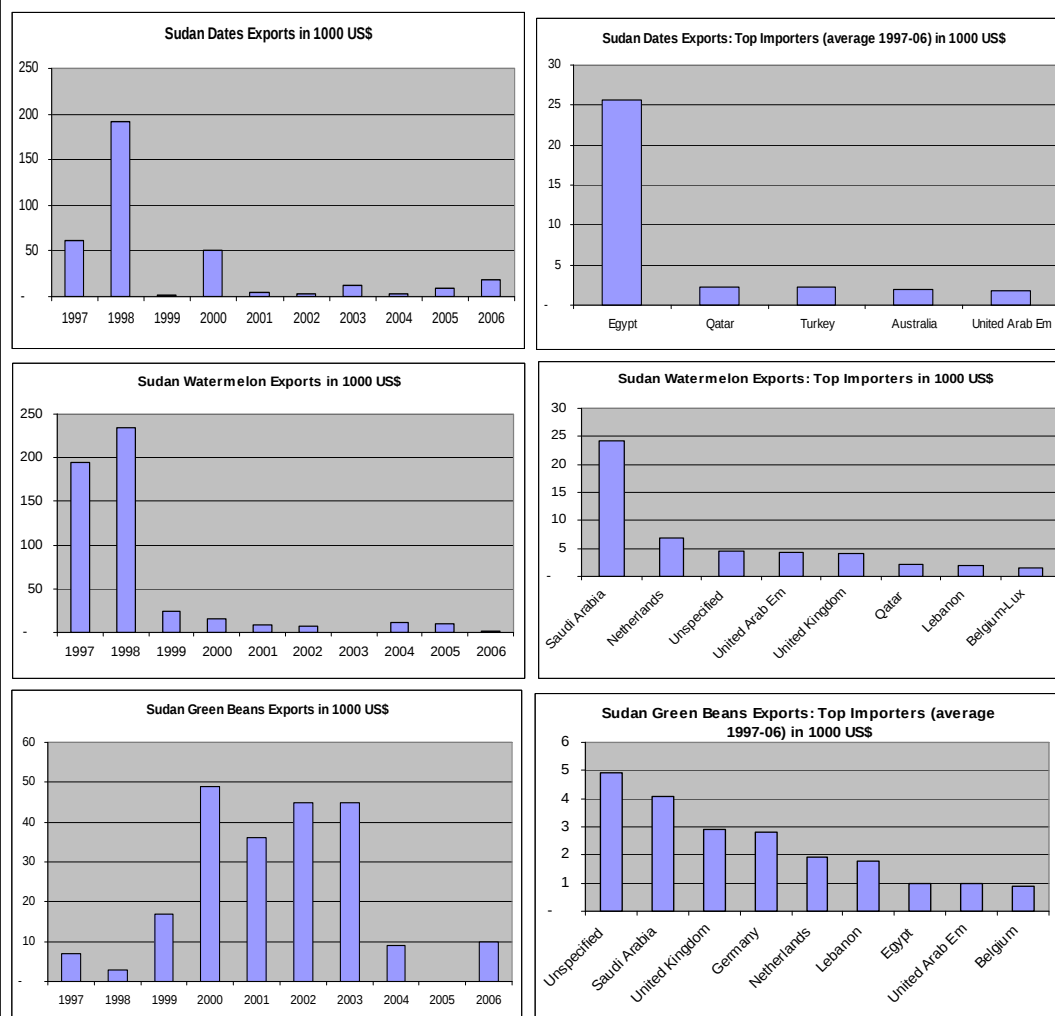
Source: FAOSTAT

European countries account for a very small share of fruits and vegetables from Sudan and although there are other issue of sanitary and phytosanitary nature that contribute to that (see Annex 4) the potential of Sudan, within these constraints is far from being realized.

For example, although the Dutch market consumes an average of 454 thousand tons of melons annually, Sudan commands only about 0.2% of this demand. Sudan can benefit from a period of 50 days between January and March during which competition from Israel, Egypt, South Africa, Kenya and Morocco diminishes. One apparently successful outlet for Sudanese melons and green beans is handled by a private dealer who receives the consignment in Amsterdam Schiphol Airport from where the products are transported between Netherlands and England searching for plausible markets.

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Figure 3.5.4. Values and destination of dates, watermelon and green beans exports



Source: FAOSTAT

The need for a 'critical mass' of exports is an important constraint for the relatively small-scale producers and exporters as they exist in Sudan. This issue has important implications for the organization of regular shipment schedules, and in turn to enable better planning of production and exports. It is only when the volume of such perishable commodities expands substantially, the sector can benefit from economies of scale. This is necessary in order to fully load a charter aircraft as well as reduce input and compliance costs³⁵.

³⁵ Regional approaches to the removal of critical constraints on the supply are also to be encouraged, such as, for example, the regional FAO-implemented project on *The Establishment of a Diversification Programme for Vegetable Export Development in Ethiopia and Sudan*, with the Department of Horticulture, Ministry of Agriculture and Forestry as a collaborating institution in Sudan. Its objective is to strengthen the export capacity of vegetable farmers in Ethiopia and Sudan through the removal of critical supply-side constraints and weaknesses in relation to technical, infrastructural, and business and market factors. The project is financed by the Common Fund of Commodities (CFC) and also by the Netherlands Government.

The other general observation about the destination of fruits and vegetables exports is the dominant role of Middle East and Gulf States and in particular Saudi Arabia. Only for green beans, grapefruit and watermelon do Sudanese produce reach farther away markets. The implication of that is that great attention needs to be paid to these particular markets in the first place by looking at the competition present and the problems that have been encountered and are responsible for the high variability in shipments from year to year. For example, it has been remarked that in the case of lemon and lime exports in the Saudi market, the main competitors of Sudan are Egypt, South Africa and Turkey, who, together, dominated the market. Among them Turkey, offered the lowest relative price and this combined with good quality, good packaging, reliable supply, etc. made its market share grow from 22.4% in 1998 to 42% in 2001, an overage annual growth rate of 425%³⁶.

Another case quoted concerns mangos and comes again from the Saudi market where Sudan had a substantial share of 22% in 1998, with main competitors India and Pakistan. Between these three competitors, CIF price was 2.96 SR/Kg for Sudan, 3.87 SR/Kg for India and 5.36 SR/Kg for Pakistan. Despite this relative price advantage, Sudan's market share declined gradually over the period until it reached 13.7% in 2001. Other factors of competitiveness, namely quality, packaging, reliability of supply, etc., seem to have outweighed Sudan's price advantage.

Because of many factors having to do particularly with proximity, cultural and religious affiliation, Saudi Arabia and the other Gulf States should be a very attractive destination of Sudanese fruits and vegetables exports. These two markets combined have a large population base, a large per capita consumption, ever increasing wealth and aspirations for a booming tourist industry, potentially making them a lucrative market for Sudan. Capturing and maintaining a sizable share of this market alone would be a major boost to Sudan's export market of fruits and vegetables.

Critical constraints for exporting fruits and vegetables relate to several factors, including: lack of skills and substandard facilities of packaging and transportation of products, especially the poor quality facilities and unpredictable cargo availability at Khartoum airport to the destined Arab and European countries. Often consignments remain at Khartoum Airport for some time until a space is availed in passengers' carriers and this exposes the produce to considerable deterioration due to poor storage facilities and lack of basic refrigeration, making them unfit for export.

3.5.3 Government Efforts for Promoting Exports of Fruits and Vegetables

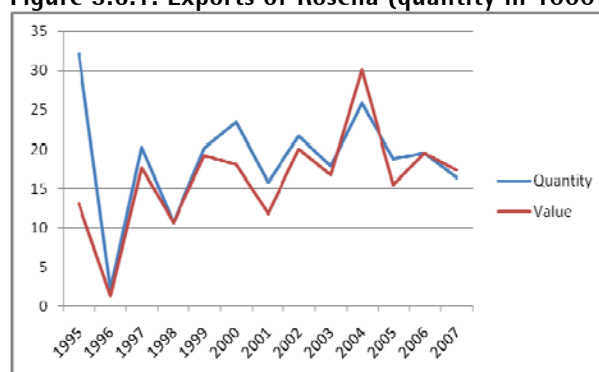
The Government has encouraged the establishment of specialized companies in production and exports of fruits and vegetables to meet international standards. These include: the Sudanese Company for Horticultural Exports, a public share company which is expected to contribute to the supply of inputs such as seeds, packaging material, transportation facilities, and marketing experience in melon, green beans, onion, mango, and lime; the Bustan Investment Company and the Neshashiba Investment Company for production and export of Galia melon; the Export Promotion Village, aiming at providing grading facilities (sorting and packing) with modern technologies and supply of appropriate transportation and storage facilities including cold storage facilities and transportation; and finally, the National Institute for the Development of the Horticultural Exports, established in 1993 to conduct studies and research on promotion of Sudan exports of fruits and vegetables. In particular, the Institute is expected to conduct socio-economic studies that include marketing surveys, technical and economic viability studies for exports, field technical studies evaluating experiments for improving productivity and quality of horticultural crops.

³⁶ Babiker Idris, op. cit.

3.6 Hibiscus

Hibiscus or Rosella³⁷ is an herbal drink consumed both hot and cold by people around the world. It is grown in Sudan under rain fed conditions in the wadies and along the khors and water harvesting projects of north Darfur and north Kordofan. China and Thailand are the main competitors of Sudan high quality product as they produce clean packed products for exports. Hibiscus exports of Sudan have been fluctuating along a growing trend attaining a maximum of about 26,000 MT quantity exported in 2004, earning some US\$ 39 million (Fig. 3.6.1). Still the potential for expanding exports is high given the natural colours of the product, used also as a natural source of food colouring as well as for perfume processing purposes.

Figure 3.6.1. Exports of Rosella (quantity in 1000 MT, value in US\$ million)



3.7 Gum Arabic

Sudan is one of the largest producers of gum Arabic in the world and accounts for 40%-60% of world trade. Gum Arabic is produced from Hashab and Talih acacia trees in tropical areas of Sudan as well as in Chad, Nigeria, Senegal, Ethiopia, among others. In Sudan, gum Arabic is produced in five ecological regions namely Kordofan (54%), Darfur (19%), Eastern (14%), Central (12%) and Upper Nile (1%)³⁸. There are two seasons for gum production, the summer season in sandy lands which account for about 65% of total gum Arabic production and the winter season in the central clay plains which produces the remaining 35.

The production of the gum Arabic from the Hashab Acacia has declined by one third from an average of 33.4 thousand tons during 1970-79 to an average of 11.2 thousand tons during 2000-08, while the production from Talih acacia has indicated fluctuating pattern ranging between 2.7 thousand tons and 3.9 thousand tons during same period. The total production of gum Arabic has decreased continuously by almost 60% between 1970-79 and 2000-08 (Table 3.7.1). The main reasons attributed for such drop are the cyclical drought which resulted in the severe cutting of the vegetative cover of the Gum belt of Sudan and its movement southwards in addition to the marketing policies adopted by the gum Arabic Company which led to the loss of many of its traditional markets in the world.

³⁷ Its botanical name is *Hibiscus sabdariffa* flower and it is known under different names around the world: karkady in the Middle East, flor de Jamaica in Latin America, bissap in West Africa, sorrel in Jamaica, and red sorrel in the wider Caribbean region.

³⁸ Gum Arabic is produced from *Acacia Senegal* trees. The best and most widely recognized gum Arabic comes from Sudan, largely grown by farmers as part of agro-forestry systems, although some large farms have also started cultivating this species on a commercial scale in recent years.

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The exclusive export concession granted by the Government to the Gum Arabic Company (GAC) has been removed in 2009, in an effort to revitalize the continued drop in exports from an average of 34.8 thousand tons during 1970-79 (about 45 thousand tons in the 1960s) to an average of 19.8 thousand tons during 2000-08 (Table 3.7.1). On average Sudan earned some \$US 28.9 million annually during 2000-08, however with some better performance in recent years with exports over \$US 50 million and as much as 100 million (Fig. 3.7.1).

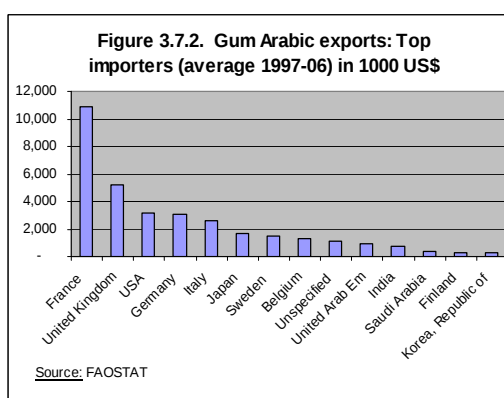
Nevertheless, GAC's poor performance over most of the 1990s and the early 2000s had raised many questions about the continuation of its monopoly status and was the main reason for the recent 2009 decision to deregulate the monopoly it had on the market, considering also the importance of this strategic commodity for Sudan in the world market and the need for improving its performance in the future³⁹.

Table 3.7.1. Gum Arabic production and exports

Averages	Hashab production (MT)	Talih production (MT)	Total production (MT)	Total exports (MT)	Value of exports (1000 US\$)
1970-79	33468	2773	36241	34812	35,645
1980-89	23249	4151	27400	27598	50,474
1990-99	19437	3882	23329	19848	38,732
2000-08	11161	3573	14734	19784	28,852

Source: Gum Arabic Company

The main importing countries of gum Arabic from Sudan are France, United Kingdom, USA, Italy, Germany and Japan, among others (Fig. 3.7.2). It would be expected that with the respectability and dominance of the market that Sudan enjoyed for a long time, its export market would be diversified. That is indeed the case with some 43 countries importing from Sudan during the 1997-06 period. Nonetheless, as in the case of other exports of Sudan, the distribution of importers is skewed with just 5 countries accounting for 73% of exports and 10 countries for over 90% of exports by value during 1997-06 period.



³⁹ The gum Arabic Company had some 34 agents in the world, of which 7 were located in the USA, 5 each in Germany and UK, 3 in France and one in each of the remaining main importers of gum Arabic. It is not clear whether this representation of Sudanese gum Arabic in the world would continue and what role these agents will play in the future.

3.8 Livestock Sector

3.8.1 The Economic Importance of the Livestock Sector

Livestock is the single most important component of the agricultural sector in Sudan, consistently accounting for nearly half of the GDP of the sector (47%), almost equal to that of all crops combined. The livestock sector makes an important contribution to the food security of the country, employment, export earnings, means of transport of goods and individuals, draught power, manure for soil fertilization and a means of accumulation of capital assets. It is considered an important element in poverty alleviation programmes in the country.

The livestock population of Sudan is estimated at some 140 million heads of animals, composed of 41.5 million cattle, 51.5 million sheep, 43 million goats and 4.5 million camels⁴⁰. The growth rate of livestock population in 2008 was estimated at 0.73% for cattle, 0.79% for sheep, 0.47% for goats and 3.4% for camels⁴¹.

The prevailing livestock production system in Sudan is the traditional nomadic and transhumant herding. In addition there are sedentary and semi-sedentary livestock production systems, small intra-urban backyard production, and integrated livestock/crop production operations. Livestock population is concentrated in the Western States, comprising 36% of cattle, 40% of sheep, 36% of goats and 33% of camels⁴².

There are considerable differences between small stock of sheep and goats, and cattle as regards production and offtake for meeting the needs of the domestic and export markets. Most of the small stock originate in Kordofan and Darfur, produced on numerous relatively small farms which have access to communal grazing areas and can withstand considerable hardship during the dry season in terms of access to water and good pastures. On the other hand, cattle need much better pastures and daily access to water. It is for this reason that the major cattle producing areas are concentrated in higher rainfall areas such as Southern Sudan, the Blue Nile, South Kordofan and Southern Darfur.

However, an important general characteristic of livestock systems in Sudan, especially of the prevailing traditional system, is the low level of commercialization. The inherently high risks in livestock rearing motivate pastoralists to keep accumulating animals to counter threats of depopulation by disease or drought. They do not sell animals unless funds are actually needed. Beyond the threats from nature which are largely unavoidable, there are also other major constraints adversely affecting the traditional livestock system, in particular, to achieve its potential. These include, inter alia:

- reduction of natural pasture lands, as a result of expansion of cropping;
- scarcity of water, leading to friction between crop farmers and livestock owners and between groups of livestock owners;
- obstacles in using traditional corridors of seasonal migration patterns, resulting in difficulties for pastoralists to reach critical resources of pasture and water in time;
- insufficient animal feed during the dry season, scarce and expensive crop residues;
- weak veterinary services;

⁴⁰ It may be noted that out of the total livestock population of the Arab world, the Sudanese cattle constitute about 70%, sheep 31%, goats 49 %, and camels 25%.

⁴¹ Ministry of Animal Resources and Fisheries (MARF).

⁴² These figures are MARF estimates based on data of the last animal census carried out in 1975/76. Considerable ecological changes have taken place since then which might have affected the present livestock population and distribution. It is of paramount importance to conduct a new census.

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- lack of a proper animal census (last carried out in 1975/76) obscuring the real situation on the ground;
- adverse effects of numerous taxes, duties and fees on animal production, marketing and exports.

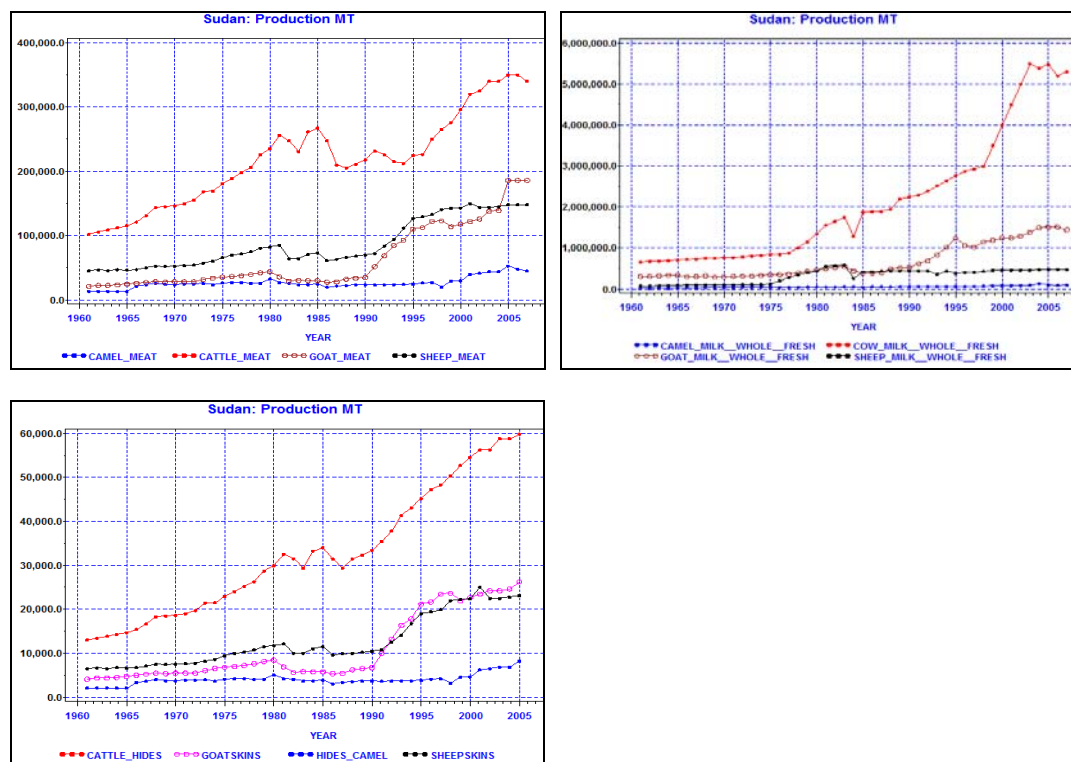
While it is recognized that livestock statistics may be outdated in view of the lack of a recent census in the country, available long-term data provide an indication of the performance of the livestock sector in all its dimensions. Drawing from FAO statistics, we see a generally strong performance for all three livestock products, namely meat, hides and skins and milk (Fig. 3.8.1 and Annex Table 7.4). Annual growth rates for every decade since the 1960s has been positive in nearly all cases and at rates that would match that of population growth. There is, of course, a strong correlation in the numbers between meat and hides but what is more interesting to note is the generally better performance in milk production, the only livestock product that Sudan has a deficit.

In absolute quantitative terms, cattle make the greatest contribution in livestock production, but especially for milk. Second in importance is goat milk, followed by sheep milk, while quantities of camel milk are much less but nonetheless important. In terms of meat production, the combined output of sheep and goats approximates that of cattle, while camel meat is of lesser quantities but an important part of the whole. For hides and skins, cattle hides alone are about equal to the total of the other three animals combined.

An interesting development over the longer term trends in production is the observed trade-off between milk and meat output. Between 1961-63 and 2003-05, the share of cattle in the total meat production of Sudan declined from 56.4% to 49.7%, while the share of cow milk output increased from 61.6% of total milk production to 72.7% (Fig. 3.8.2). Exactly the opposite trade-off is observed for sheep and goat meat and milk output. Thus, the combined share of sheep and goat meat output increased from 36.4% of total meat production of Sudan in 1961-63 to 43.5% in 2003-05. At the same time, the combined share of sheep and goat milk output declined from 35.7% of total milk production in 1961-63 to 25.9% in 2003-05.

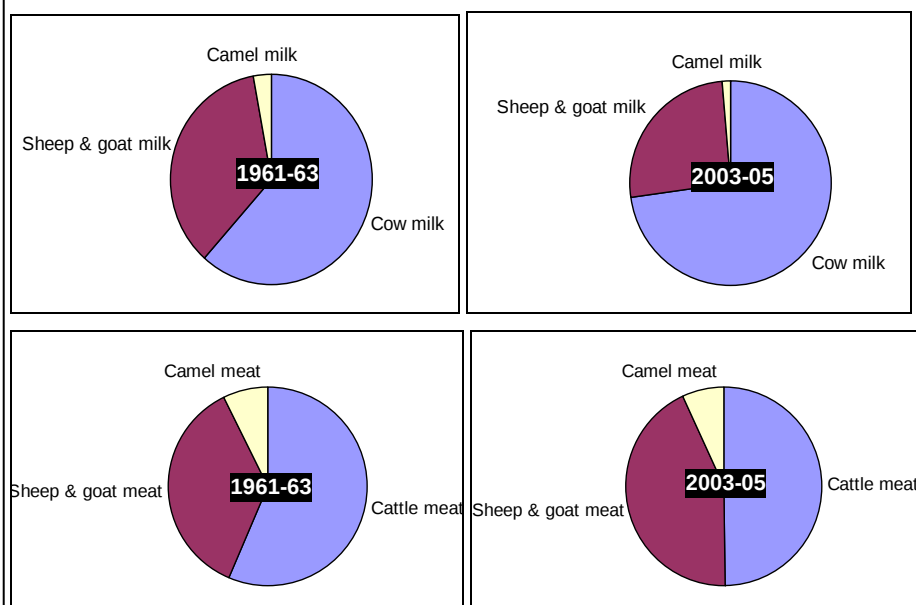
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Figure 3.8.1. Estimated Production of meat, milk and hides and skins



Source: FAOSTAT

Figure 3.8.2. Trade-offs between cattle meat and cow milk production



Source: FAOSTAT

3.8.2 Live Animals and Meat Exports

The structure of the domestic livestock marketing is based on several tiers of livestock markets (Figure 3.8.3). The first starts with individual sales directly from the farm or the pastoralist; primary markets at the village level, located in the main production areas where individual or small groups of animals are brought to be sold and bulked into larger lots; secondary markets at the provincial level, in larger towns or near the areas of production, where animals are bulked into yet larger groups; and terminal markets that represent the final point of sale. Omdurman is the largest final market for domestic sales and exports.

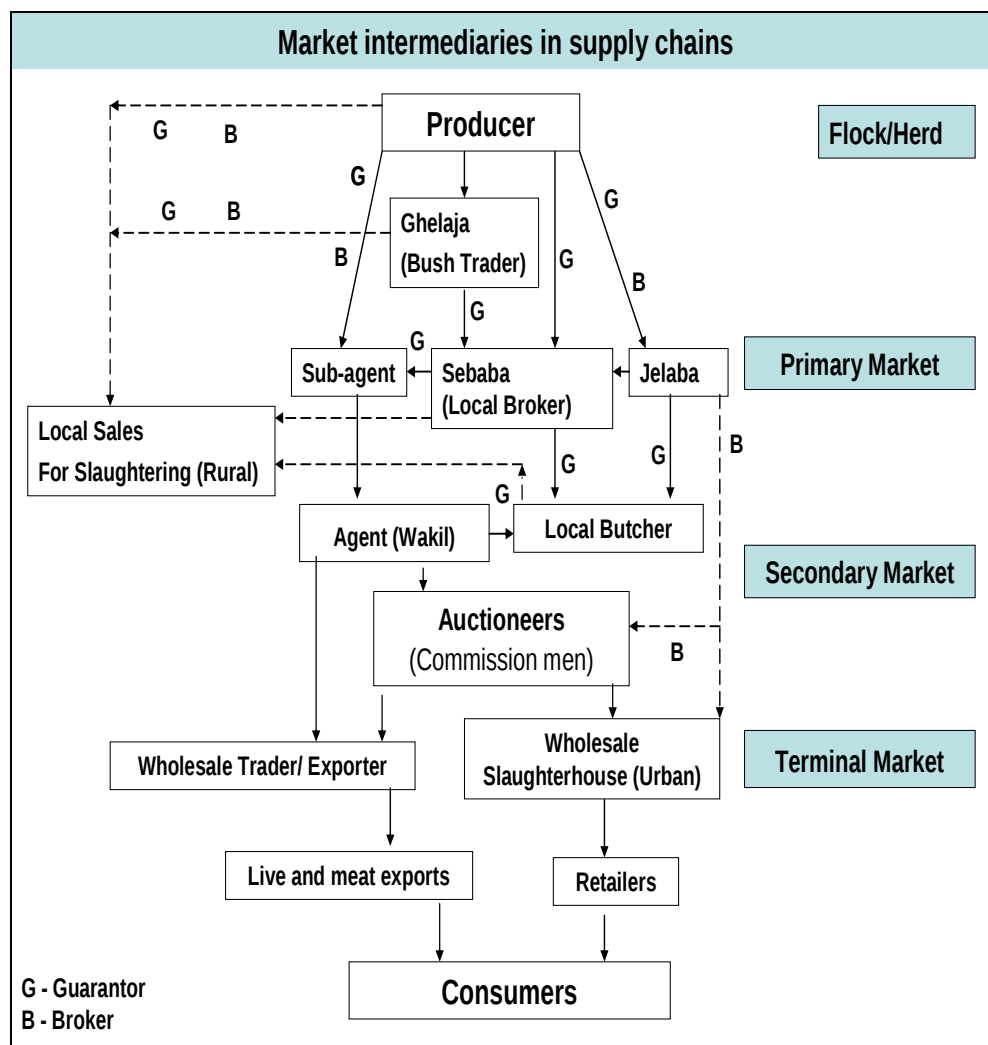
The marketing chain is characterized by many intermediate costs including herding, trekking, watering and feeding costs, taxes, weight losses, mortality and the margins taken by intermediate traders and brokers.⁴³ Most selling and buying is done by private treaty, with the exception of large numbers of sheep intended for export by secret auction, at primary, secondary or terminal markets when there are more than one buyer to bid for them. Stocks changes hands and reselling is taking place in the same market within the same day. Often, value addition is undertaken through additional fattening or reconditioning or treatment of the animals before reselling them.

Transportation problems from production to consumption areas and to Port Sudan are the major constraint facing the industry. Aside from the great distances between the supply hinterlands and the export ports, specific constraints include the following:

- farm/flock level health problems reduce seasonal and overall supply of export quality of animals to market (see Fig. 3.8.4 on the occurrence of diseases in three main producing areas);
- access to health services is infrequent due to distance of health facilities (Table 3.8.1);
- too many intermediaries are involved along the supply chains leading to increased transaction time and transaction costs;
- systems of inspection and certification for live animals and meat are elaborate but inadequate in view of the high rejection rates along the chain
- trekking involves long periods under harsh environmental conditions resulting in deterioration in the quality of animals and losses along the way;
- trucking is an expensive alternative, both in terms of the direct costs involved but also indirect ones due to unduly long stoppages for inspection resulting in a loss of quality of animals;
- further direct and indirect costs at Port Sudan due to shipping delays;
- multiple taxes along the trekking and trucking routes, so overall procurement costs including transaction costs are high leading to reduced competitiveness at the final destination.

⁴³ FAO/AAADC, 1997.

Figure 3.8.3. Livestock marketing structure in Sudan



Source: O.H. Dirani. (2007). *Potentials of Sudanese Exports of Sheep and Sheep Meat to the Middle East* (Survey data in 2005). Unpublished M.Sc. Thesis in Agriculture, University of Khartoum, 2007.

Table 3.8.1. Access to animal health facilities (% households)

Distance (km)	Kordofan	Blue Nile	Gedaref
0-19	30	62	24
20-39	37	11	24
40-59	14	6	31
60-79	15	11	11
80-99	2	0	7
100+	2	10	2

Source: Dirani, op.cit.

Live sheep are by far the largest livestock export earner amounting on average to over US\$100 million annually between 1997 and 2006. Saudi Arabia accounted for nearly all live sheep exports during 1997-6 period (98%) and also for 79% of sheep meat during the same period (Fig. 3.8.5). As

for live goats and goat meat exports (less than US\$2 million annually during 1997-6), Saudi Arabia accounted also for the lion's share of 96% and 75%, respectively.

Live sheep and goats usually move from producing areas to Port Sudan by truck or sometimes by rail⁴⁴. They may be walked part of the way via quarantine stations for inspection. Following the complete 12-month ban by Saudi Arabia of imports of sheep and goats from Sudan in 2001⁴⁵, because of their concerns about the existence of Rift Valley Fever and other infectious diseases among sheep in Sudan, the Government responded by instituting a rigid vaccination and inspection program for sheep destined for export. Four inspections at quarantine stations on the way to Port Sudan are required and while the importance of this policy is understood in view of the huge risks of complete embargo, the cost of vaccination add to the already high marketing cost for exporters, traders and producers⁴⁶.

Even though the Saudi market is a lucrative one for Sudan sheep and goat exports, this route is not without problems. In the first instance there are domestic problems of reaching Port Sudan, due to the numerous impediments and costs along the way as discussed above. The next Chapter on value chain analysis gives more substance to these domestic constraints along the value chain, which shows that marketing costs represent about 33% of the value of the cost of the sheep. The DTIS study notes that if the Zakat tax (10% on sales value for rain-fed agricultural/pastoral production) is added then total taxes become even more significant.

The second difficulty for expanding Sudanese sheep and goat exports to the Saudi market is due to the competition from other more efficient exporters. Already, the Saudi market is dominated by exports from other sources (including Australia), despite the preference of Saudi consumers for Sudanese sheep. The DTIS study contains a good analysis of the nature of the competition between Sudanese and Australian sheep in the Saudi market. It remarks that the substantial price differential between the two sources explains the shift of Saudi Arabia to importing increasing quantities from Australia, despite the preferred taste of Sudanese sheep. For example, in 2000, Australian sheep could be landed in Jeddah at about half the price of Sudanese sheep.

Yet another characteristic of Sudanese sheep exports is the seasonality of supply. The Saudi market imports regularly throughout the year, notwithstanding the increased import demand during religious festivities. Unlike Sudan, Australia is in a position to supply that market on a regular basis with standard quality sheep meat⁴⁷.

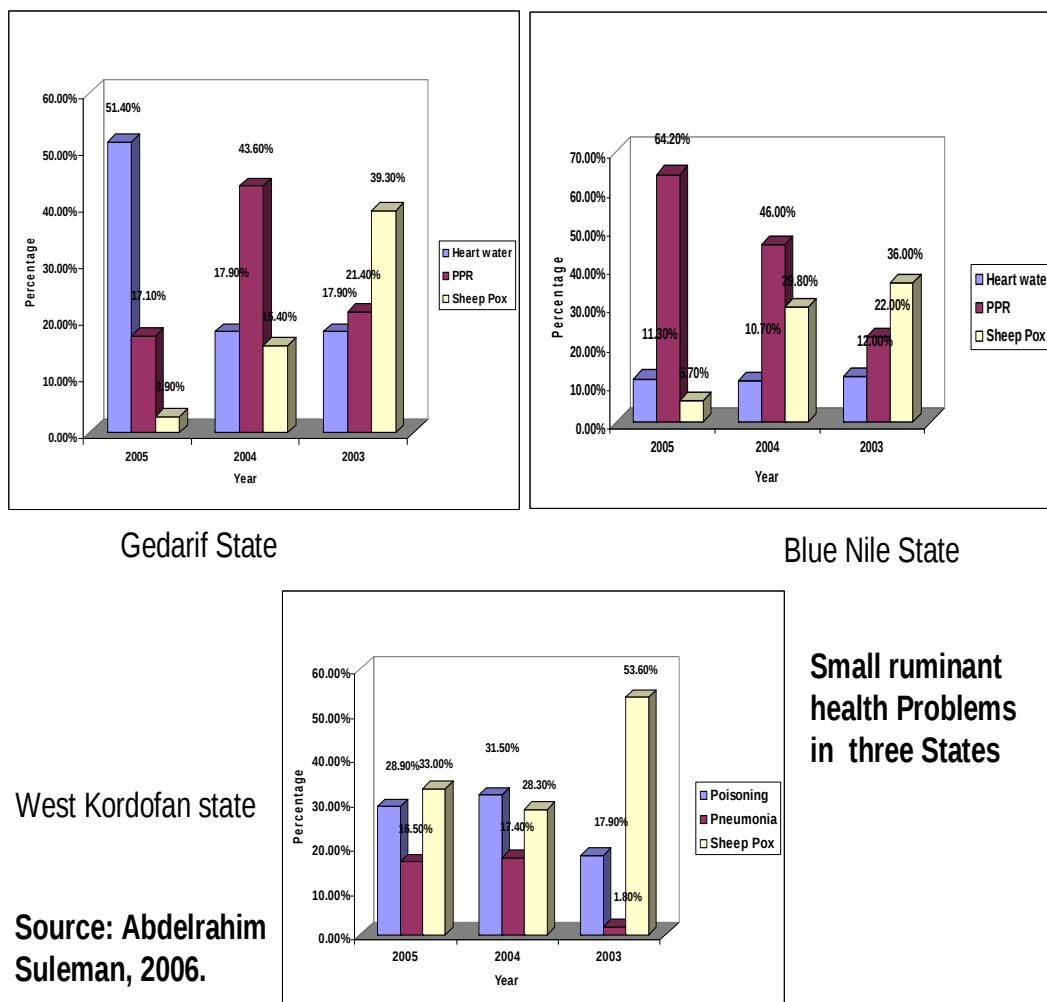
⁴⁴ Sheep and goat meat exports are transported largely through air shipments and the constraints identified in connection with fruits and vegetables exports having to do with lack of appropriate facilities at the airport apply as well here.

⁴⁵ In addition to sheep and goats, cattle imports from Sudan into Saudi Arabia were also completely banned in the past. This ban was finally lifted in December 2006, creating yet another avenue for Sudan in a lucrative and growing import market.

⁴⁶ In addition to veterinary health requirements, religious considerations especially during Hajj period require strict adherence to Islamic (Shariah) law. Hadi live sheep should be healthy and fat, not diseased, not emaciated, without abnormalities or deformities, such as no tail docking and no ear cut more than one third of the ear.

⁴⁷ Islamic consumers place paramount importance on the religious requirements for the production of food. Halal Meat is requested from all exporters and for this reason all cattle, sheep and goats processed in Australia destined for the Middle East market are slaughtered by Muslims approved by accredited certifying authorities according to strict Islamic law.

Figure 3.8.4. Occurrence of animal diseases in three main producing areas

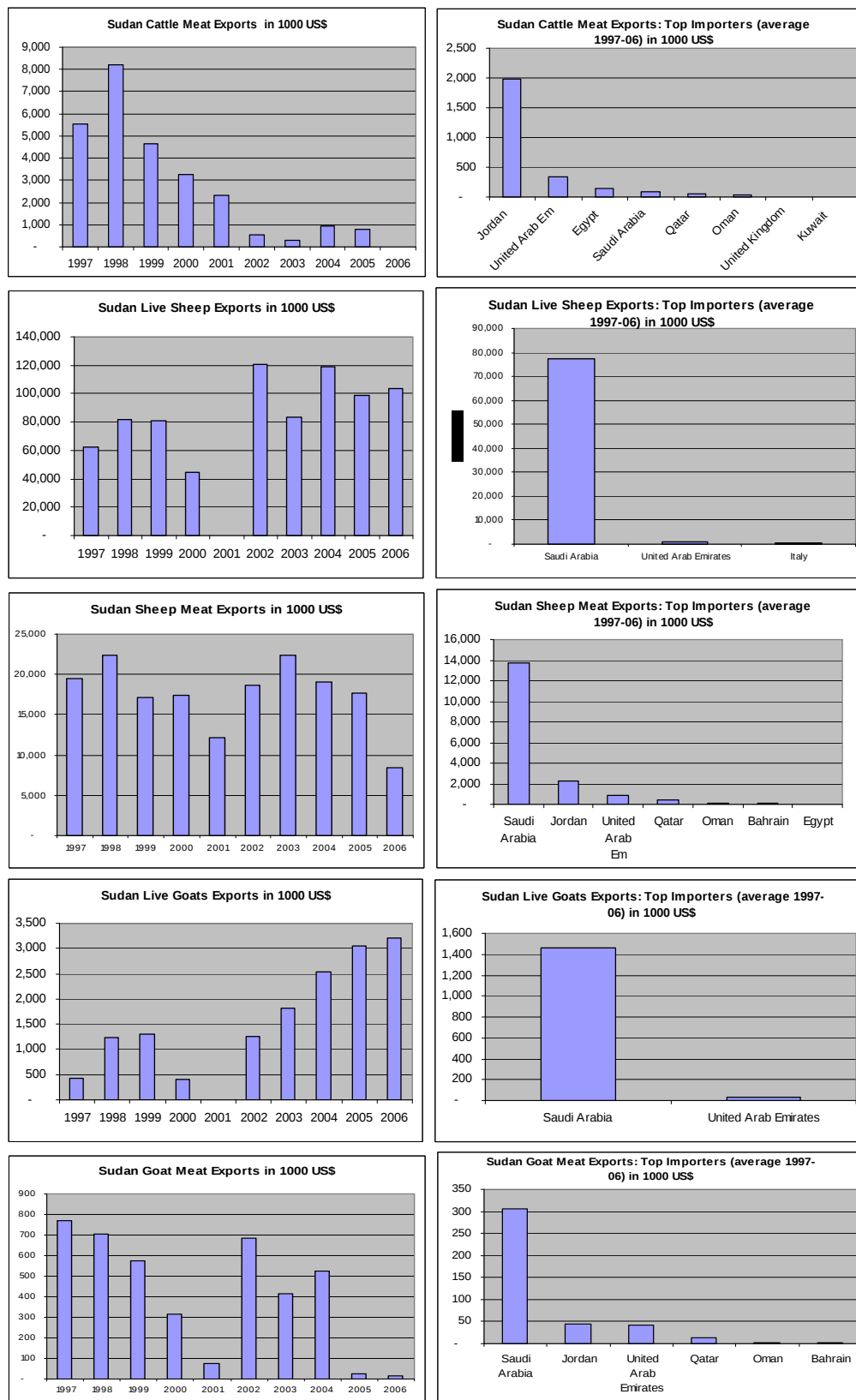


Source: Abdelrahim Suleman, 2006.

Source: Suleman, A. (2006). *Sero-prevalence and impact of selected diseases (PPR and Heart-water) affecting small ruminants in west Kordofan State (El Khawi), Blue Nile and Gedarif States of Sudan*. Unpublished M.Sc. Thesis, Veterinary Science, University of Khartoum.

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Figure 3.8.5. Exports of cattle meat, live sheep & goats and sheep & goat meat



Source: FAOSTAT

3.9 Agriculture-Based Manufacturing Products

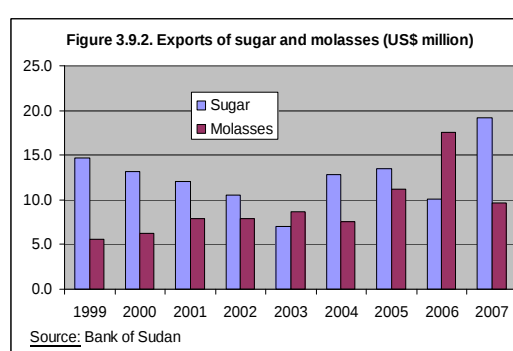
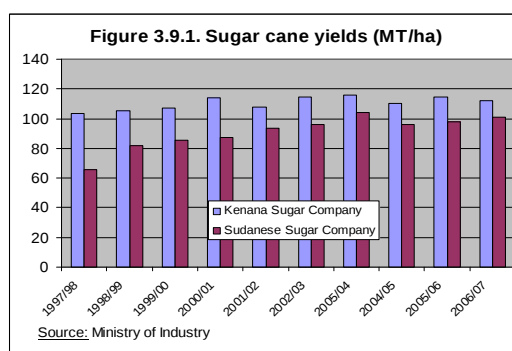
Sudan agriculture is the source of a wide range of raw materials for the production of a variety of products such as sugar, edible oil, animal feed, preserved fruits and vegetables, spinning and weaving, leather industries⁴⁸. Commodities that have been important for export include sugar, molasses, edible oils, cakes/concentrates, yarn, hides and skins. Of these, the oilseeds-based commodities (edible oils and cakes) were discussed earlier and are of diminishing importance in Sudan's export portfolio. The most important commodities are sugar and molasses of over US\$20 million export value during 2001-07, and hides and skins, amounting also some US\$20 million export value, although all of them experience considerable annual variation.

3.9.1 Sugar

Sugar production in Sudan began with the establishment of the Gunied Sugar Factory in 1962, when Sudan was a sugar importer, of some 200,000 MT annually. In 1965 a second sugar factory was established, New Halfa, bringing the total capacity to 75,000 MT of refined sugar. A third factory Sennar with a capacity of 110,000 MT/year began production in 1976 and a fourth, the Assalaya Sugar Factory began production in 1979, again with a capacity of 110,000 MT/year. All these were owned by the public sector, the Sudan Sugar Company.

A substantial sugar production capacity was the Kenana Sugar Company (owned by the Government of Sudan as well as Sudanese and foreign private sector investors). It is one of the largest and modern sugar factories in Africa and the Middle East. It began producing in 1980 with a designed capacity of 300,000 MT/year. It was expanded in 2001 to crush 26,000 MT of cane/day and have production capacity of 450,000 MT of sugar/year. Kenana Sugar Company attained 100% of its designed capacity and has reached a contract with a Brazilian company by which the factory began to produce and export ethanol using sugar by-products in 2009.

The sugar industry in Sudan experienced a continuous expansion both horizontally and vertically which contributed to an increasing productivity of the industry. Rehabilitation and upgrading of old sugar factories run by the public Sudanese Sugar Company was undertaken, while Kenana Sugar Company has adopted a long term investment strategy to invest on new facilities and replace the old ones. Also cane productivity has increased during the past ten years, aided by pursuing an ambitious research programme and adopting improved agricultural practices.



⁴⁸ Government policies that have benefited the sector include: lifting of sugar monopoly in 2001 and levying floor price fees on imported sugar SDG 20/MT, which was increased to SDG 30/MT; reduction in direct taxes from 30% to 10%; and lifting export fees on all manufactured exports, except raw hides and skins which remained at 15%.

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For sugar, the main importing countries include the EU where Sudan enjoys a preferential access to that market at higher than world market prices. Major developments are under way in reforming EU agricultural policies, unilaterally and in the context of the Doha Round at the WTO. Also sugar, as well as other agricultural commodities has become much more integrated than before with the energy sector (ethanol production) and developments in that sector would be a determining factor for sugar prospects in the future⁴⁹. While Sudan has plentiful fossil fuel resources and the imperative of producing ethanol may not be very strong, the use that could be made of sugar and its by-products (such as molasses and bagasse) would have to be seen within this changing global environment. Also, it would appear that in view of the relative scarcity for livestock feedstuffs and their high cost for the livestock industry, as discussed in an earlier section, a strategy for better exploiting sugar by-products for livestock feed would be warranted.

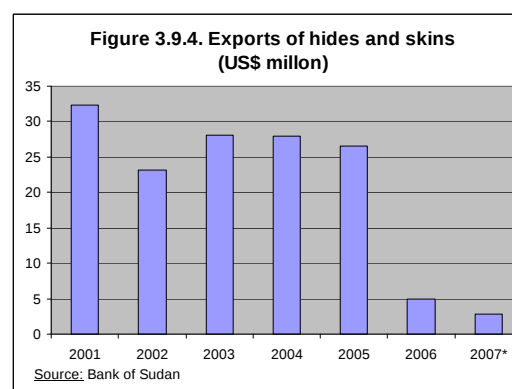
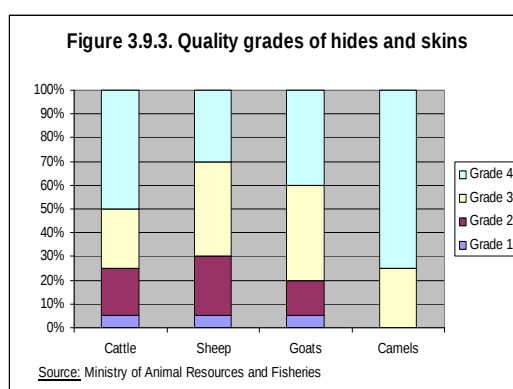
3.9.2 Hides and Skins

Hides and skins and the extended leather industry are an important sector in Sudan both as a source of employment and export earnings. Modern industry of leather in Sudan started in 1940s with trading in raw material under the private sector. During 1970-80, the leather industry was largely managed under the public sector until the end of the 1970s when the private sector resumed its activities.

By 1993 and due the ban of exporting raw hides and skins, tanning began as an established industry in the country for production of tanned leather for domestic and export markets, and the number of tanneries increased from 5 to 23 between 1992 and 2000. The ban of exporting raw hides and skins was diluted by allowing their exports but by imposing an export tax of 15% on exported raw hides and skins.

The total production of hides and skins averaged 31.3 billion pieces during 2002-07, equivalent to 68.6 thousand MT. However, the quality of hides and skins is low (Fig. 3.9.3), with the highest percentage of the hides and skins are found of grades 3 and 4.

At present, the tanning capacity in Sudan includes both modern and traditional types with a total designed capacity of 1,430 pieces per year for cattle and 13,050 pieces for sheep and goats. In total, both the traditional and modern tanneries were operating at lower than designed capacity, of about 60% to 65% respectively.



⁴⁹ Schmidhuber, J, *Impacts of an increased biomass use on agricultural markets, prices and food security: A longer-term perspective*, "International symposium of Notre Europe", Paris, 27-29 November, 2006; Konandreas P. and J. Schmidhuber, *Global Biofuel Production Trends and Possible Implications for Swaziland*, Swazi National Sugar Conference, Mbabane, Swaziland, July 2007.

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Sudanese hides and skin are mostly exported in raw form, with few as tanned leather. Hides and skins became an important foreign exchange earner providing well over US\$20 million per year in most years, although there has been a substantial decline in the last two years (Fig. 3.9.4). The average quantity of total exported hides and skins dropped from about 5.78 million pieces in 2003 down to 4.35 million pieces by 2007. Cattle hides accounted to 40% on average of the total exported hides and skins during 2003-07 and the remainder represented sheep and goats skins. The low values of 2006 and 2007 demand consideration within future reform policies.

The main importing countries for hides and skins are Pakistan, Lebanon, Turkey, China, Egypt, India, Italy, Saudi Arabia, Hong Kong, Syria, Mexico, France, Germany, Spain, and Nigeria. The main competing countries are Italy, Hong Kong, China, Brazil, USA, Germany, Argentina, Pakistan, Ethiopia, Turkey and Kenya.

Several constraints of production and export of hides and skins that have been identified include, inter alia, the following:

- low quality of hides and skins, inter alia due to marking of animals by nomads and in the process reduce the quality and grade of hides and skins, trekking of animals in wood and natural pastures expose their skins to the risk of injuries from thorny trees and shrubs,
- slaughtering done in houses reducing the quality of the hide,
- low productivity due to inadequate training in leather preparation and grading,
- non transparency of trade operations
- high taxes and fees on exported hides and skins,
- lack of qualified labour in the leather industry due to inadequate skilled trainers and poor training programs.

The industry's vision to rectify these problems includes, inter alia, the following:

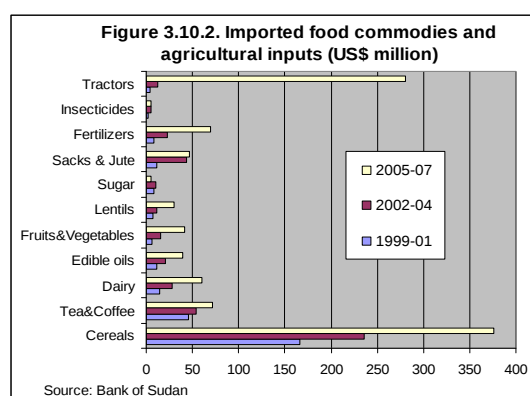
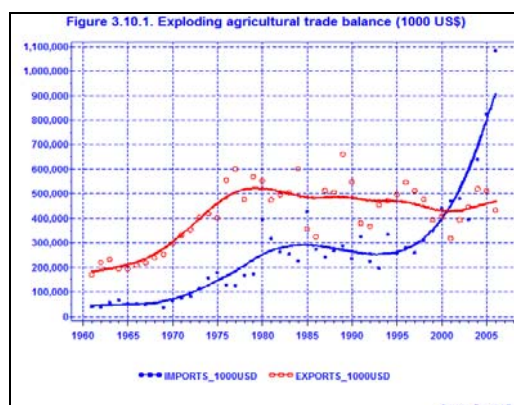
- reducing injuries of hides and skins by 10% to 50% during 3 years,
- training human staff in hides and skins preparation and grading,
- rehabilitating tanneries and equip them with new technology,
- modifying the 1954 Law of hides and Skins to match the new evolutions in processing and trade (registry and licensing of traders, slaughtering labour, etc),
- applying quality control and standards for hides and skins,
- establishing a higher council for leather, with active representation of the private sector,
- putting an end to the continuous change of government policies on hides and skin to reduce instability and mistrust of investors in the sector,
- providing technical and financial support for the establishment of a specialized industrial area for leather, taking into consideration all modern environmental-safe technologies,
- subsidizing applied research in the field of leather chemicals and use of by-products and clean technologies,
- subsidizing the implementation of machine flaying in all slaughterhouses in Sudan,
- preparing training programs and training of trainers,
- facilitating technology transfer in the field of leather finishing.

3.10 Trends in Overall Agricultural Trade Balance and Trading Partners

3.10.1 Negative and Exploding Agricultural Trade Balance Since Late 1990s

Until the late 1990s, the agricultural trade balance of Sudan was consistently positive, notwithstanding fluctuations both of agricultural exports and imports from year to year. The tilt to the negative side came from the increase in agricultural imports, following the boom of petroleum export earnings from 1999 onwards. Since then there has been a huge increase in all food and agriculture-related commodities (Fig. 3.10.1). Wheat and wheat flour constitute the main import item among agricultural and food-related products, followed by animal fats and edible oils, tea, coffee and rice. Most of the imports of tea and coffee come from Kenya and Uganda.

Among non-food agriculture-related commodities it is encouraging to note that there have been some sizable increases in agricultural inputs such as chemicals, fertilizers, tractors and pesticides (Fig.3.10.2). As these are essential inputs to expanding and intensifying agricultural production, these trends should have a positive effect on agricultural growth and productivity gains. Among other commodities, textiles and wood products have also seen large increases. Again, this is also a positive sign in helping the development of a generally labour-intensive domestic garment and furniture industry.



3.10.2 Increasing Geographical Concentration of Agricultural Trade

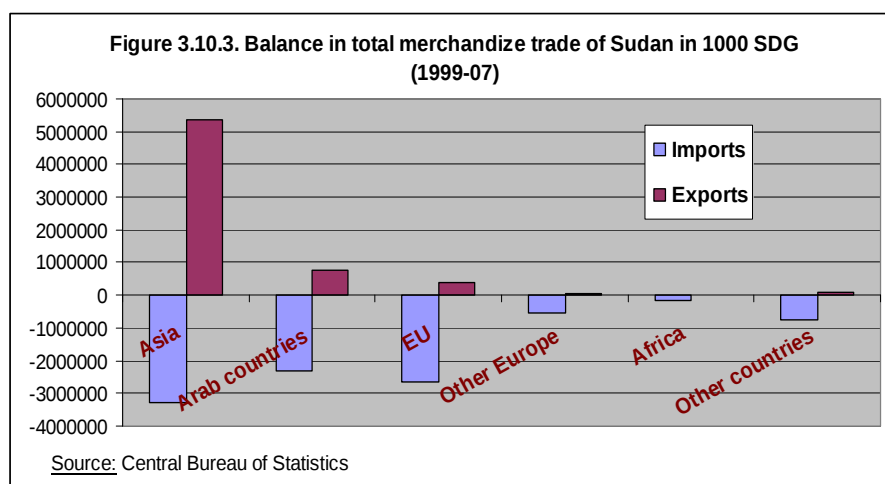
The dominant trading partners of Sudan in the 1960s and 1970s were industrialized countries and European countries in particular. This continued through the 1980s and 1990s, although gradually Arab and Asian countries were gaining increasing shares. These trends of the 1980s and 1990s have been much more pronounced since the advent of petroleum exports from 1999 onwards. Asian alone (and China in particular) account now for the lion's share of Sudan total merchandize exports (86% in 2006 and growing). Next to that is Arab countries of the Middle East and Gulf region with a share less than 10% and the remainder is accounted for by European and other countries (Fig. 3.10.3).

There is relatively little trade with African countries, including Sudan's COMESA partners (aside from Egypt, see below). Overall, for all merchandize trade, it is only with Asia that Sudan has a positive trade balance and that is due to the huge petroleum exports to that region. When petroleum is excluded, leaving basically agricultural exports, there is better diversification of export destinations, with Saudi Arabia on top of the list (some 20-25%, depending on the year). All Middle East countries together account for some 30-35% of total agricultural exports, European and other

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industrialized countries have a combined share of about 25% and the remainder is basically accounted by Asian countries (with China and India on top of the list).

While the sources of imports of Sudan are much more diversified than its export destinations, the broad picture is similar, with Asia and China in particular being the main origin of imports. Thus, Asia accounts for some 35% of total merchandise imports of Sudan, Arab countries of the Middle East and Gulf region some 25%, European countries for some 30% and the remainder from other countries.



4. Competitiveness of Agricultural Exports

This Chapter looks at the competitiveness of agricultural exports by employing several measures that have been suggested in the literature and for which analytical work has been carried out in the past, including for Sudan. The analysis here draws heavily on existing assessments and also reports on some new work, especially on value chain analysis.

4.1 Revealed Comparative Advantage (RCA)

As a starting point for examining the comparative advantage of Sudan's agricultural exports, the measure of Revealed Comparative Advantage (RCA) has been calculated⁵⁰. The RCA ratio measures the relative export performance by country and industry, and is defined as the ratio of a commodity's value share in the country's total exports in relation to that commodity's share in total world trade. Formally, for country *i* and commodity *j* it is defined as⁵¹:

$$RCA_{ij} = 100(X_{ij}/X_{iT})/(X_{wj}/X_{wT})$$

where:

X_{ij} is exports by country *i* of commodity *j*,

X_{iT} is total exports by country *i*,

X_{wj} is total world exports of commodity *j*, and

X_{wT} is total world exports of all commodities.

For a commodity that has a high share in a country's total exports relative to other commodities, and that share is larger than the global share of the same commodity in total world trade (all commodities and all countries), the RCA would be greater than unity. It implies that the country has a comparative advantage in that commodity and since it is exporting it, it should also be competitive in world markets.

Table 4.1.1. RCA indices for aggregate commodity groups

HS code	Description of products	Average 2001-03	Average 2004-06
13	Lac, gums, resins, vegetable saps and extracts nes	34.6	46.1
01	Live animals	24.7	21.2
12	Oil seed, oleagic fruits, grain, seed, fruit, etc, nes	16.6	12.2
52	Cotton	5.7	4.2
41	Raw hides and skins (other than furskins) and leather	3.6	2.1
17	Sugars and sugar confectionery	3.2	1.9
99	Commodities not elsewhere specified	2.5	0.0
02	Meat and edible meat offal	1.4	0.6
15	Animal, vegetable fats and oils, cleavage products, etc	0.7	0.0
14	Vegetable plaiting materials, vegetable products nes	0.4	0.3
23	Residues, wastes of food industry, animal fodder	0.4	0.0
05	Products of animal origin, nes	0.3	0.1
10	Cereals	0.2	0.1
08	Edible fruit, nuts, peel of citrus fruit, melons	0.2	0.1

Source: COMTRADE database

⁵⁰ Comparative advantage is the ability to produce a good at lower cost, relative to other goods, compared to another country. With perfect competition and undistorted markets, countries tend to export goods in which they have comparative advantage.

⁵¹ Balassa, Bela, 1965, "Trade Liberalization and 'Revealed' Comparative Advantage," *Manchester School* 33, pp. 99-123.

Table 4.1.1 lists the RCA numbers calculated at a very aggregate level using COMTRADE data. Although the data are very aggregate and the limitations of this measure are appreciated, the calculated numbers do confirm that Sudan has a comparative advantage (RCA greater than unity) in the commodities it actually exports in large volumes. This is the case for HS chapter 13 (essentially gum Arabic), live animals (essentially sheep), oil seeds (essentially sesame), cotton, hides and skins, sugar and possibly meat. On the other hand, there are several other agricultural commodity groups for which the calculated RCA index for Sudan is well below unity.

RCAs at a more disaggregated level and over a longer time period also indicate basically the same picture (see Table 4.1.2). This shows the presence of high RCA index for all export crops except for sugar and chilled meat during 1970-89, although the latter also improved during 1990-00. The consistent competitiveness of sesame and sesame cake is evident from the high RCA index for all periods. In contrast, the drastic drop in the RCA for groundnuts confirms the substantial decline in competitiveness of that commodity in world markets.

Table 4.1.2. Estimated RCA indices for individual products

Crop	1971-77	1978-84	1985-89	1990-00
Sorghum	2.5	14	21	13.7
Cotton lint	11	13.5	15.9	10.4
Sesame	99.0	93.3	104.3	135.5
Groundnuts	39	25.7	8.5	1.6
Sugar	0	0.1	0.3	4.6
Chilled meat	0.3	0.0	0.0	4.6
Hides and skins	1.1	1.0	0.3	0.7
Cotton seed cake	14	5.3	6.2	2.9
Sesame seed cake	103.5	18.4	72.1	61.6

Source: Hassan, M. M.A. *Simulation performance of Agricultural Exports of Sudan under Trade terms of Uruguay AOA and Doha Round*, Ph. D. Thesis, University of Khartoum, 2009.

4.2 Domestic Resource Cost (DRC)

Domestic resource cost is a measure, in terms of real resources, of the opportunity cost of producing or saving foreign exchange. It is an *ex ante* measure of comparative advantage, used to evaluate projects and policies. The term was introduced to the economics literature in 1963⁵².

The DRC ratio is defined as the value of domestic resources (primary, non-traded factors of production) in domestic currency units required to earn or save a unit of foreign exchange. In other words, it is the value of domestic resources per unit of foreign exchange saved for not importing competing goods, or the value of domestic resources per unit of foreign exchange earned by exporting the commodity produced. It can be compared to an accounting price of foreign exchange.

⁵² Bruno, Michael, *Interdependence, Resource Use and Structural Change in Israel*, Jerusalem: Bank of Israel, 1963.

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Mathematically, the DRC ratio can be expressed as follows:

$$DRC = \frac{\sum_{s=1}^n Y_{sj} MP_s^h P_s^d}{[P_j^y - \sum_{i=1}^m A_{ij} P_i^y]}$$

where:

Y_{sj} = quantity of the sth primary non-traded factor used in the production of one unit of the jth commodity

MP_s^h = marginal physical product of the sth input in its best alternative use

P_s^d = domestic price of the sth input

P_j^y = border price of the jth output (fob for exports; cif for imports)

A_{ij} = quantity of traded input i used in producing one unit of the jth output

P_i^y = border price of the ith traded input (fob for exports; cif for imports)

DRC less than unity implies that the productive activity is economically profitable because its production yields more than enough international value added to compensate for the cost of domestic factors used. Otherwise, the country is better-off to import, rather than to produce that commodity.

Table 4.2.1. Computed Domestic Resource Costs for selected commodities

	1991/92-1994/95	1995/96-1999-00	2000/01-2005/06
Groundnuts Gezira	0.75	0.23	0.95
Groundnuts New Halfa	0.09	0.12	0.37
Groundnuts El Obeid	0.04	0.65	1.04
Sorghum Gezira	1.19	1.16	1.17
Sorghum Gadarif	1.33	0.21	1.63
Sorghum ElObeid	0.5	14.79	5.7
Sesame Gadarif	0.49	0.45	0.9
Sesame Demazine	0.69	0.51	1.05
Sesame El Obeid	0.3	0.92	2.46
Cotton Gezira Barakat	0.43	0.42	0.21
Cotton Gezira Acala	0.5	0.33	0.28
Cotton New Halfa Acala	0.2	0.4	0.36
Cotton Rahad	0.5	0.18	0.3
Onions			0.31
Mangoes			0.15
Lime			0.195

Source: Ministry of Agriculture and Forestry, 2009.

It is evident that the calculation of DRCs is demanding in terms of data. Nevertheless, there is a wealth of studies that have focused on DRC calculations for Sudan's agricultural exports, and many of them have indeed shown values well below unity for many commodities (some of these results are shown in Table 4.2.1). However, the limitations of the DRC measure in situations of weak information base are well recognized. In particular, the conclusions are crucially dependent on the assumption that an exogenous value can be found for the shadow price of land, in other words, the net return per feddan for the next best alternative crop. Depending on the choice made, the DRC values can change considerably. Thus, while valuable information can be gained about the transfer effects of government interventions in individual output and input markets by looking at international prices, assessing the opportunity cost of domestic resources involved is more

problematic⁵³.

4.3 Value Chain Analysis

Value chain analysis refers to the physical transformation and value addition of a product from the farm gate to the end-market. This transformation encompasses all economic activities including production, assembling, processing, handling, marketing, transporting and delivering a product of specific characteristics to a certain destination market. It usually involves several enterprises in which different operators work within their respective businesses to add value and improve the overall competitiveness of the final product⁵⁴.

Throughout an agricultural value chain, products are transformed and value is added to them. In the most basic sense, this may simply be the difference between a recently harvested farm product with high moisture content and one that has been assembled in a warehouse and dried for several months. Some agricultural raw materials also undergo some type of industrial processing to produce one or more final traded commodities. This may involve any number of processes such as shelling of groundnuts and crushing them to produce groundnut oil, or ginning of seed cotton to produce lint and cottonseed.

Tracking the accrued value along the value chain is one of the main benefits of value chain analysis as this is a key determinant of international competitiveness. Because a country is only able to influence prices within its own borders, value chain analysis is particularly concerned with the composition of domestic costs. The cumulative value of a product at any given stage in the value chain is equal to the sum of all costs involved in producing, assembling, processing and transporting one unit of output up to that stage, including also legitimate local business expenses and mark-ups, official customs duties and taxes as well as unofficial payments that sometimes have to be made to facilitate a particular operation.

This cumulative value is often referred to as 'Shipment Value (SV)', and can be used for the calculation of two important indicators⁵⁵, namely the 'Export Competitiveness Ratio (ECR)', and the 'Import Competitiveness Ratio (ICR)'. The ECR is calculated by dividing the SV at the border by the export parity price at the border, while the ICR is calculated by dividing SV at a main domestic consumption point by the import parity price of the same domestic consumption point⁵⁶.

The ECR and ICR competitiveness indicators can be interpreted in much the same way as the Domestic Resource Cost (DRC) indicator used in domestic resource cost analysis. A competitiveness ratio less than unity indicates that the country is competitive in the production of that commodity, while a ratio more than unity indicates that the country is not competitive in the production of that commodity.

The value chain analysis not only shows if the country is internationally competitive, but also helps to identify key stages where costs can most effectively be reduced. For example, if the numbers show that transport and domestic fees account for a large share of total costs, this would suggest that a reduction in these cost items may be one of the most effective ways for improving international competitiveness. Also, this is important information in deciding which enterprises to

⁵³ Babiker Idris, op. cit. explores some of these issues in more depth.

⁵⁴ Each of these operators may not be fully aware of the linkages between their operation and other upstream or downstream participants.

⁵⁵ For more details see: *Awakening Africa's sleeping giant: Prospects for commercial agriculture in the Guinea Savannah zone and beyond*, The World Bank, February 26, 2009.

⁵⁶ In other words, the SV is compared with the cost of bringing similar quality of the commodity into the country from the best alternative source.

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promote and how best to allocate scarce investment resources, as well as in identifying areas where new policies or process innovations could have the greatest impact on international competitiveness.

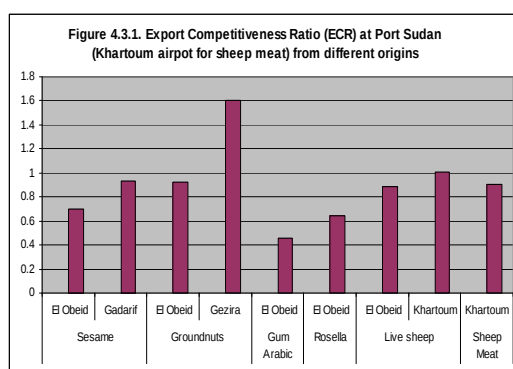
The analysis that follows includes estimation of ECRs for selected exported commodities of Sudan. The export commodities include sesame, groundnuts, gum Arabic, rosella, live sheep, and sheep meat (Annex Table 9.1).

For **sesame** seeds, the analysis captures two separate value-chain processes, the first, from El Obeid Crop Market of North Kordofan State to Port Sudan for export (the final point of exit for exporting sesame) and the second from Gedaref Crop Market again to Port Sudan. The former sesame is grown under a traditional farming system while the latter sesame is grown under rain-fed semi-mechanized farming system. The latter has a relative advantage over that produced in Kordofan by virtue of its proximity to Port Sudan.

The shipment value (SV) of El Obeid sesame at the farm gate level is SDG 840.3/MT, which when added to assembly costs between market and Port Sudan of SDG 95.8/MT and the assembly cost at Port Sudan of SDG 108.7/MT gives a total SV of SDG 1044.8/MT at the port exit point.

The parity price for sesame at Port Sudan is calculated by considering first an appropriate international reference price (in this case US\$ 776.6/MT). This converted into SDG and adjusting for logistics cost at port to 'reach' the international market gives an export parity price of SDG1499.1/MT. The Export Competitiveness Ratio (ECR) is then obtained by dividing SV at Port Sudan by the export parity price at the same port, which gives an ECR of 0.70 (Fig. 4.3.1). The ECR being less than unity indicates a competitive position of sesame produced and exported from Kordofan State.

For sesame produced and exported from the semi-mechanized farming system, it was observed that the proximity of Gedaref to Port Sudan advantaged the assembly and logistic costs than those from El Obeid. That is indeed reflected in the cost data. On the other hand Gedaref sesame commanded a higher price at the farm level. On balance, the ECR for Gedaref sesame turned out to be 0.94 (again less than unity) which also indicates competitiveness of that crop in the international market, despite its higher production cost.



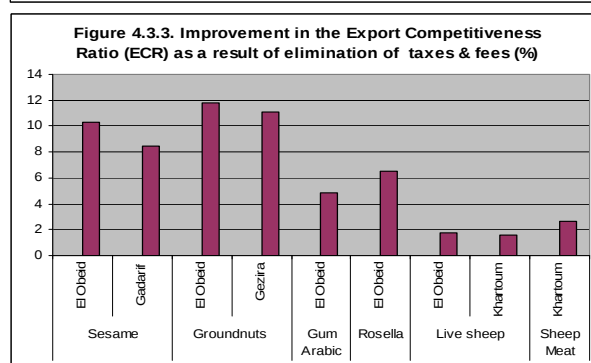
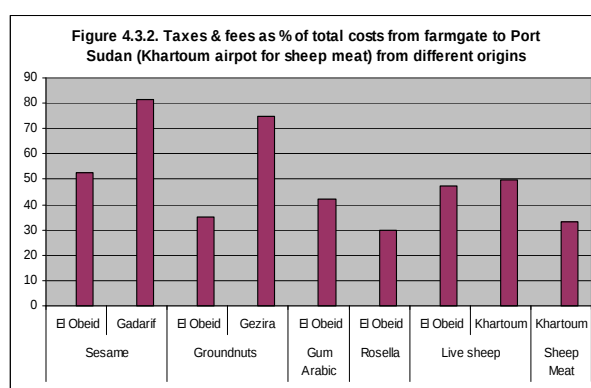
For the other commodities considered, **groundnuts** for El Obeid exported through Port Sudan, have an ECR also less than unity although close to it, indicating competitive position, while groundnuts for Gezira are not at all competitive with an ECR of 1.6. El Obeid **gum Arabic** and **Rosella** show a very low ECR, indicating excellent competitiveness.

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When it comes to **live sheep**, those originating in the El Obeid market and shipped through Port Sudan gave a competitive position while those originating in the Khartoum Omdurman market and shipped again through Port Sudan did not. On the other hand, on the basis of the data collected, chilled **sheep meat** exported through the Khartoum airport⁵⁷ gave a competitive position, despite the arduous process involved in bringing the sheep and preparing the carcass meat for export.

On important piece of information obtained from the value chain analysis is the numerous costs involved in the process from the farmgate to the exit port, including taxes, fees and other charges levied along their way, as well as in Port Sudan itself. The numbers confirmed what is already known, namely that numerous such taxes and fees are a heavy burden for the trade. These charges were large, between 30% and as much as 80% of the total assembly, logistic and transport costs incurred between the farm gate and the port of exit (Fig. 4.3.2).

In order to assess how competitiveness would be affected without such taxes and fees, the calculation of ECRs was repeated assuming these charges were set to zero. The improvement in the ECR was significant for certain crops such as sesame, groundnuts, gum Arabic and Rosella (Fig. 4.3.3). This does suggest the importance of considering reduction or complete elimination of such charges. More importantly, however, it is the indirect costs associated with these practices, which unfortunately cannot be captured by the ECR indicator. These have to do with the deterioration of the commodities transported in view of long delays for the collection of fees and to complete the paperwork involved.



⁵⁷ These sheep actually are trekked to Omdurman market from Nyala (2000 km away) or from Kordofan (600-800 km). They are fattened for few days and then sold for slaughtering either in Omdurman or in Khartoum North and then transported to Khartoum Airport as carcass meat for export. The assembly and logistics involved in all this process carries several costs as well as subjected to several fees and taxes.

Wheat is an imported commodity and the analysis of its competitiveness was undertaken with respect to the Gezira scheme as it is the largest area for cultivating wheat, compared to the better suitable climate of the Northern State, however with limited fertile lands along the banks of the River Nile. The calculation of the Import Competitiveness Ratio (ICR) along same procedures as in the case of the ECR, gave values just above unity, thus in general not competitive although close to the borderline.

These results would indicate that cultivation of wheat in the Gezira scheme is not competitive compared to the imported wheat at the international price paid in 2008 from available supplies in Gulf States ports. Clearly, however, it all depends on the prevailing world market price and what is likely to be that price in the future⁵⁸. To the extent that the strengthening of grain prices we have experienced in recent years continues into the future, the prospects of wheat production in Sudan are better than before (see Annex 3 on global outlook for selected food commodities published by FAO and OECD).

⁵⁸ The price of wheat in Khartoum in May 2009 was down by about 36% at US\$409 compared to the same period in 2008. The fall in international wheat prices, as well as improved domestic market supplies have contributed to this decline. However, the depreciation of the Sudanese Pound (which fell 17% against the US\$ during the period indicated) has meant that domestic prices have not decreased by as much, but still declined by 25% in May 2009 to SDG 978/MT, compared to SDG 1311/MT a year earlier.

5. Constraints and Opportunities due to External Factors

5.1 Ordinary Market Access Barriers and Opportunities

With a few exceptions, in terms of the traditional barriers to trade (border tariffs), Sudan does not face serious access problems at present. In most developed countries MFN rates for agricultural commodities of export interest to Sudan are either already low or Sudan benefits from non-reciprocal preferential trade arrangements (in view of its LDC status) which allow it to enjoy privileged access to these markets.

On the basis of aggregate tariff rates (Table 5.1.1) it appears that only a handful of countries pose any market access problems for Sudan at present, including India and China, important destinations of Sudan's agricultural exports as we have seen in the previous section. Two important agricultural products presently adversely affected by India's MFN rate is gum Arabic (20% tariff) and cotton (10% tariff). India's overall average applied rate is 37% and for most commodities it can go up to 150% (as in the case of sugar) and as much as 300% (in the case of vegetable oils), two commodities of potentially export interest of Sudan in that market.

Table 5.1.1. Exports to major trading partners and duties faced

Major markets	Bilateral imports		Diversification		MFN AVG of		Pref.	Duty-free imports	
	in million		95% trade in no. of		traded TL		margin	TL	Value
	US\$		HS 2-digit	HS 6-digit	Simple	Weighted	Weighted	in %	in %
Agricultural products									
1. Saudi Arabia	2006	142	3	4	3.0	0.7	0.7	100.0	100.0
2. European Communities	2006	109	4	7	4.2	1.9	1.1	97.2	91.4
3. China	2006	63	2	2	13.6	14.0	13.2	80.0	86.8
4. Mexico	2006	15	1	1	7.5	9.9	0.0	25.0	1.1
5. India	2006	15	2	2	38.1	11.9	0.8	5.2	0.1
Non-agricultural products									
1. Japan	2006	2,994	1	1	0.0	0.0	0.0	100.0	100.0
2. China	2006	1,880	1	1	6.9	0.0	0.0	27.2	100.0
3. Korea, Republic of	2006	230	1	1	4.0	5.0	0.0	25.0	0.2
4. Canada	2006	63	1	1	5.9	0.0	0.0	100.0	100.0
5. United Arab Emirates	2005	54	1	1	4.7	0.2	0.2	100.0	100.0

Source: *World Tariff Profiles*, WTO, 2008

In the case of China, cotton is subject to the applied MFN tariff of 38% which can be raised up to the bound level of 60%. Sugar is also a commodity potentially affected, as China imposes a tariff of 50%, as well as vegetable oils where the ceiling bound tariff is 63%, although its applied tariff for vegetable oils is low at present. In addition, other Sudanese products that potentially can face tariff barriers in the Chinese market include meat (20-25%) and fruits, which includes citrus fruit or melons (some 25-30%). China has recently introduced a non-reciprocal preferential scheme for African countries, which is still limited in scope, however. Considering the importance of this single import market, a more generous GSP scheme of China could be highly beneficial for Sudan.

In addition to China and India, market access constraints in the case of Korea are also notable, related to the narrow coverage of its GSP scheme whereby none of Sudan's major exports are included in it. At the same time Korea administers a tariff rate quota (TRQ) regime which includes sesame seeds imports.

Beyond these three specific country situations where Sudan exports are currently concentrated, there are also other markets which could pose access problems in the future as Sudan makes efforts to diversify geographically its export base. Among the African countries those that could pose problems are the ones that do not belong to the COMESA group (see below) and this includes countries of Central and West Africa. For example, Nigeria, a huge market in West Africa has a potentially very protective import tariff profile, with tariffs bound under the Uruguay Round at 150% across the board. Although applied tariffs are generally much less than bound levels, countries have the option to raise these tariffs up to the bound level.

Elsewhere, in Latin America, bound and applied tariffs are generally low, although for some products there could pose access problems. Even in the case of Brazil, for example, which has very low applied tariffs and is the champion for further trade liberalization, certain products enjoy higher bound tariffs than others, such as cotton.

Of course it is to be hoped that with the conclusion of the Doha Round such high bound tariffs would come down everywhere, but that process is yet to be concluded and even then there are special provisions for both developed and developing countries for continued protection of certain sensitive sectors, in the form of sensitive products for both groups and in the form of Special Products and the Special Safeguard Mechanism for developing countries. Although Sudan is not participating directly in the Doha Round negotiations, it could be informed of developments in the negotiations and ally with other countries which have similar trade interests.

A more general concern relates to tariff escalation which is prevalent in many countries, both developed and developing. This could become an issue for Sudan to the extent that it moves up into value-added processed products which generally face higher tariffs than the primary commodities which Sudan exports at present. Again under the Doha Round tariff escalation would be addressed somewhat but the problem is not likely to go away for good.

5.2 Reciprocal Preferential Arrangements

Among Sudan's regional preferential arrangements are the Common Market of Eastern and Southern Africa (COMESA)⁵⁹ and the Greater Arab Free Trade Area (GAFTA)⁶⁰. Preferential reciprocal tariff rates have been negotiated among the members of these regional groups, while they apply their higher MFN rates to third countries. There is some overlap between the two groupings with Egypt, Libya and Sudan belonging to both of them.

COMESA was established as a Free Trade Area (FTA) by a treaty signed on 5 November 1993, building on an earlier preferential trade agreement, and aimed at creating a common market in Eastern and Southern Africa. The COMESA Customs Union was launched in June 2009 in Zimbabwe. COMESA has agreed on various instruments including a common tariff nomenclature, common external tariff⁶¹, COMESA Fund, common valuation system, as well as legal instruments that include the council regulations governing the COMESA Customs Union and the Common Market Customs Management Regulations.

⁵⁹ Sudan was an original member of the COMESA Free Trade Area of 2000 when nine of the member States eliminated their tariffs on COMESA originating products in accordance with the tariff reduction schedule adopted in 1992. It presently has 19 member countries: Burundi, Comoros, D.R. Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia and Zimbabwe.

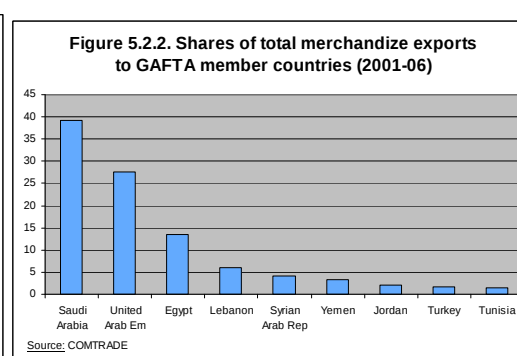
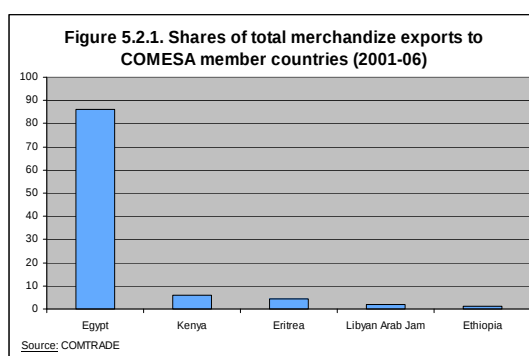
⁶⁰ GAFTA came into existence on January 1, 2005. GAFTA has presently 17 Members States: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen.

⁶¹ The structure of the common external tariff for COMESA is zero for raw materials and capital goods, 10% for intermediate goods and 25% for final products.

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As regards COMESA, total merchandise exports of Sudan to that group of countries averaged some US\$61 million, or 1.8% of its total world exports in 2001-06. Just five members accounted for 99.3% of total Sudan exports to COMESA, with Egypt alone (a member of both GAFTA and COMESA), accounting for over 86%. Agricultural products represented a small share of Sudan's exports to other COMESA countries, except for Egypt which imports live animals, sesame, molasses, and cotton from Sudan under preferential (zero tariff) terms (Fig. 5.2.1).

Kenya is the second destination of Sudanese exports within COMESA. Despite its proximity and it being a potentially attractive market, issues having to do with rules of origin (a precondition for benefiting from zero tariffs within COMESA) impede the growth of trade in some products such as sugar⁶². It has been reported that Sudan and Kenya concluded an agreement in 2006 on procedures for satisfying COMESA rules of origin. This should lead to a better utilization of the preference advantage that Sudan enjoys in Kenya's market. However, this issue is of a general nature for COMESA as a whole and should be addressed also at that level as it concerns all member countries. However, in the medium term, there is great scope for Sudan to look at the issue of rules of origin with great care considering the great potential that exists for trade with neighbouring COMESA members, especially on products that COMESA external tariffs are high.



Despite the reduction in tariffs within COMESA, member states are still grappling with non-tariff barriers which restrict the flow of exports and imports. According to available information, some 56% of all reported non-tariff barriers consist of customs and administrative entry procedures, including customs valuation, rules of origin and pre-shipment inspection; technical barriers to trade; sanitary and phytosanitary measures; and import regulations⁶³.

As regards, GAFTA, total merchandise exports of Sudan to that group as a whole averaged US\$385 million annually in 2001-06, representing nearly 12% of Sudan's total world exports. Saudi Arabia accounted for nearly 40% of the total to GAFTA, followed by UAE with 27% and Egypt with 14%. Just 5 GAFTA countries accounted for over 90% of Sudan's total exports to that group (Fig. 5.2.2).

Many of the GAFTA countries are net importers of food and other agricultural commodities and Sudan could take advantage of the preference margin that enjoys in those countries to meet a greater share of their increasing food and agricultural imports. While the preference margin on the

⁶² Kenya has a high MFN duty on sugar of 100%, which implies that there is a substantial preference margin from which Sudan could benefit.

⁶³ Recognizing the problems faced by non-tariff barriers, a sub-regional meeting on the status of the elimination of non-tariff barriers in COMESA took place in Blantyre, Malawi in 2007. Other reported complaints included that exporters are forced to pay export charges twice within the country of origin. Furthermore, exporters spend lengthy periods of time at the borders before authorities let them into the countries where they aim to market their goods. Some member countries, according to the documentation, exhibited a lack of willingness to adhere to the COMESA free trade agreement, fearing loss of competitiveness and revenue.

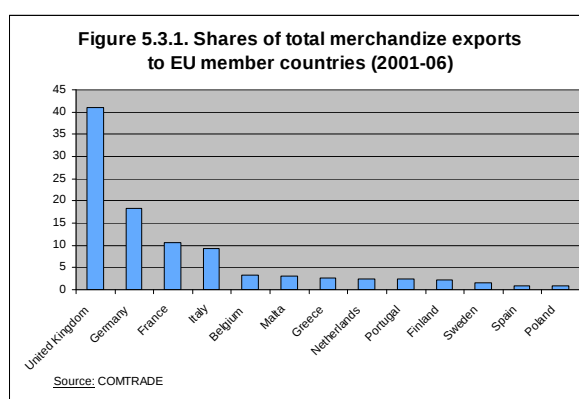
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primary products that Sudan presently exports to GAFTA countries are generally low (due to the generally low MFN rates in these countries for primary commodities⁶⁴), the situation would change when considering value-added processed products where their import duties are much higher and hence the value of preferences for Sudan much more valuable. It follows that to the extent that Sudan can move up the commodity value chain scale and succeeds in producing processed products of export quality, GAFTA should be a priority export market. In other words, it would be easier for Sudan to compete in GAFTA countries than in third countries.

However, Sudan's experience so far in trading with GAFTA has not been without problems. Custom valuation of imported commodities has been one of them, which combined with inflows of cheap products of low quality has pushed many national enterprises and activities in Sudan out of production. Commodities, which are produced more competitively in Egypt and other Arab countries, are alleged to have been responsible for the closure of a large number of factories in Sudan, with the consequent adverse effects on employment in the country. Overall, statistics from the Ministry of Foreign Trade show that some 41% of all factories in Sudan closed during 2001-07 and for the South the share of closures approaches two-thirds. Also, private investment from Arab countries have largely concentrated on services such as transportation, restaurants and catering services and much less in productive activities including agriculture.

5.3 Non-Reciprocal Preferential Arrangements

Turning to non-reciprocal schemes benefiting Sudan's agricultural exports, the European Union (EU) has been one of the main destinations of its exports in the past, however that share has declined considerably. During 2001-06 total merchandise exports of Sudan to the EU averaged some US\$163 million per annum, or less than 5% of Sudan's average total world exports during that period. UK is by far the main destination with over 40% share, followed by Germany, France and Italy. These four countries accounted for nearly 80% of total Sudanese exports to the EU and 8 countries for over 90% (Fig. 5.3.1).



Sudan benefits from EU's Everything But Arms initiative. However the EU's MFN duties for most products of interest to Sudan are very low or zero and hence the value of the preferential access to that market is generally low. The exception is sugar where the EU MFN rate is very high⁶⁵ and Sudan enjoys a price for its exports to EU at twice the level of the world market. Another commodity which could be of interest to Sudan in the EU market is chilled sheep meat for which the EU is a major

⁶⁴ Among primary commodities, only in sesame Sudan enjoys a substantial preference margin in GAFTA countries and that only in a handful of them (i.e. Morocco has an MFN tariff for sesame of 25% and Tunisia 27%).

⁶⁵ The EU's MFN tariff on sugar is expressed in specific terms and stands at €339/MT which is close to the prevailing world market price, thus representing an ad valorem tariff equivalent of close to 100%.

importer, although Sudan has no share in that market. Sudan could capitalize on the preferential access it enjoys in the EU market and it would be important to explore and tackle problems constraining meat access to this market, aside from SPS issues.

Sudan is in the process of negotiating an Economic Partnership Agreement (EPA) with the EU, in line with the Cotonou Agreement between the EU and the Africa, Caribbean, and Pacific (ACP) countries which expired at the end of 2007. Until these negotiations come to an end, Sudan is benefiting from the quota-free and duty-free access to the EU under the Everything But Arms initiative, as discussed above. As far as access to the EU market is concerned, the EBA provides the same preferential treatment to Sudan except for an expanded sugar quota and more liberal rules of origin which has been provided to other ESA countries that signed the interim EPA at the end of 2007⁶⁶.

The interim EPA initialled by the five EAC countries has tariff-reduction commitments which involve the largest degree of 'back-loading' of any of the interim agreements concluded. According to an ECDPM/ODI study, the EAC countries will only start 'removing positive tariffs on a significant proportion of imports during the second phase' (2015-23). The process of tariff removal for the EAC will only be completed over the period from 2020 to 2033.

The prospect of diverse horizons for tariff-elimination commitments potentially creates considerable problems in terms of moving towards a common comprehensive ESA-EU EPA⁶⁷. This provides the background to the concerns which have been expressed in the region over the consistency of the EPA process with the regional-integration process in eastern and southern Africa.

While having not concluded an interim EPA with the EU may not have serious implications for Sudan-EU trade flows, it is likely to delay the country's prospects for regional economic integration, which includes interventions in several areas, including: trade-related assistance and capacity building; support to private-sector development; removal of supply-side constraints; assistance on standards such as regional accreditation bodies; and generally the development of regional infrastructure through EU's expected contribution to the COMESA Infrastructure Fund.

5.4 Border Barter Trade Arrangements

These arrangements are based on barter trade for products produced in border regions of Sudan and its neighbouring countries. MoFT has been responsible for organizing the border trade agreements since 1994, and in coordination with Bank of Sudan, Customs Department and the specific State, has laid down the main directives for border trade procedures. Exporters and importers registry of border trade takes place in the MoFT in Khartoum. The states are authorized to issue trade licenses on behalf of the MoFT to be distributed in quotas and be monitored for deduction from the endorsed list of commodities of each state.

Several positive aspects of border trade that have been identified include: strengthening political, social and economic relations with border countries (establishment of crop export upgrading center in Dongola and the increase in area under crop production of beans, chick peas, broad beans, shamar and sesame in Northern State and river Nile State, are cases in point); reduction of pressure on main

⁶⁶ As of January 2008 ESA member countries were trading with the EU under three distinct trade frameworks. Five EAC countries had initialled an interim EPA with the EU (Kenya, Uganda, Tanzania, Burundi and Rwanda), another five ESA members had initialled a series of interim EPAs with separate tariff-elimination commitments (Mauritius, Seychelles, Comoros, Madagascar and Zimbabwe), while another seven countries, all LDCs, had declined to initial an interim EPA (Djibouti, Somalia, Eritrea, Ethiopia, Sudan, Malawi and Zambia) and were trading with the EU under the EBA initiative.

⁶⁷ ECDPM/ODI, 'The new EPAs: comparative analysis of their content and the challenges for 2008', March 31st 2008
http://www.acp-eu-trade.org/library/files/ECDPM-ODI_EN_310308_ECDPM-ODI_The-new-EPAs.pdf

ports of Sudan by having goods transacted through land borders, reduces transportation costs and raises tariff revenues; reducing smuggling of export commodities (e.g. gum Arabic and camels); establishment of custom stations and opening of banks branches to facilitate border trade transactions; improvement of regional airports in border states, facilitating trade flows to neighbouring countries and to other further-away international markets (e.g. Nyala, EL Fasher, Dongola and El Obeid Air Ports); and improving infrastructure for livestock trade supported with veterinary services.

5.5 Accession to the WTO

Currently there are 29 countries in their accession process at the WTO, among them Sudan. Sudan has been pursuing its accession for some time and has invested considerable effort in negotiating and supplying the requested information. It submitted the Memo of its Foreign Trade Regime in 1999, provided check-list documents on agriculture, services, standards and intellectual property rights in 2003 and the legislative action plans in 2003 and 2004. Following up on these submissions, the Working Party on Sudan's accession met in July 2003 and March 2004, while a third meeting scheduled for October 2004 was postponed indefinitely. Despite the interruption of Sudan accession negotiations, the Government is still pursuing on legislative reforms to comply with WTO rules. Also, Sudan updated its initial offers of maximum restrictions on traded goods and services from WTO members in February 2005.

Notwithstanding the special circumstances that have burdened Sudan's WTO accession, this process is time consuming in the best of circumstances for a number of reasons, among them⁶⁸: (a) there are extensive legislative requirements that need to be met prior to accession and, legislative processes are inherently time consuming; (b) acceding countries have weak institutional capacities and sometimes even lack familiarity with the economic and legal issues that need to be addressed; (c) WTO members have been placing greater demands on acceding countries than the disciplines required from existing members; (d) meeting the requirements for accession to the WTO is ultimately the responsibility of the acceding government, although technical assistance is available from the WTO itself and other international organizations; and (e) accession requires that the specific commercial interests of all members are addressed, which frequently requires extensive and time consuming negotiations.

The toughest part ahead to be reckoned with, once Sudan's accession process is resumed, relates to the last point, which involves negotiating bilateral market access agreements with its main trading partners which will then have to be multilateralized, i.e. accepted by other members. By and large, new members to the WTO since 1995, have agreed to much tougher market access conditions (even the acceding LDCs) than those applicable to existing members and Sudan is not likely to be an exception (Table 5.5.1).

The question often being asked in the context of countries contemplating their membership to the WTO is the benefits and costs involved. The main conclusion for LDCs as a whole and for individual countries within that group is that the benefits from WTO membership in terms of improved market access for traditional exports are likely to be limited. By and large, LDCs enjoy preferential access to industrialized countries' markets (paying low or zero tariffs), although supply bottlenecks seem to hamper export expansion to take advantage of the preferential margins they enjoy in these markets. The trend is for a gradual erosion of these margins, irrespective of an LDC joining the WTO or not⁶⁹.

⁶⁸ Michalopoulos, C., *WTO Accession for countries in transition*, Policy Research Working Paper 1934, World Bank, June 1998.

⁶⁹ However, to the extent that membership to the WTO would force preference-receiving countries to adjust to market access conditions applicable to other developing countries, it would be an inducement to concentrate on those commodities that they have a comparative advantage and can compete internationally. Nevertheless, the process of making

Table 5.5.1. Market access commitments of Newly Acceded Members (NAMs)

	Accession	Agricultural Goods		Non-Agricultural Goods	
		Bound Rate	Applied Rate (2007)	Bound Rate	Applied Rate (2007)
Ecuador	1996	25.6	14.6	21.2	11.3
Bulgaria	1996	42.4	19.9	23.0	9.0
Mongolia	1997	18.9	5.0	17.3	4.4
Panama	1997	27.7	13.6	22.9	6.4
Kyrgyzstan Rep	1998	13.0	7.8	6.7	4.3
Latvia	1999	15.4	15.1	3.9	3.9
Estonia	1999	15.4	15.1	3.9	3.9
Jordan	2000	23.8	18.1	15.2	10.4
Georgia	2000	13.4	11.5	6.5	6.4
Albania	2000	9.4	7.9	6.6	5.4
Oman	2000	28.0	8.7	11.6	4.8
Croatia	2000	12.0	11.0	5.5	4.0
Lithuania	2001	15.4	15.1	3.9	3.9
Moldova	2001	13.4	11.6	6.0	4.2
China	2001	15.8	15.7	9.1	9.0
Chinese Taipei	2002	18.3	17.5	4.8	4.7
Armenia	2003	14.7	7.9	7.5	2.3
FYR Macedonia	2003	13.4	13.7	6.3	7.4
Nepal	2003	41.1	14.9	23.7	13.7
Cambodia	2003	28.1	18.1	17.7	13.7
Saudi Arabia	2005	21.4	7.8	10.5	4.8
Average		20.3	12.9	11.1	6.6

Source: Compiled by the author from WTO accession documents

However, there are a number of good reasons for any country to seek membership to the WTO⁷⁰. First, WTO membership implies binding commitments to reforms in all trade-related policies. External commitments can help governments to pursue reforms against the resistance of vested interest groups with monopoly privileges which often restrict reforms that would reduce the economic rents that previously enjoyed. Second, WTO membership, including the process of accession, involves considerable capacity building in the acceding country with respect to the legal framework of the multilateral trading system and its economic underpinnings. Third, the WTO is a good shelter against unilateral pressure and unfair practices from more powerful trading partners. There is more restraint in resorting to such pressures in view of the transparency of the WTO institutional framework, and the ultimate threat of a dispute settlement procedure. Finally, WTO membership increases the transparency of domestic regulations and this may help to attract foreign direct investment.

On the other hand, there are also costs involved from WTO membership. First, sovereignty is curtailed and short-term manoeuvring in trade-related policies is limited, even for developing economies that enjoy special and differential treatment. Second, there are economic costs in terms of the opportunity costs of employing high skilled personnel for the implementation of WTO commitments and participation in WTO processes, although there are also benefits for an active engagement. Third, opening up to trade, unless properly timed and incrementally implemented can be detrimental to domestic productive activities which otherwise could adjust to the competition and survive. Fourth, the fiscal costs of reducing import tariffs may be significant because taxes on international transactions are a major source of government revenue in many LDCs⁷¹.

this transition is not an easy one and requires a gradual phasing out of existing arrangements in parallel with the financial and technical assistance support by the international community.

⁷⁰ R. J. Langhammer and M. Lücke, *WTO Negotiation and Accession Issues for Vulnerable Economies*, Discussion Paper No. 2001/36, UNU/WIDER, July 2001.

⁷¹ This would not be the case for Sudan as revenues from petroleum exports far outweigh any revenues from import tariffs. Also, the economic efficiency from reductions in tariff rates eventually broaden governments' tax base, especially if those reductions also reduce the dispersion of tariff protection across commodity groups.

In any case the decision to join the WTO is no longer an issue for Sudan and, despite the present impasse; accession will come to fruition sooner or later. The process of accession is perhaps as important for the acceding country as the final outcome (becoming a member of the 'club'). That process presents a unique opportunity for soul searching and internal debates on domestic and trade policy. In this context, what may be an issue is some of the specific numbers contained in Sudan's submission, for example on the domestic support pillar of the Agreement on Agriculture. These numbers do reveal a large share of price support programmes for certain crops such as cotton, sugar, sorghum and wheat⁷². While it may be the case that these subsidies have an impact in increasing production and this may be desirable for basic foodstuffs such as sorghum and wheat, it may not be defensible for other commodities such as cotton and sugar destined for export. The subsidy element goes to foreign consumers and not to Sudan. Moreover, the distributional effects of such subsidies are questionable, to the extent that the beneficiaries are not farmers from the traditional rain-fed farming system which supports the livelihood of some 70% of the population of Sudan and where most of the poorest households are to be found.

A better rationalization of domestic support may be called for, not necessarily to meet WTO obligations where there is considerable flexibility in view of Sudan's LDC status, but in order to raise the living standards of rural populations and help them remain in the land, especially in years when they are threatened by harsh climatic conditions and are forced to migrate to the cities. In that sense the most desirable support for Sudan could be under Article 6.2 of the AoA, which exempts from reduction commitments input subsidies to resource poor farmers and investment subsidies generally available to agriculture. Moreover, for these types of subsidies there is no limit under the existing AoA and none is envisaged under the new agreement being negotiated under the Doha Round. Beyond Article 6.2, there is the product and non-product specific *de minimis* support, which for developing countries stands at 10% each, of the value of agricultural production. Theoretically, that implies an upper limit of product and non-product specific support of 20% of the value of agricultural production, which added to the boundless support that can be provided under Article 6.2, would give ample flexibility for Sudan to support its domestic agriculture and is also a sound policy from the food security perspective⁷³. Therefore, the issue is not how much is allowed under the WTO but who receives that support if the objective is poverty alleviation and sustainable agricultural and rural development.

Until the completion of the WTO accession process Sudan could benefit from its observer status, especially in building capacity in the different WTO agreements and processes. Also, in many respects Sudan can enjoy a 'free rider' status benefiting from the substantive work of the organization, e.g. in having access to publically available information, such as notification records on SPS and TBT new regulations and how the WTO SPS and TBT Committees respond to specific concerns brought to its attention (more on this in the next section in the context of SPS).

5.6 US Embargo

Among the developments in the external environment that have preoccupied the Government of Sudan for some time, due to the potentially harmful effects on trade, is the economic sanctions imposed by the United States on Sudan in 1997. The embargo blocks US entities from conducting any business transaction with the Government directly, or Government-affiliated organizations and

⁷² Cotton and sugar alone receive the lion's of domestic subsidies with an AMS, expressed as a percentage of the value of production of these crops, of 62% and 60.5%, respectively, for 2000-02. Also, cotton was the main beneficiary of export subsidies, amounting to nearly 70% of total export subsidies (see: *Accession of Sudan to WTO and its Implications for Agriculture Trade and Food Security: A Synthesis of Background Studies*).

⁷³ Supporting farmers through the input side, by subsidizing fertilizer, irrigation, and other key inputs to production, helps them in containing the cost of production and thus the prices of the crops they produce, thus not penalizing poor households who depend on the market to meet their basic needs.

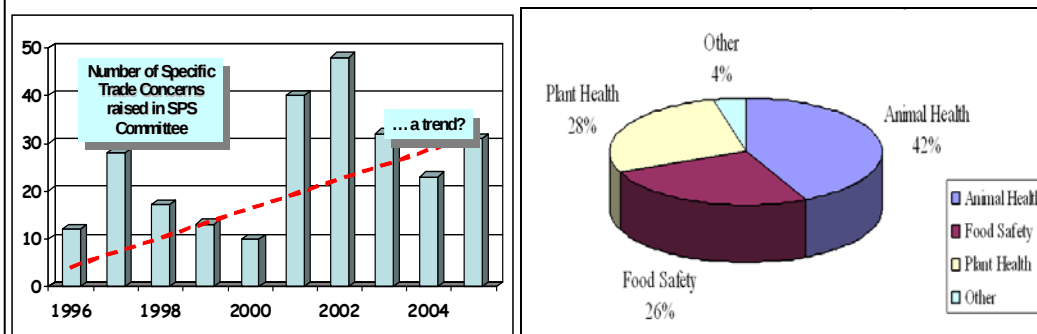
state-owned enterprises.

While the direct effects on commodity trade of the embargo may have been small as Sudan re-directed its exports to other countries, the indirect implications through the impact on the country's financial sector could be substantial due to strict restrictions on financial flows. Moreover, in practice the embargo extends beyond the US as financial institutions in other countries are also deterred in conducting business with Sudan.

5.7 Non-Tariff Barriers

Increasingly, industrialized and other better-off countries have been seeking ways to strengthen their food safety management systems to provide increased protection to consumers against long-standing and emerging risks. Stricter measures are being adopted in the wake of a series of food safety scares or crises, and in the context of expanded trade in higher-value food products. There has been some upward trend in the number of specific trade concerns raised at the WTO SPS Committee in recent years relating to animal and plant health, and food safety (Fig. 5.7.1). While the system in place provides for consultative mechanisms to address such issues and most of them have been resolved without moving into the dispute phase, this trend has been of concern to countries. In parallel with an increase in official standards and regulatory measures, private protocols and other stipulations for food safety within national and international supply chains have proliferated and been strengthened.

Figure 5.7.1. Specific Trade Concerns raised in the WTO SPS Committee (1995–2007)



Source: WTO

Although countries have a legitimate right to protect their consumers, there is concern that with the gradual decline of tariffs countries may resort to non-tariff barriers as a new form of protectionism. In a way these barriers to trade are less transparent than tariffs as they are not easily quantifiable. Increasingly stringent food safety standards would impact on the competitiveness of developing-country suppliers. This could be because of their comparably weaker administrative, technical, and scientific capacities to comply with the emerging requirements, as well as the fixed and recurrent costs that they incur in the process of compliance. In general, additional costs arise from the translation of foreign regulations, hiring of technical experts to explain foreign regulations, and adjustment of production facilities to comply with the requirements. In addition, there is the need to prove that the exported product meets the foreign regulations. In the absence of international disciplines, there is a risk that technical regulations and standards could be adopted and applied solely to protect domestic industries. From this perspective, emerging standards are frequently cast as "barriers to trade."

On the other hand, to the extent that standards and regulations adopted are the least trade distorting, apply equally to domestic and foreign suppliers and respect the basic established principles of non discrimination, they could offer market opportunities to developing countries which can meet these higher standards. From this perspective, standards provide a necessary bridge between consumer requirements and distant suppliers and a 'common language' within the supply chain necessary to establish trust and consumer confidence and thus act as a beneficial drive to international trade.

Although the initial motivation for being more vigilant on meeting SPS standards may come from a specific problem exporters experience in a particular foreign market, the agriculture-wide effects and positive externalities of taking compliance action can be huge. In the first place, there are information externalities by increasing the efficiency of information exchange, whereby the whole industry becomes aware of the importance of enforcing standards (i.e. reducing transaction costs, minimizing market failures due to asymmetric information). This contributes to increasing efficiency and broader participation in international trade. A second important effect is reputation externalities, whereby compliance in one product improves the image of a country in world markets which is likely to help the export prospects of other products and other importing markets. Finally, there are learning externalities at the farm level, whereby farmers could learn from successful neighbours, for example on better pesticide practices which ensure compliance of the produce to market standards, or how to add value to their produce by better grading and packaging methods.

Standards also underline the importance attached to the social and ecological dimensions of international trade. Today, standards include not only the technical specification of products and/or related production processes but also environmental concerns, human rights and social and ethical values. Importantly, this leads to a debate between those (especially from developing countries) who view this as a possible way of using standards as a trade barrier, and those (from developed countries) who argue that the use of stringent standards helps to avert a "race to the bottom" ⁷⁴.

Empirical estimation of how one country's or region's adoption of new or more stringent standards affects trade is often difficult, given the multiple repercussions of such measures, the varied responses taken once such measures are adopted, and the multiple other factors affecting trade flows and competitiveness. Econometric studies working at an aggregate cross-country level have tended to estimate rather large adverse impacts on trade⁷⁵. On the other hand, studies based on country case studies have tended to find more modest impacts, and considerable difficulty in separating the distinct role of standards from the other factors affecting trade flows and performance.

One of the most well-known and controversial cases of the effects on standards is the strict EU aflatoxin standards and in particular their impact on groundnut trade of Sub-Sahara Africa, including that of Sudan. A recent study⁷⁶ looked in much detail on groundnut export performance

⁷⁴ Nadvi, K. and Wältring, F. (2004), "Making Sense of Global Standards' in H. Schmitz (ed.), *Local Enterprises in the Global Economy: Issues of Governance and Upgrading* (Cheltenham: Edward Elgar).

⁷⁵ For example, a study by Otsuki, et al, focusing only on edible groundnut exports from Africa, estimated that the new EU standard for aflatoxin would result in an 11% decline in EU imports from Africa, and a trade flow some 63% lower than it would have been had the EU based its new harmonized standards on the guidelines of the *Codex Alimentarius*. Otsuki, T., et al. *What Price Precaution? European Harmonization of Aflatoxin Regulation and African Groundnut Exports*, *European Review of Agricultural Economics*, 28(2), 2001. See also, *Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Peanuts*. CAC/RCP 55-2004. Codex Alimentarius Commission.

⁷⁶ L. B. Diaz Rios and S. J. Barrier, *Catalyst, or Distraction? Standards, Competitiveness, and Africa's Groundnut Exports to Europe*, Agriculture and Rural Development Discussion Paper 39, World Bank, January 2008.

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both in the years prior to the EU's enforcement of stringent harmonized aflatoxin standards⁷⁷ and in the period following adoption of those standards.

It finds that the dominance of African countries in raw groundnut exports came to an end in the 1970s and its trade was already marginalized prior to the EU's enforcement of more strict aflatoxin standards (Table 5.7.1). This was due initially to internal supply-side or macroeconomic factors, and an inability to compete on the bases of cost, reliability, and quality. Arguably, the new EU standards have exacerbated the underlying competitive weaknesses of African groundnuts.

Table 5.7.1. SSA's Share of world raw groundnut exports (volume)

Period	Share of World Exports (%)			
	SSA	Nigeria	Senegal	Sudan
1962–1969	88.6	45.6	17.4	8.2
1970–1981	43.5	8.5	2.7	15.2
1982–1991	4.4	0.0	0.6	1.7
1992–2005	5.2	0	1	0.4
Source: COMTRADE data. ¹ Raw groundnuts include in-shell and shelled groundnuts.				

Source: Diaz Rios and S. J. Barrier, op. cit.

At the same time, other factors played an increasing role, including the rise of strong competition from Latin America and Asia. For some of these producers, especially in Latin America and China, the stringency of the EU's aflatoxin standards, and the enforcement of these standards, has served as a catalyst for production and supply-chain upgrades.

Whatever the case may be, standards are a reality in international trade and the capacity of countries to comply with existing standards and regulations is not simply to enhance their competitive position but often equivalent to their very survival as exporters. This is because such standards and quality norms are imposing requirements for market access that create threshold effects. For a growing number of commodities, public and private standards are creating a situation in which the idea of a trade-off between price and quality only applies once certain minimum standards have been met. For example, peanut butter cannot be sold in the EU at any price if it does not meet EU aflatoxin standards. This means that in such markets there is no positive price at which certain commodities can be sold if their quality is below the minimum threshold level.

With increasing concerns about quality and safety in trade, the international regulatory framework has also been strengthened. Already, Article 20 of the General Agreement on Tariffs and Trade (GATT) allowed governments to act on trade in order to protect human, animal or plant life or health, provided they did not discriminate or use this as disguised protectionism. In addition, since the conclusion of the Uruguay Round, there are two specific WTO agreements dealing with food safety and animal and plant health and safety, and with product standards in general: the Agreement on Sanitary and Phytosanitary Measures (SPS) and Agreement on Technical Barriers to Trade (TBT). These agreements are not standard setting bodies and recognize internationally negotiated standards in other technical organizations. As regards the SPS Agreement, three such technical standard-setting bodies are specifically mentioned: the FAO/WHO Codex Alimentarius

⁷⁷ The EU regulation was developed in parallel with the limits set in the *Codex Alimentarius*, which were adopted by the Codex Commission in 1999, following the recommendations of a risk assessment published by the FAO/WHO Joint Expert Committee on Food Additives and Contaminants (JECFA) in 1997.

Commission for food; the International Animal Health Organization (Office International des Epizooties or OIE) for animal health; and the FAO's Secretariat of the International Plant Protection Convention for plant health.

Member countries to the WTO are encouraged to use international standards, guidelines and recommendations where they exist. When they do, they are unlikely to be challenged legally in a WTO dispute. However, members may use measures which result in higher standards if there is scientific justification. They can also set higher standards based on appropriate assessment of risks so long as the approach is consistent, science-based and not arbitrary. They should be applied only to the extent necessary to protect human, animal or plant life or health. And they should not arbitrarily or unjustifiably discriminate between countries where identical or similar conditions prevail.

5.8 Compliance with SPS and TBT Standards

Sudan has had some bitter experiences in having its products banned from export markets because of non-compliance with established standards. The complete ban live sheep and goats by Saudi Arabia in 2001 is still fresh as is also the ban of groundnuts in the EU market. While absolute control of pest and diseases is not possible in the best of circumstances, the probability of Sudan being affected by such occurrences and the adverse effects on exports can be contained. There is a high payoff in building capacity to meet foreign countries' SPS measures and this is imperative for Sudan in its efforts to revitalize traditional exports and gain access to the markets of value-added products.

The two key sectors where SPS issues are most evident are livestock and horticultural products. As regards livestock products, the need for tighter inspection and testing is critical. The government's systematic measures taken after the 2001 ban, for vaccination, quarantine, and testing of animals go a long way in minimizing the possibilities of similar bans in the future. Yet the risks in moving live animals to great distances to reach Port Sudan are large and the costs of such operations even larger. In view of this, the alternative route of increasing the capacity of the country in exporting chilled meat through Khartoum airport may be given due consideration. At present, this capacity is constrained by substandard meat processing facilities and practices and a major effort is needed in developing high standard meat processing facilities, refrigerated storage and other related infrastructure as well as effective decentralized surveillance and inspection facilities and certification services.

Similar issues arise in improving the capacity of the country in realizing its huge horticultural export potential. Improvements are needed at the farm level and along the supply chain to ensure that products are free of pests and below thresholds levels for chemical residues. The phytosanitary measures needed involve better farming practices, better post-harvest preparations and better access to laboratory and certification facilities.

It is not only SPS measures, however, that constrain Sudan's export performance in agricultural products. In the first place, it is non-SPS related characteristics that have to improve. Improving the quality and appearance of horticultural produce destined for the export market by better grading and better packaging, for example, is not an SPS issue and could ensure a much better price of these products in the markets where they are already accepted. Similarly, better care in the initial handling, sorting and processing of wet blue skins could increase the value they fetch in the world market. These improvements can be made immediately and the payoff will also be immediate.

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In its efforts to upgrade its SPS infrastructure and related institutions, Sudan should also seek outside assistance and be active in international fora where SPS issues are being discussed and negotiated. While Sudan is not yet a member of the WTO, it is a member of the standard-setting bodies such as the Codex Alimentarius, OIE and IPPC, referred to earlier and can effectively participate in the activities of these organizations and have an input in new standards being adopted. Also, Sudan could benefit from the Standard and Trade Development Facility (STDF) a joint initiative of FAO, OIE, WHO, the World Bank and the WTO. The STDF aims at increasing coordination in the provision of SPS-related assistance, and mobilizing resources to assist developing countries enhance their capacity to meet SPS standards.

It would appear that Sudan has yet to benefit from the STDF. Funding opportunities are available for project preparation phase and more importantly for financing the project activities. As regards the former, project preparation grants (PPGs) up to a maximum of US\$ 30,000 are available for proposal development. PPGs help overcome constraints faced by developing countries in the articulation of their needs and are also a mechanism for ensuring synergy with other on-going initiatives as the Enhanced Integrated Framework (EIF) or the Aid for Trade.

Project grant financing up to a maximum of US\$ 600,000 in STDF funding is available for project implementation. Applications for funding are particularly encouraged from public and private sector organizations in LDCs, for which the STDF will provide up to 90% of the project value. The beneficiary's own contribution to the project can be either in the form of financing or in-kind contributions such as staff time, use of premises, vehicles or other already existing assets. Hence, there is great flexibility in the assistance that can be expected for this facility and Sudan should endeavour in benefiting from it⁷⁸.

⁷⁸ More information on the STDF can be obtained from: <http://www.standardsfacility.org/>

6 Constraints due to Domestic Factors

This Chapter addresses a wide range of issues and constraints of largely domestic origin having to do with macroeconomic, trade and sectoral policy processes as well as the physical and institutional capacity of the country to facilitate agricultural production and exports. These are cross-cutting constraints affecting all sectors of the economy but agriculture in particular due to its dependence on transport and logistic infrastructure and facilities both upstream and downstream to produce the quantity and quality of produce that can compete in the domestic and export markets.

In identifying and analyzing these constraints, the starting point is agricultural production at the farm level. The constraints discussed here are not simply *export constraints* which start at some point of the value chain. They are in addition, and primarily, *production constraints* and unless they are recognized as such isolated efforts to address strictly export-specific issues will not work. It is the whole value chain that matters.

6.1 Brief Overview of Macroeconomic and Sectoral Policies Affecting Agriculture

Sudan's present agricultural and trade policies have their origin in the liberalization program of the early 1990s. That reform, meant also to prepare the entry of the country into the WTO, included liberalizing prices of goods, services and factors of production, reduction of subsidies, privatization of public enterprises, reforms of the tax system and monetary policies, as well as reduction of taxes and tariffs on exports and imports. The liberalization of the exchange rate encouraged production and exports of cash crops in the early 1990s.

The liberalization policies divided the commodities into two classes: principal and secondary. Principal commodities included: sorghum, oilseeds, cakes, livestock and camels, meat, hides and skins, and melon seeds. These commodities were given minimum-floor prices⁷⁹, and the exporter was given the right to transact on any prices received above the minimum prices, which were exempted from export taxes. The secondary commodities included all the rest and their prices were to be estimated according to credit letters via the commercial banks and the commitment of exporters to deliver all revenues to the Bank of Sudan.

The 1992 reform also abolished the licensing system and designed several controls and conditions for trade to encourage integration into the world market, including certified compliance with quality standards, in addition to improvement of agricultural quarantine procedures of sanitary and phytosanitary measures. The exports of all agricultural commodities were allowed except those of cottonseed and gum Arabic, managed directly by the Cotton Company and Gum Arabic Company, respectively.

Despite the intention of such reforms, the incentive to agricultural production was short-lived. The agricultural sector received limited support for essential inputs and infrastructure, extension and related research, marketing of crop and animal produce, development of marketing statistics and related information, development of human resources and physical institutional capacity. The sector had also been constrained by limited credit supply and high interest rates in cases of loans from the private sector. The vacuum that was created by the withdrawal of the state from direct intervention

⁷⁹ The calculation of minimum prices was based on domestic and international prices, transportation costs, removal of and gradual removal of export taxes and fees on agricultural commodities, and with 15% public finance allocation to exports of livestock and animal products, namely meat and hides and skins.

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in agricultural production was only selectively filled by the private sector and, as would be expected, the latter would make decisions on economic rationale alone. Thus, with the deregulation of the Oilseeds Company and the removal of subsidies on wheat and on agricultural inputs, production could not be sustained.

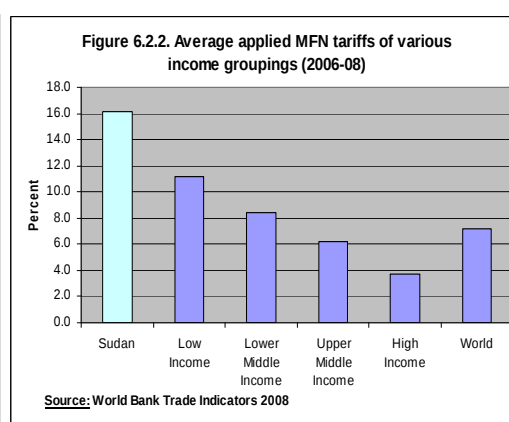
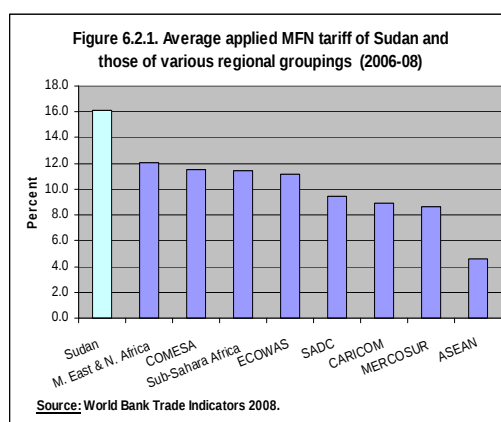
As the pendulum had perhaps swung too far to the liberal side, movement towards the middle ground has been sought during recent years, in particular after the boom of petroleum exports which provided also the means to pursue more balanced policies, although the resources necessary to revitalize the agricultural sector have not been forthcoming, as we will see below.

Beyond the sectoral level, in recent years there have been efforts to improve basic infrastructure which can also indirectly be beneficial to agriculture. These include highways between Khartoum-Dongola in the north, and Khartoum-El Obeid and El Fasher in the west, the two roads in the east Gedaref-Ethiopian border, the Khartoum-White Nile and Upper Nile highway in the centre and southern parts of the country. These can facilitate the movement of agricultural produce and the procurement of essential agricultural inputs, although expansion of feeder roads would also be needed to supplement the national road network. On energy, the construction of the Merwei Dam with its expected increase in power supply of 1250 Megawatt will link most of the towns and rural areas to the national electricity grid. Finally, telecommunication infrastructure built in the early 2000s has covered nearly 80% of the country and linked Sudan to the rest of the world.

6.2 Import Tariffs

Although Sudan has made important steps in trade liberalization since the early 1990s, its weighted average MFN tariff was 16.1% in 2006-08, which is among the highest in the world (Fig. 6.2.1). It is high in comparison with the average of regional groupings in Africa and much more so when compared with those of Asia, Latin America and the Caribbean. Looking at the average applied tariffs by economic group, Sudan's is also much higher than that of low income countries (Fig. 6.2.2).

Focusing closer at home, Sudan's average MFN tariff of 16.1% compares with the average of 10.2% of Uganda, Tanzania and Kenya while that for agriculture is estimated at 31% compared for 22% in the case of the three neighbouring countries. In Southern Sudan, the Custom Department employs nine rates ranging from 1% to 20%, with a minimum of 1% imposed on agricultural exports.



As is the case for other countries, agricultural products face a higher average tariff than that of non-agricultural products, at 30.6% and 18.5%, respectively (2006 simple averages)⁸⁰. However, in terms of trade-weighted averages, the situation is reversed with the tariff for agricultural products being slightly lower than that of non-agricultural products, at 14.7% and 15.7% respectively in 2006. The reason for that is the difference in the distribution of tariffs between the two categories of products (Table 6.2.1). In the case of agricultural products some 58.4% of imports were charged a tariff of 5% or less, while in the case of non-agricultural the percentage of imports charged a tariff of less than 5% was only 19.1%. The percentages of imports charged a tariff in the upper band (between 25 and 50%) were very similar for both agricultural and non-agricultural products at 20.3% and 19.3%, respectively.

Table 6.2.1. Frequency distribution of applied tariffs

Frequency distribution			Duty-free	0 <= 5	5 <= 10	10 <= 15	15 <= 25	25 <= 50
			Tariff lines and import values (in %)					
Agricultural products								
	Final bound							
	MFN applied	2006	2.1	5.3	8.1	0	27.2	56.9
	Imports	2005	8.5	50.0	8.0	0	13.3	20.3
Non-agricultural products								
	Final bound							
	MFN applied	2006	7.2	21.5	24.3	0	22.6	24.4
	Imports	2005	11.1	8.0	46.9	0	14.7	19.3

Source: *World Tariff Profiles*, WTO, 2008

Overall, however, there is considerable variation across industries and stages of production and a better rationalization of this regime is called for. Of particular concern is the cost of imported inputs in view of the already high production costs in Sudan. High tariffs on such inputs raise further the cost of production, thus limiting the chances of Sudanese products to compete in international and even domestic markets.

6.3 Domestic Taxes and Fees

The trade liberalization policy of Sudan in the 1990s abolished export and import licensing requirements and gradual elimination of agricultural export taxes and agricultural input tariffs except taxes on gum Arabic and hides and skins and imports of jute sacks and cotton baling material. However, on the domestic front, many government agencies at federal and State levels impose some form of taxes and other levies which reduce the competitiveness of these commodities in the domestic and world markets.

A good example of such taxes and fees levied is gum Arabic. There are about 37 types of taxes and fees on gum Arabic produced and transported from El Obeid market in North Kordofan in western Sudan to Port Sudan for export. Such taxes and fees are multiple and difficult to control as they are levied by each State on gum Arabic produce crossing its territories on its way to Port Sudan. They impede the easy flow of the produce, adversely affecting also its quality characteristics and hence its export price. Such charges include the Ushur and Gibana taxes originating from the tithes levied during the Ottoman colonial period, which together with the Zakat and agricultural production

⁸⁰ Other than ordinary tariffs, there are also seasonal restrictions on the importation of selected agricultural commodities. These have been determined by the Ministry of Agriculture and include: several fruits (mangoes, lime, grape fruit, bananas, guava, dry dates), vegetables (tomatoes, potatoes, onion, watermelon, egg plant, pumpkins, squash, green pepper, okra, cucumber, spices, pepper, gargeer) and medicinal and ornamental plants, all of which are banned all year; and several other fruits and vegetables with seasonal bans depending on timing of local production.

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taxes represent about 20% of the floor prices announced by the Gum Arabic Company every year. All levies and taxes, in total, arrive at almost 50% of the floor price. The export taxes and fees levied on gum Arabic account to about 15% of the FOB export prices.

Table 6.3.1. Domestic taxes, fees and charges levied on gum Arabic

Tax and fees type	Percentage or absolute value	Description
Ushur and Gibana (tithes and taxes)	8%	Of floor price
Agricultural production	2%	Of floor price
Zakat on crops	10%	Of floor price
Support to the Forestry Corporation	5%	Of floor price
Support to producing states	2.5%	Of floor price
Development fund	20%	Of net profit
Wounded support	1%	Of floor price
Gum Arabic Producers Union support	9%	Of floor price
Sudan Agricultural Union support	9%	Of floor price
Concentration fund	0.2%	Of floor price
Kenana and Rahad Projects support	3.2%	Of floor price
Shairia support	SDG 0.5-0.6	Per sack
Storage fees	SDG 0.35-0.5	Per sack
Crossing fees	SDG 0.1-0.7	Per sack
Locality services	3%-7%	Of floor price
Locality government support	3%-4%	Of floor price
Salam highway support-upper Nile state	SDG 0.15-0.2	Per sack
Gedaref farmers Union support	SDG 0.2	Per sack
Electricity support in west Kordofan	SDG 0.02	Per sack
Struggle solidarity support in Upper Nile State	SDG 0.1	Per sack
Education and health support in Upper Nile State	SDG 1	Per sack
Peace Fund support in Blue Nile State	SDG 0.1	Per sack
Custom duties in Blue Nile State	3%	Of floor price
Police support in Blue Nile State	SDG 0.1	Per sack
Galabat highway tax	SDG 0.5	Per sack
Standards and metrology fees	0.1%	Of export price
Quality control fees	0.3%	Of export price
Custom cost	1.1 %	Of export price
Custom cost	1%	Of profit
Sea Port Corporation fees	0.5%	Of export price
Sea Ports Corporation fees	11%	Of FOB price
Health fees	0.1%	Of export price
Measures control	0.1%	Of export price
Shipment and stamps expenses	0.1%	Of export price
Plant protection fees	0.3%	Of export price
Origin certificate	0.1%	Of export price
Agricultural stamps fees	0.1%	Of export price

Source: Gum Arabic Company

The heavy burden of taxes and fees at all stages of the supply chain has been highlighted by the value chain analysis carried out in the previous section. Such taxes and fees act as a barrier to exports the same way as import tariffs levied by importing countries. It is therefore time to reflect on the scope of such taxes and fees and on the need to continue such practices. To give an order of magnitude of the problem, consider the size of revenues generated by the different taxes and fees. Assuming that the average rate of domestic taxes and other charges amounts to 8-10% of the value of agricultural exports of Sudan (based on the value chain analysis of the previous Chapter), the total revenues would be somewhere in the neighbourhood of US\$40-50 million which is less than 0.3% of current petroleum export revenues.

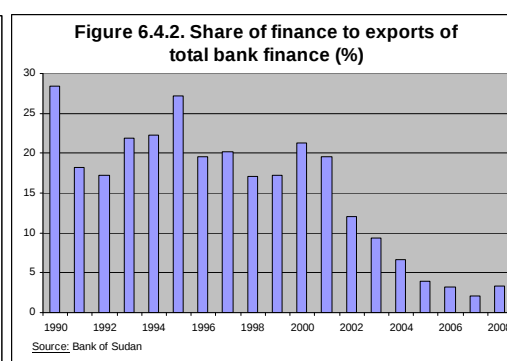
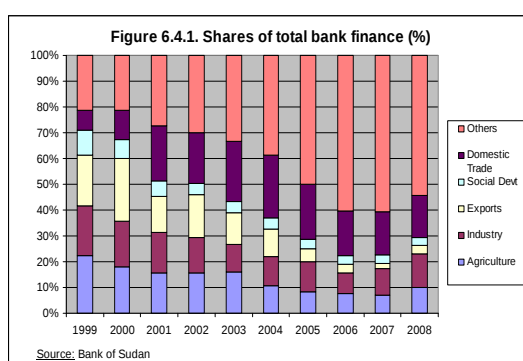
6.4 Access to Credit Finance for Agricultural Production and Trade

Sudan is served by some 30 official financing institutions and other money lending companies established in the country, including foreign banks. By and large there is a high concentration of bank branches in the capital and main cities in the central States, while other states are poorly served.

Besides this uneven geographical distribution, there is an even more uneven distribution in the lending operations of these institutions. The share of agriculture in total bank finance declined from some 22% in 1999 to as low as 6.8% in 2007 before turning upwards to just 10% in 2008 (Fig. 6.4.1). It comes as no surprise that this has led to a slow and uneven economic development and limited gains in terms of poverty reduction in Sudan, where most of the poor and food insecure live in rural areas and depend on agriculture for a living.

Beyond these aggregate figures, the distribution within agriculture is also worrying. As an example, it has been assessed that, on average, out of the total finance provided by the Agricultural Bank of Sudan (ABS, one of the key financial institutions in the country for the agricultural sector), the rain-fed semi-mechanized farming system receives the lion's share of over 50%, the irrigated farming system receives some 40% and the rain-fed traditional system the remaining 10%⁸¹. This distribution is exactly in reverse relationship to the farming population supported by these systems as we have seen in Chapter three, whereby the rain-fed traditional system supports some 70% of the population, while the rain-fed semi-mechanized system supports the livelihood of merely 1% of the population.

Although understandable from the national food security perspective to expect an emphasis on semi-mechanized farming to secure a larger share of national food needs, this does not contribute substantially to poverty alleviation of the country, when the majority of the poor live in the traditional rain-fed farming areas. Within the latter, the situation of livestock producers could be even worse in terms of access to finance in view of the different guarantees required by ABS as collateral, such as buildings and other fixed assets. This is not possible for pastoralists in particular, most of which raise their livestock under nomadic conditions.



Banks are financial entities and need to recover their loans if they are to remain in business. Thus insisting on collateral is a normal practice. The main issue is on what prevents individuals and households to offer collateral. It has been noted elsewhere that problem lies principally with current laws governing the ownership, leasing and transfer of land rights which affect the ability of

⁸¹ Personal communication, Khartoum, June 2009.

borrowers to use land as collateral⁸². This is because at present, almost all land in Sudan is effectively owned by the government and leased to individuals. Leases can be legally transferred, however registration is not compulsory, and many transfers are not registered due to the cost of registering them. Under the circumstances there is uncertainty on the part of the bank about the actual ownership of real estate assets and hence their hesitation to lend.

Another problem that limits lending is the nature of the predominant mechanism used in repaying loans, whereby lending banks recover their principal and 'interest' by receiving actual crops from the farmers as repayment. However, this adds another difficulty to the banks' willingness to lend in view of the transaction cost and price uncertainty involved in these in-kind transactions. It is likely also that because of this uncertainty, the farmer pays more for the loan in real commodity terms than what would have paid in a strictly money transaction.

Turning to finance for exports, the situation is not much better. The percentage share of export finance fluctuated between 2 and 4% during the period 2005-08 compared to an average of close to 20% during the 1990s, and as much as 28% of total bank lending in 1990 (Fig. 6.4.2)⁸³.

6.5 Trade-Related Institutional Structure

The organization and management of trade policy and trade promotion in Sudan is complex with responsibilities scattered in different entities throughout the government. There are various institutions with different, sometimes overlapping mandates, that are responsible on policy matters, to organize foreign trade and enhance exports promotion in world markets.

For analytical purposes it may be useful to divide these institutions between those that are responsible for policy making and those responsible for operational matters and the implementation of policies, although the dividing line is not always clear.

6.5.1 Policy-Making Institutions

Ministry of Foreign Trade (MoFT). Based on the Republican decree No. 34 of 2005, the mandate of the MoFT with respect to exports includes, inter alia:

- organize and guide export and import transactions, closely observe and watch the movement of international trade and commodity prices,
- organize border trade with neighboring countries and extend commodity exchange and exports development in collaboration and coordination with border States,
- participate in export and import pricing policy design,
- disseminate of cooperative doctrine and propose the regulations governing cooperative work,
- coordinate with other entities concerned with strategic arrangements for food security,
- provide and secure data and information concerning exports and imports,
- make policies and regulations concerning the Rules of Origin, competition, anti-dumping and transit trade, and
- command the follow-up of the implementation of trade agreements, protocols and treaties concerning commodity loans.

⁸² For example in the DTIS study, op. cit.

⁸³ Much of bank lending has gone to the oil sector as well as other more profitable sectors in view of the boom in construction and other more profitable activities in the recent past. What is also worrying is the substantial reduction in the share of social development, from some 9.5% in 1999 to only 3% of total bank lending in 2008. This could have adverse effects on poverty alleviation.

Other Ministries and government entities play also a role in trade policy. Thus, in carrying out its mandate, MoFT has to maintain close links with the Bank of Sudan, Ministry of Finance, Ministry of Agriculture, Ministry of Animal Resources and Fisheries, Ministry International Cooperation, the Commission on WTO Affairs, Customs General Administration, Chamber of Commerce, Chamber of Industry and Ports Corporation, among others. Of particular relevance is the relationship of the MoFT with the Commission on WTO Affairs, in view of the authority of the latter to negotiate the terms of Sudan's accession to the WTO. Close collaboration between the two would ensure coherence in the formulation of trade policy not only as it relates to WTO accession but also vis a vis other regional and bilateral trade agreements.

Export Councils. In 1991 eight Export Councils were set up for every important sub-sector with export potential. Initially their main function was to approve the export price controls. Since the mid-1990s, as price controls were eliminated, Export Councils have become a forum (convened by MoFT) where government and private sector sit together to discuss and address supply-side constraints for exporters. In each council there are 3 representatives of the private sector and representatives from Ministries of Industry, Agriculture, Finance and Foreign Trade, Bank of Sudan, Kenana Sugar, and Bureau of Metrology. For years Export Councils were quite active, meetings took place on monthly basis and their resolutions were generally implemented. However, in the last year and a half they have met only a few times, and private sector representatives complain that agreements and resolutions are not being implemented.

National Council for Exports Development (NCED). In 2000 the Council of Ministries established NCED by Decree Number 657, subsequently modified by Decree Number 299 in May 2001. It was modified again by the Decree Number 126 in April 2006 under the chairmanship of MoFT to undertake the following tasks:

- conduct studies on domestic and external factors that determine present and future export potential and provide necessary support to facilitate access to foreign markets,
- design programs and projects that aim at expanding the base of exports and follow implementation with agencies concerned,
- facilitate the monitoring and valuation of the performance of non-oil exports, among which agricultural sector exports.

The main objective of NCED was to design policies for the development and promotion of exports. However, the Council was devoid of the associated technical capacity needed to analyze trade developments and make timely recommendations. NCED has been merely a brain-storming forum, however without the analytical and operational capacity to offer solutions to evolving trade problems and crises. Most of the queries presented to it revolved around fiscal policies and financial issues related to tax and tariff revenues. Problems related to trade and export promotion policies and issues of fulfilling trade protocols and trade agreements have received much less attention.

6.5.2 Supporting Institutions and Bodies

Commercial Attachés. Sudan has several commercial attachés in its Embassies abroad which are expected to perform important functions in supporting trade promotion activities, inter alia:

- development of exports and export promotion,
- promotion of exhibitions and arrangement of businessmen visits,
- activation of preferential trade agreements with external world,
- supply of economic and commercial information,
- organizing trade missions to the Sudan and facilitate private sector relations with their counterparts abroad to promote trade relations.

Customs General Administration (CGA). The CGA implements Sudan's established trade policy as it relates to border measures, including the collection of tariffs on imported goods and levying taxes on exported products as the case may be. It aims to protect the domestic industry from illicit trade but also to facilitate the movement of goods according to established policies and agreements, including preferential trade agreements such as COMESA and GAFTA, as well as bilateral arrangements.

The important role of the CGA as facilitator of international trade is evident. There have been several developments in strengthening its capacity, including a modern computer system (ASYCUDA++). While overall, the CGA has a good standard of professionalism; several shortcomings still remain including the following⁸⁴:

- ASYCUDA ++ not yet fully used specially transit and selectivity modules,
- customs has not implemented risk management and post-audit clearance,
- existence of 4-5 custom check points impedes the movement of goods in transit,
- customs valuation system not consistent with WTO valuation requirements,
- Southern Sudan Customs is not fully integrated into the national Customs as stated in CPA,
- lack of electronic interconnectivity between customs and other stakeholders like MoFT and Bank of Sudan.

National Agency for Insurance and Finance of Exports (NAIFE). NAIFE was established by an Act in August 2005 as an independent legal entity and has commenced its operations on January 2006. It is partially owned by the Government of Sudan (Ministry of Finance & National Economy and the Central Bank of Sudan) with capital share of (70%) and the remaining capital (30%) is held by private financial institutions (Commercial Banks & Insurance Companies)

The stated objectives of NAIFE is to become a leading agency in the field of insuring and re-insuring export credit and provide finance, guarantee and promotional support to enhance the competitiveness of Sudanese exports (other than petroleum and gold ore). Its specific services include: Export Promotion, Export Credit Insurance; and Export Financing.

Sudan Trade Point (STP). STP is an information center set up in 2001 with support from UNCTAD and housed under the Ministry of Foreign Trade. STP is a member of the World Trade Point Federation, with headquarters in Geneva. The center performs three functions:

- trade information services,
- trade facilitation services and
- trade promotion services.

STP provides information about investment, trade opportunities, procedures and legislation in Sudan through the internet, connecting potential exporters and importers with their counterparts, and posting detailed data on commodity prices and quantities. One of their main assets is the information provided by 76 databases from Trade Points all over the world.

Somewhat related to the activities of the STP, but independent from it, is the **Trade Information Center (TIC)**, established also in the MoFT, and initially supported by the International Trade Centre (ITC). As suggested by the DTIS study, in view of resource limitations and considering some overlapping in mandates, it may be time to merge TIC into STP, thus creating a stronger and more effective entity.

⁸⁴ See also DTIS study on this.

Sudanese Standards and Metrology Organization (SSMO). The SSMO is a scientific supervisory precausal organization established in 1992. Its objectives include, inter alia, the following:

- protecting consumer against adulteration and cheating, and health threats,
- improving quantity and quality of national products and services,
- setting up a scientific means on organizing commodity strategies and foodstuff movements,
- improving training at SSMO,
- enhancing relationships between SSMO and other organizations working in the field of standardization and calibration,
- mobilizing agricultural, industrial and animal resources to preserve competitiveness in international markets,
- spreading awareness of standardization within society and helping to cope with globalization,
- ensuring that importing commodities comply with regional and international standard specifications,
- preventing dumping of commodities,
- supplying investors with information as regards trade requirements

With the SSMO also assuming the role of SPS and TBT enquiry point for the WTO, stronger coordination with numerous other national bodies involved in SPS and TBT issues is called for. In particular, as noted in the DTIS study, there is a need to streamline existing regulations across several ministries and departments to make the SPS inspection and certification system more efficient and effective.

6.6 Transportation and Other Logistics Services

Sudan suffers from a poor transportation network and underdeveloped trade facilitation logistics which are essential for increasing competitiveness. The main problem is the vast territory and the extensive nature of agricultural activity, making both the assembly of produce and their transportation to Port Sudan an expensive and logistically complicated operation.

The recently completed DTIS study⁸⁵ contains a comprehensive and succinct analysis of transportation and logistics issues faced by Sudan, which are summarized here.

As regards transportation and logistics difficulties in general, issues noted included:

- the difficult geography complicated by the aftermath of conflict,
- inadequate transport infrastructure in the North, but freight transport is improving,
- high transport and logistics costs hindering export competitiveness,
- lack of logistics services providers,
- need for further development of freight forwarding industry,
- lacking system of inland container depots and not taking advantage of container developments favouring international trade.

As regards Port Sudan, issues included:

- Port Sudan charges are the highest in the region,
- import and export procedures resulted in lengthy delays (5–6 weeks are frequent), inter alia, due to multiple agencies in clearing or preparing goods for imports and exports,
- overstaffing, poor productivity, and high labour costs.

⁸⁵ DTIS study, op. cit.

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As regards trucking to and from Port Sudan, it was noted:

- the increasing fleet leading to healthy competition in the sector and reasonable charges,
- the much higher volumes of imports compared to exports (a ratio of 16 to 1 in 2005) resulting in empty hauls to Port Sudan, hence an opportunity to obtain bargain trucking rates for exported commodities.

As regards rail transport, issues included:

- poor performance of the Sudan Rail Corporation (SRC) including low equipment utilization, low revenues, high staff costs and financial losses,
- low reliability as a mode of transport leading to substantial drop market.

As regards transportation in Southern Sudan, the DTIS study noted:

- considerable distance from any sea port,
- very poor physical transport infrastructure and no related institutional capacity,
- dependence on Kenyan and Ugandan companies for transport services,
- very high costs and delays in using Port Sudan but some problems also in using the port of Mombasa.

A critical constraint so far for perishable agricultural commodities such as fruits and vegetables is the near total lack of adequate cold storage and logistics facilities at Khartoum airport. A modest cold storage facility is presently being completed at Khartoum airport. It would be possible to store temporarily there fruit and vegetables under controlled temperatures while waiting to be exported through Khartoum airport. It is anticipated that, in addition to some basic services such as cleaning, grading, packing and storing produce for export, the facility will also arrange for export inspection and the preparation of documentation for private vegetable growers. Larger and more modern cold storage facilities are being envisaged under the new Khartoum airport, although it will be some time before is completed.

7 Conclusions and Recommendations

Sudan is blessed to be endowed with abundant land, sun, water, forests, pastures, fisheries and livestock, and a population with culture and history dating back to antiquity. The country's diverse agro-climatic conditions range from desert/semi desert to tropical, suitable for a wide variety of high quality agricultural produce. The good agricultural potential of Sudan is well known and the country has rightly earned the reputation of a major agricultural producer and exporter.

The Sudanese agriculture continues to be the backbone of the economy: it provides rich nourishment to a growing population, employment to two-thirds of the labour force in addition to employment generation in upstream and downstream sectors, supplies valuable inputs to domestic manufacturing and artisanal industries, contributes more than one-third of the GDP and the lion's share of non-petroleum export earnings.

Yet, and despite the newly arrived wealth with the advent of petroleum, the health of the Sudanese agriculture is not good. Sudan continues to remain among the least developed countries in the world with increasing poverty and food insecurity, in particular among the rural populations who depend exclusively on agriculture for their livelihood. There are also great disparities in the level of human development between different regions, and across the rural-urban and gender space. Traditional farming areas which support the largest part of the population have received the least development-investment considerations among the different sectors of the economy.

It is not surprising that with an ailing agriculture, Sudan's agricultural exports are no longer what they used to be. Over the past three to four decades its market share in all its traditional exports has been substantially eroded, and its export base has become less diversified both in terms of commodities exported and export destinations. With limited resources devoted to agriculture and in a climate of increased globalization and greater trade liberalization everywhere, the country became increasingly vulnerable to global competition.

Sudan has not been able to produce the quantity and quality of commodities demanded by the growing and discerning world markets. Low productivity, high cost of production, poor quality of processing, high internal taxes and fees as well as high transportation costs to the port, have all contributed to weakening Sudan's export competitiveness. Many traditional export crops have lost their prominence in world markets and were replaced by more competitive exporters even in Sudan's well-established markets. The bulk of Sudan's agricultural exports now come from a small number of primary commodities and is narrowly diversified geographically to a limited number of markets, mainly in the Middle East and Asia.

It is now well understood that central in Sudan's overall strategy to revitalize its agricultural sector and compete effectively in regional and world markets is to address the numerous constraints along the supply chain of agricultural products. Many of these constraints have already been identified by stakeholders and policy makers alike and efforts are being made to address some of them, particularly through the new impetus provided by the Agricultural Revival Plan.

Yet, the challenges are enormous and the tasks ahead multi-varied, spanning the whole supply chain. In tackling these problems, the starting point should be those at the farm level. The supply chain commences at the farm and the measure of success is not export earnings per se but ultimately that farmers earn a living. Only that would ensure that there are also commodities to export. Improving productivity at the farm level and reducing related production costs is the *sine qua non* in prioritizing action. Unless there is a strong gain in commodity yields and reduction in production costs, competitiveness of Sudanese agriculture will remain a mirage.

Assessing Sudan's Export Diversification Potential in Agricultural Products

In the search for export opportunities and in formalizing a **strategy** for more concrete action, three categories of agricultural products can be distinguished, each with some distinct features and hence different strategies for export promotion.

The first category comprises **traditional export commodities**, i.e. commodities that Sudan exported successfully in the past (e.g. sesame and cotton) and in which it has lost market share or has become a lesser exporter. For these commodities there is a proven record of successful production and export; good know-how in the country at all levels: production, marketing, export; and an established network of export channels and product recognition.

The strategy here would need to primarily focus on supporting the farming activity itself: making available basic production inputs, providing incentives in the use of improved seeds, improved implements, fertilizer and other chemicals, providing extension services to minimize post harvest losses and other simple technologies to raise yields, as well as credit and finance to the farming communities and the private sector to undertake the investment needed. Risks of failure in this area are small and results can be relatively quick.

The second category comprises generally **perishable high-value products** for which there is strong demand in world markets, and Sudan has the potential to produce competitively (e.g. meat, fruits and vegetables, cut flowers and medicinal plants), although presently is a minor participant in these lucrative markets. For these commodities the level of technology and know-how in the country is not at the level needed for the export market. Production suffers in quantity and quality and there are potentially many risks and losses along the supply chain, reducing the incentives for private investment.

For perishable high-value products the strategy has to be multi-faceted and address issues simultaneously along the whole supply chain: public investment is needed in basic infrastructure and technology development and transfer; building adequate cold storage facilities; facilities for packaging, labelling and attractive promotion of Sudanese produce; streamlining of food safety/quality control and certification systems; intelligence gathering and very timely market information. In view of the high costs and risks involved in this area, and also the strict SPS compliance demanded by foreign markets (difficult for smallholders acting alone), the strategy should also include consideration of 'contract farming' and supporting collective action by producer organizations. Aiming for quick returns could potentially be damaging to the business. Establishing a reputation of a reliable high-quality supplier is imperative. Gains would come gradually over the medium term.

The third category comprises **processed value-added agro-industrial products** (e.g. jams, canned meat, fruit and vegetables, edible oil, sugar, molasses, ethanol, leather, feed cakes and concentrates, etc), derived from agricultural raw material that Sudan produces, yet, presently, partly wasted or exported at low prices. Many of these products are closely linked to those of the second category and exploiting their potential not only as fresh produce but also in conserved form would add to the profitability of both product avenues. While the technology involved in processing and conservation of produce is well established and easily transferable, Sudan has not been very successful in this area, especially in processing fruits and vegetables. The risks are relatively lower than those of fresh produce and one would expect keen interest from the private sector.

The strategy in this area would therefore be to seek the active engagement of the private sector alone or, better yet, in partnership with producer organizations. It is imperative to ensure that investors opt for modern processing facilities or upgrading existing ones, such that they meet international specifications of food safety and hygiene. Gaining food technology know-how, including supporting university activities in these areas, should be a priority. Packaging, attractive

labelling, marketing research and promotion activities are all vital ingredients in this strategy.

In view of the needed involvement of private sector, a supportive policy environment is also essential, including access to credit, as well as fiscal and other incentive measures by the government at the initial establishment phases. The location of these facilities has to be well thought out vis a vis producing areas to ensure economies of scale and high levels of capacity utilization. Returns to investment can be relatively quick, especially if Sudan can exploit the demand for such products in regional markets where it enjoys preferential access, and which have similar consumption habits and tastes.

Beyond these strategic choices for the three categories of commodities outlined above, there is a need to address the numerous **cross-cutting issues** that have been identified in this Study, as well as other recent studies. The list is long and fairly well known and includes, inter alia:

- reforming macro-economic and trade policies,
- strengthening physical and institutional capacities at all levels (producing, grading, storing, transforming, transporting, marketing, certifying, promoting, exporting),
- pursuing land reform policy leading to more clarity about land ownership, thus strengthening farmers' access to needed finance for investments on the farm to boost productivity,
- addressing the high costs of production faced by Sudanese farmers through, for example, selective time-bound "market-smart" subsidies on key inputs to production (such as targeted vouchers for fertilizers), thus facilitating also the development of better functioning agricultural input markets to deliver these inputs over the longer term,
- abandoning certain long-standing practices (i.e. agricultural production tax as well as numerous market taxes) unjustifiably burdening the sector without a corresponding service being offered to producers and traders,
- streamlining government regulatory institutional framework affecting trade,
- mobilizing and empowering the private sector, inter alia, through incentive measures to encourage investment in improved technologies to raise productivity, as well as investment in export-related services (cold storage facilities, air cargo, shipping and export promotion activities),
- strengthening policy making and trade-promotion institutions.

Some pertinent observations of a broader nature made in this Study are also worth re-emphasizing here. They are in the minds of policy makers and more reflection may be needed, also in the form of additional analytical work. These include:

- **Competing in the domestic market.** There is often the notion expressed that the export market should be disassociated from the domestic market and one should be producing for one or the other. While that may be correct for some very specific cases, it is a wrong approach overall. The world market will always remain a residual market, especially for countries like Sudan where there is high climatic variability and enormous difficulties and costs in accessing that market. The risks of failure from an exclusive dependence on the world market are not trivial and can have catastrophic consequences. In agriculture, being able to compete in the domestic market should always be the first step.
- **Prioritizing regional markets.** Another notion that is often expressed is the need to re-establish the strength of trade flows with industrialized countries, and especially Europe, that Sudan enjoyed in the distant past. Yet, since then demographics, consumption patterns, the dynamics of regional economies and cultural affiliations have evolved considerably. It would be somewhat of an anachronism for Sudan to continue to view Europe as a priority market for its exports, when much closer at home there are fast growing and lucrative market destinations with which Sudan also shares important cultural ties. The Middle East region (including the Saudi peninsula and the Gulf States) is a fast growing market for all commodities exported by

Sudan. More than any other group of countries, that region depends on the world market for a large share of its needs (one-quarter of all food and agricultural products consumed in the region) and most of that does not come from intra-regional trade. Hence, it is not the case of displacing other suppliers from within the region. Projections also suggest that the region's strong dependence on imported agricultural and food commodities will remain a feature in the long-run.⁸⁶

- **Employing a holistic approach.** Commodities form an integral part of commodity chains, either as primary products or by-products of the same production process. Thus livestock produce not only meat but also milk; groundnuts produce oil and cakes used for livestock feed, as does sugar production with molasses and bagasse. These other products are part of the value chain and important outputs on their own for the overall profitability of the sector. The implication is that in judging about the viability of a production process it is not only the exported commodity that matters but all the rest. The paper hinted on some particular commodity groups where additional analysis is called for, especially in assessing the potential for increasing production of animal feed from crop by-products. This could help avoid potentially undesirable developments, such as using an increasing share of sorghum, the key food security crop, for feed, or compromising cattle meat output because of the imperative to produce more milk.
- **Recognizing the increasing integration of agricultural and energy markets.** This is yet another area where a holistic approach is called for, in view of the new realities for world agricultural markets. Sudan should keep a close eye on these developments and assess production and trade choices in a more integrated framework than simply from the perspective of an isolated export product.
- **Lifting the heavy burden of taxing agriculture.** The revenues accrued from the numerous taxes and fees levied on the production and movement of agricultural commodities within Sudan's territory are insignificant when seen from a national perspective. They amount to a mere one-third of one percent of the annual revenues from petroleum exports. However, they are a huge burden for farmers and traders not only in direct monetary terms but perhaps more importantly in terms of indirect losses due to considerable delays associated with collection and paperwork, resulting in deterioration of commodities. Serious consideration should be given to abolishing such taxes and levies, however at the same time making equivalent provisions from the federal budget to cover the legitimate needs that these taxes and fees served in the first place.
- **Reversing investment trends.** Instead of taxing agriculture Sudan should strive to reverse the worrisome trends of investment and bank lending to the agricultural sector. The share of agriculture in total lending and government transfers is not commensurate to the role of the sector in the national economy and the livelihood it provides to the growing population of Sudan. It is not only the share of resources going to agriculture that matters but also its equitable distribution within it, so that it can make a greater contribution to poverty alleviation.
- **Using the WTO accession process astutely.** This process presents a unique opportunity for internal debates on domestic and trade policy. In this context, the domestic support accorded to different crops and the relative level of protection the country would negotiate on their behalf, should be better rationalized. Food security considerations need to be placed above narrow commercial interests. At the same time, serious consideration should be given to the elimination of export subsidies for long-standing exported commodities of Sudan. It is totally illogical for Sudan to subsidize consumers elsewhere. In addition, the accession process offers unique opportunities for building valuable trade-related capacity and, in particular, taking

⁸⁶ *Near East agriculture: towards 2030/2050*, paper presented at the FAO Near East regional Conference in Cairo, 1-5 March 2008.

advantage of existing mechanisms to improve capacity on such critical issues as SPS compliance.

- **Finally, using oil to transform agriculture.** Although the advent of petroleum and its dominance have been ostensibly portrayed as rivalling the role of agriculture in Sudan, this new resource presents an unparalleled opportunity for the country to develop a flourishing and sustainable agricultural base. Sudan is in a very unique position among countries, to be endowed with rich agricultural resources and now to be also rich in oil reserves. The choices are clear. The presently abundant but non-renewable resource should be used to develop an also abundant, underdeveloped but renewable resource that has the potential of lifting people out of poverty and offering them sustainable livelihoods.
- This is an **intergenerational responsibility**. It would be grave for the generations to come if Sudan misses this unique opportunity!

Finally, at a more practical level for the short term, the Study recommends that consideration should be given to developing a time-bound **training programme** on trade policy and effective export promotion practices. Ideally, such a training programme should be located in 'neutral' ground, i.e. outside a specific Ministry (for example at a competent department of the University of Khartoum) so that there is flexibility in developing its training content as well as in being more widely accessible by officials from different ministries, trade-related institutions and individuals from the private sector.

The scope of this training programme should be decided after careful consideration of needs in relation to what is already being offered under existing multilateral trade-related capacity-building programmes (ITC, WTO, FAO, etc), and how these can be exploited in terms of training material and other on-line resources, including distant learning possibilities. Because training needs are commodity and issue specific, the training programme and related resources would be best organised in the form of modules, whereby specific issues are contained in individual modules, such as SPS issues, market access for horticultural products, product promotion practices, etc. This would also facilitate building up a roster of competent individuals in Sudan and elsewhere who could act as resource persons in the delivery of the training programme.

Related to capacity building is also the need for developing a more solid information basis to facilitate analysis and guide decision making. While data on all aspects of commodity production and trade exist, these are far from being readily available and not in a form conducive to policy analysis. There are also important discrepancies between data from different sources. The **development of a reliable and easily accessible set of production and trade data** on agricultural commodities, as well as input use and investment in agriculture should be a priority. While centralizing these data under a single Government unit may not be feasible or desirable, a comprehensive overview of data sources in Sudan is necessary, i.e. mapping the units responsible for maintaining reliable up to date data.

In conclusion, it is suggested that the Ministry of Trade sets up an **Action Committee** with a mandate to work out how best follow-up action, to the recommendations made in this Study, is to be pursued and how and in what capacity to involve other government entities, private sector stakeholders and bilateral and multilateral partners.

Annex 1. List of Persons Interviewed

Ministry of Foreign Trade

- Mr. Momammed Ali Abdallah, Director of International Organizations
- Dr. Dirk Hansohm, Long Term Technical Advisor
- Mr. Hassan Mohammed Salim, Deputy Director, Sudan Trade Point
- Mr. Nabawia Mahamed Mahgoub, Trade Information Center
- Mrs. Sana Khiddir, Export Division
- Mr. Mohamed Elmutaz Sir Elkhatim, International Organizations Department
- Mr. Osman Eltayeb El Mahdi, International Organizations Department
- Ms. Amani Elzein Mohamed Musaad, International Organizations Department

Ministry of International Cooperation

- Mr. Mekki Mirghani Osman, Director General for Multilateral Cooperation
- Mr. Ndeke L. Kanene, Team Leader/Adviser to NAO

Ministry of Agriculture and Forests

- Dr. Abdelatif Ahmed Iejami, Undersecretary
- Mrs. Widad Abdelrahman, WTO Unit
- Mrs. Afaf A. Elgozuli, National Project Manager, Diversification Programme for Vegetable Export Development in Ethiopia and Sudan
- Mr. Badereldin Elshiekh M. Elhassan, Export Administration

Ministry of Animal Resources and Fisheries

- Dr. Mohammed A. Razig A. Aziz, Undersecretary
- Dr. Salaheldin Mohamed Ahmed Mukhtar, Director

Ministry of Industry

- Mr. Mohammed Widafalla, Consultant Leather Specialist

Commission for WTO Affairs and Integrated Framework Focal Point

- Dr. Mohamed Ali Dingle

Strategic Reserve Cooperation

- Mr. Mohieldeen Ali Mohamed, General Director
- Mr. Lim Donato, Assistant Manager of Information Statistics

Central Bank of Sudan

- Mr. Mohammed Osman Ahmed, Director, Policies Directorate

Agricultural Bank of Sudan

- Mr. Salah Eldin Hassan Ahmed, Head of Commercial Department

National Agency for Insurance & Finance of Exports

- Mr. Abdelmoneim Abdellatif Saad, Manager Planning and Promotion Department

Sudan Standards and Metrology Organization

- Mr. Nour Elsayed Mukhtar, Head of Agrochemicals Section
- Mr. Abdel Moneim Abdel Gadin, Head of Inspection Department
- Dr. Osman Ahmed Osman, Head of SPS Unit

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Sudan Airways

- Mr. Osman Yousif Ahmed, Cargo Director
- Mr. Maawia Mohammed Ahmed, Cargo Operations Department

Traders and related associations

- Mr. Zakaria Adam, Director of Crops, Sudan Oilseeds Co. Ltd.
- Mr. Xenophon B. Carapanayoti, RUBICON Ltd., Trader, Str 13 east, Khartoum
- Mr. Wagdi M. Mahgoub, Managing Director, MAHGOUB (Sons) GROUP
- Mr. Siddig Mohammed Modau, General Trade Export Breeding Livestock Transport
- Mr. Salah Salim, Tanneries and Shoe Manufacturer, Chairman of AFALI
- Dr. Ahmed Elshiekh Abbo, Expert in Leather Industry

Others

- Dr. Moslem Ahmed Alamir, Economist, The World Bank, Sudan Country Office
- Mr. Tilaye Bekele, Chief Technical Adviser, Diversification Programme for Vegetable Export Development in Ethiopia and Sudan
- Mr. Omer Jalal, Farmers Union

Annex 2. Agriculture in Southern Sudan

Southern Sudan comprises vast natural resources although largely underutilized. The civil war affected development of the agricultural sector which supports about 85% of the population in the South, producing for self-subsistence under small-scale-traditional farming system (Annual Needs and Livelihoods Assessment, 2006). The sector suffers from poor access to inputs (tools, seeds), credit, extension services and irrigation systems.

The livelihoods of the people of Southern Sudan are based on smallholding subsistence agriculture mixed with reliance on traditional cattle rearing, crop production, fishing, wild food collection and trade. The importance of cattle for the families in the South, except in the tsetse fly areas, is fundamental for wealth and status, cultural affiliation, safety nets and food security. Forests cover about 57 million hectares (out of 97 million hectares for the whole Sudan) and are a key source of livelihoods for the rural poor and a potential source of revenue through commercial exploitation⁸⁷. The Sudd region with an area of about 16,500 square kilometres constitutes the main fresh water fish resource in the South. Fishing plays also an important role in supplying food and livelihoods for the population living along the White Nile and the Sobat corridors. Traditional fish salting and drying methods are practiced, but marketing is limited by poor transport, refrigeration and packing services.

The division of agricultural activities is governed according to ecological zones. In the far south-eastern part, a form of pastoralism prevails, while in the southwest surplus agricultural production prevails. Fish and wild foods dominate along the White Nile and its tributaries, supplementing cattle products and crops, whereas, cattle are found on the rich flood plains.

Apart from the surplus producing Greenbelt, poor households in other zones spend not less than 40% of their income on staple grains, followed by essential non-food items, such as veterinary and health services, clothes, soap, etc. Generally, it is estimated that the total value of poor households' cash income in these areas is equivalent to 2-4 sacks of sorghum per household⁸⁸. Households in the Greenbelt often invest in education or savings in Uganda, while pastoral households spend their cash to purchase grain, veterinary medicine and protection of animals.

Crop production trends

Some 80% of cereal production is produced in traditional farming systems with the rest under mechanized farming. The main staple crops in the South are sorghum, millet, maize, rice and cassava. Sorghum is by far the major food crop produced, followed by millet. The household average farm for sorghum ranges from 0.5 - 5 faddens. Upper Nile constitutes the granary production area of the South. Production of sorghum and millet increased to above 1 million MT in the last few years, however there is high variability in production and substantial shortfalls in output well below the 1 million MT mark are not uncommon.

The area under cereal production in the traditional rain-fed sector increased from about 807,000 ha in 2004 producing about 587,000 MT to about 998,000 ha producing 1.25 million MT in 2008 (Table 2.1). Most of the traditional production is concentrated in Bahar Ela Gazal zone, followed by Equatoria zone and finally by Upper Nile Zone. The favourable rains and relatively few outbreaks of

⁸⁷ The rich forests resources of the South are further blessed with the presence of the two precious tree species (teak and mahogany) that constitute a wealth to the region. Despite such high potential, Southern Sudan is a net importer of forest products.

⁸⁸ One sack = 90 kg. Little cash circulation existed in Southern Sudanese economy over the years of civil conflict and the transactions were based on barter trade. Because of the limited cash in circulation, a range of currencies are in every day use.

Assessing Sudan's Export Diversification Potential in Agricultural Products

pests and diseases, together with increased returnees population, resulted in an above average cereal harvest in the traditional rain fed and mechanized sectors in 2008.

Only in the Upper Nile State districts of Renk, Melut and Wadakona and to a much more limited extent in Malakal and Bentiu (Unity State), is tractor-farming conducted at a level that could be identified with the commercial farms of South Kordofan and Blue Nile States. The area under mechanized farming actually declined from 191,000 ha producing about 182,000 MT in 2004 to 142,000 ha producing 165,000 MT in 2008.

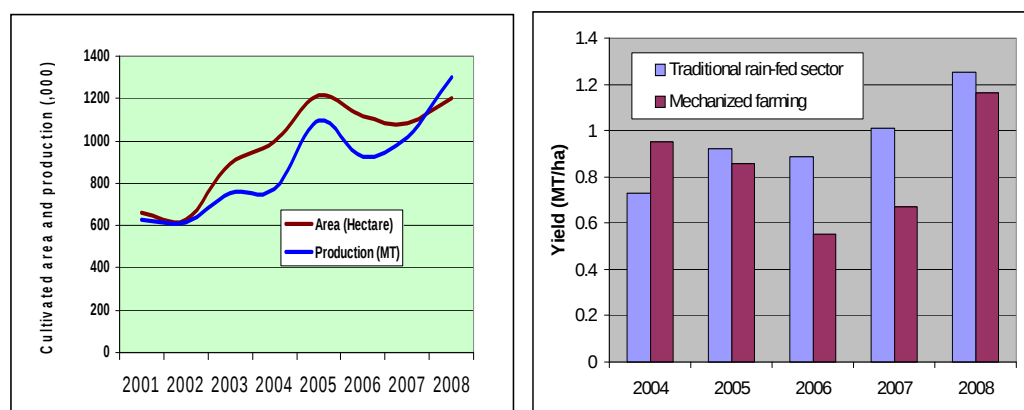
Cereal yields in Southern Sudan are low and fluctuations in production in recent years are due to both area planted as well as yield variability.

Annex Table 2.1. Cereal production (area in 1000 ha, production in 1000 MT)

	2004		2005		2006		2007		2008	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.
<i>Traditional rain-fed sector</i>										
Upper Nile	138	82	204	167	226	189	142	123	197	196
B. Ghazal	451	306	432	374	438	359	450	422	487	561
Equatoria	218	199	233	259	242	258	257	314	314	491
Total	807	587	869	800	906	806	849	859	998	1248
<i>Mechanized farming</i>										
Total	191	182	346	296	219	121	237	159	142	165

Source: CFSAM, 2008 by MAF/FAO/WFP/SSRRC

Annex Figure 2.1. Cultivated area, production and yields of cereals in Southern Sudan



Other crops

In the northern parts of Southern Sudan, other crops grown include groundnuts, which make a significant contribution to the household food economy replacing sorghum as the main staple in poorer sorghum-growing years when the rains begin later than usual; and providing a regular staple and cash crop in the higher localities with sandier soils. Green grams, cowpeas, beans, sesame, pumpkins and tobacco add to the biodiversity of the northern farming areas.

Assessing Sudan's Export Diversification Potential in Agricultural Products

Maize replaces sorghum as the major cereal in the southern half of the Greenbelt and in Central Equatoria. In the south and central areas, although groundnuts and the other crops are also grown in quantity, cassava is the most important contributor to the household food economy providing at least half of the carbohydrate ration. Minor crops of sweet potatoes, yams, coffee, mangoes, papayas and teak are also grown for home and some localized commercial use.

The agriculture potential of Southern Sudan is high. A wide range of field crops other than cereals, including vegetables, especially pumpkins and okra, and tree crops are grown successfully in all states. Presently, small quantities of oil seeds, tobacco and, less regularly, cotton, are grown in the traditional sector for household consumption and for occasional sales of small surpluses in local markets. Two other crops, groundnuts and cassava, are grown in quantity, the former throughout the states and the latter in all states except North Bahr el Ghazal, Warrap (some small quantities along field boundaries), Unity, Upper Nile and Jonglei⁸⁹.

Livestock and fisheries

Smallholder pastoralists, agro-pastoralists and fisher folks are food insecure groups of Southern Sudan. Furthermore, they are threatened by conflicts over natural resources among themselves and with farmers and resident and returnees. These conflicts deprived pastoralists, agro-pastoralists and fisher folks of the support services that were provided before the conflict. At present, these groups suffer from lack of basic services of market support, extension, animal health and rural finance.

The livestock sector faces many constraints including the prevalence of animal diseases, despite success in eradicating rinderpest, lack of extension services and poor flow of market information, lack of water harvesting reservoirs and micro-dams; under-developed livestock markets and export channels.

The wetland ecosystem in Southern Sudan is appropriate for aquaculture that could contribute to food security, income diversification for rural households and source of employment. At present fish farming is practiced only to a very limited extent and is constrained by different factors such as lack of technical know how by farmers and fisher folks, lack of capital by poor farmers for investing in aquaculture, and limited marketing opportunities.

Trade in Southern Sudan

There are no official records on agriculture exports from Southern Sudan, although small quantities are exported informally. Imports, on the other side are widely recognizable in the market of Juba as a signal of importing food and other commodities from Kenya and Uganda. National official statistics reported US\$ 6 to US\$ 7 million payment on importing tea and coffee from Uganda and Kenya into Sudan. Comparing this with the official reports of Kenya (US\$81 million) and Uganda (US\$56 million) indicate the presence of larger volume of trade transactions going between the two countries and Southern Sudan.

One of the main constraints impeding both domestic and international trade in Southern Sudan is lack of basic transportation infrastructure. Paved roads are few with most of the others not passable during the wet seasons. Because of bad roads, the cost of shipment by trucks from Uganda to Juba doubles during wet seasons. The Khartoum Wau railway network of 1960 is non operational. The river navigation from Kosti to Juba (a distance of 1,435km) is a costly route at some US\$200 per ton. These problems are well recognized and there are plans to construct a network of 3,000 km of

⁸⁹ FAO/WFP Crop and Food Security Assessment Mission to Southern Sudan, 6 February 2009

paved roads and another 3,000 km of gravel roads by 2015.

The South is landlocked and uses Mombasa as its main seaport. Its shortest link to the sea is a road through Kenya using the Lokichoggio border crossing. There is an equidistant road route through Arua and Nimule in Uganda that has started functioning recently (it was moribund owing to civil strife in Northern Uganda). A slightly longer route has been working through Yei in Uganda.

Goals of the Government of Southern Sudan

The goals of the Government of Southern Sudan (GOSS) are eradication of poverty, attainment of the Millennium Development Goals, guaranteeing the equitable distribution of wealth, redressing imbalances of income and achieving a decent standard of life for the people of Southern Sudan.

Medium term priorities (2008 - 2011) of the GOSS include: security, roads, provision of primary health care, provision of basic education, access to water, and increasing the production of basic foodstuffs.

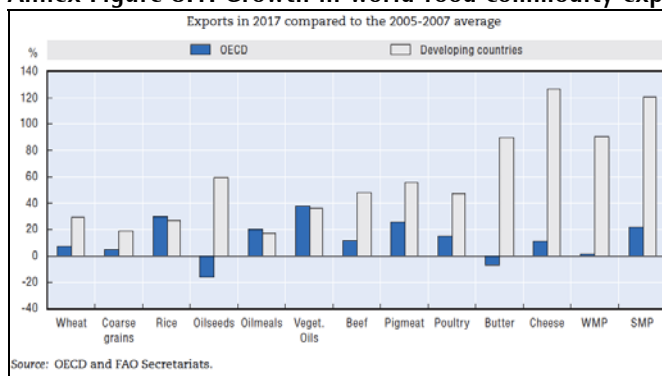
Beyond these immediate considerations, the GOSS Ministry of Agriculture and Forestry has envisaged a program of crop production intensification and diversification in the South, including the following⁹⁰:

- maize (Upper Nile, Unity),
- rice (Northern Bahr el Ghazal, Western Bahr el Gazhal, Lake),
- groundnuts (Northern Bahr el Ghazal, Western Bahr el Gazhal, Lake),
- sesame (Northern Bahr el Ghazal, Western Bar el Gazhal, Lake, Upper Nile, Unity),
- sorghum Northern Bahr el Gazhal, Western Bar el Gazhal, Lake, Upper Nile, Unity),
- cotton in different States,
- pineapple (Central Equatoria),
- coffee (Central Equatoria), and
- tea (Eastern Equatoria).

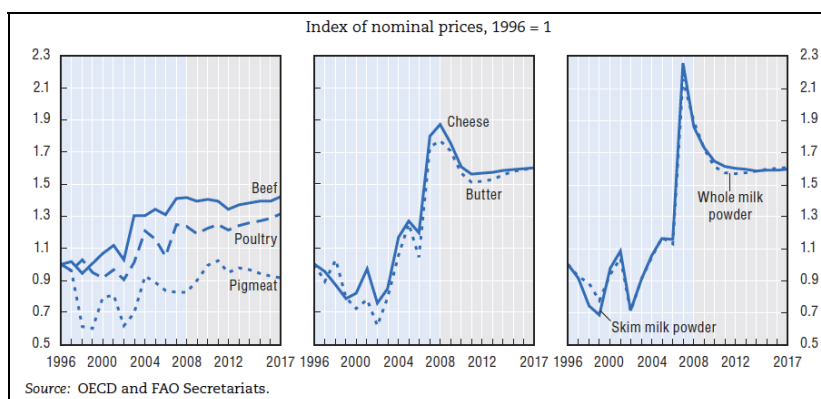
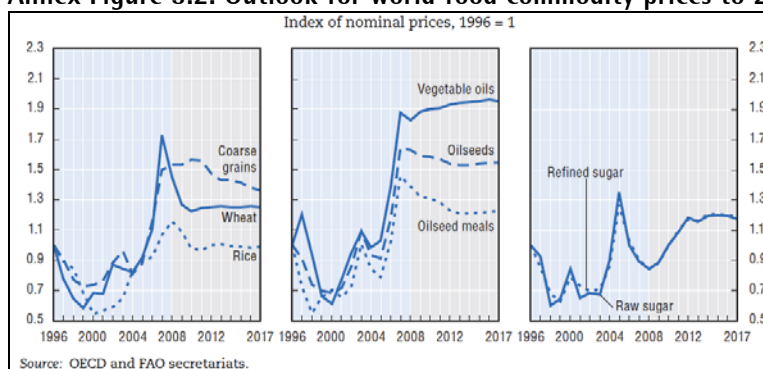
⁹⁰ Government of Southern Sudan, Ministry of Agriculture and Forestry, Directorate of Agriculture Production.

Annex 3. Global Outlook for Some Agricultural Commodities of Interest to Sudan

Annex Figure 3.1. Growth in world food commodity exports to 2017



Annex Figure 3.2. Outlook for world food commodity prices to 2017



Source: *Agricultural Outlook 2008–2017*, OECD and FAO, Paris and Rome 2008.

Annex 4. The EU Market in Fruits and Vegetables

The European Union (EU) is the second largest exporter and the biggest importer of fruits and vegetables (F&V). Among fresh products, the main imports are bananas (3.3 million MT), citrus fruit (1.9 million MT), apples (0.7 million MT), grapes (0.3 million MT) and pineapples (0.3 million MT). Fruit juices, mostly citrus and apple juice, also represent important imports. Onions and tomatoes are the most imported vegetables (respectively 0.26 and 0.17 million MT). Frozen and dried vegetables are also traded in large volumes⁹¹.

A common market organization (or 'regime') for fresh F&V was initially set up in 1962 and a regime for processed F&V has developed since 1968. These regimes have been subject to continuous reform, especially at each stage of enlargement of the EU, and contain many of the elements being introduced in policy reforms in other commodity sectors. The F&V regime supports traditional and diversified production, often in less-developed regions, using rural development style measures, but is largely market-oriented. The regime also recognizes the perishable nature of many products and the need to improve the quality of products sold in EU markets⁹².

As with other products, the EU import regime on F&V operates within its WTO commitments on the Most Favoured Nation (MFN) principle. However, concessions have been agreed for certain products, under Generalized System of Preferences (GSP), the African Caribbean and Pacific States (ACP) party to the Cotonou Agreement, and a variety of bilateral trade agreements. These concessions may be restricted to certain tariff quotas or to certain periods of the year, depending on the Community season. If import volumes of products subject to the entry price system exceed the trigger volumes agreed within the WTO, an additional import duty may be applied.

The F&V sector is very sensitive in many respects in the EU and this includes in particular concerns about hygiene, food safety, nutrition, labelling and environmental sustainability. This applies equally to both domestically produced F&V and those imported from third countries. Special emphasis is usually given to those quality products recognized as PDO (protected designation of origin), PGI (protected geographical indication) or TSG (traditional specialty guaranteed).

Marketing standards (previously called quality standards) have been laid down in the EU for products which are supplied fresh to the consumer⁹³, similar to the UN/ECE quality standards. Implementing international standards on domestic and world markets reduces transaction costs along the F&V chain, and is a means to add value.

The standards allow producers to describe their products and give indications of their market value without requiring physical presentation. To simplify the administrative procedures for trade in F&V, the EU has recognized controls conducted in an increasing number of third countries, which account for approximately half of EU imports. This system reduces delivery times, administrative costs and overheads for EU importers, improves the quality of imported products, and adds administrative certainty for the exporter.

⁹¹ *The horticulture sector in the European Union*, European Commission, Directorate-General for Agriculture, June 2003

⁹² Council Regulation (EC) No 2200/96 of 28 October 1996; Council Regulation (EC) No 2201/96 of 28 October 1996; and Council Regulation (EC) No 2202/96 of 28 October 1996.

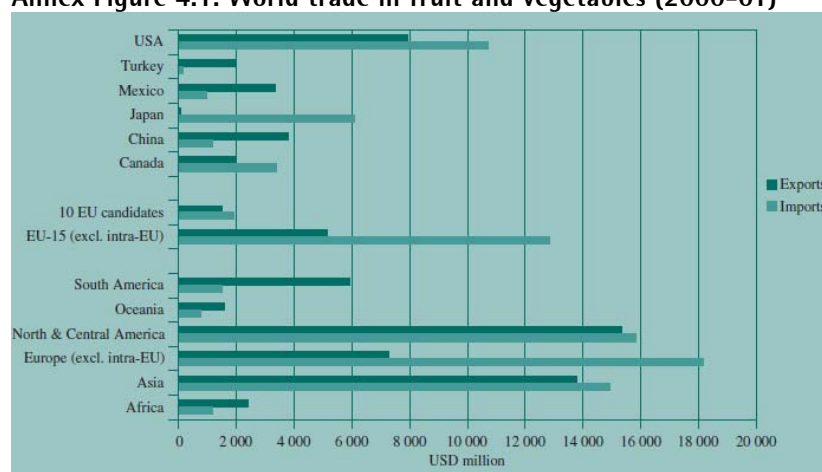
⁹³ Among some 35 products listed, the following products of possible interest to Sudan include: Artichokes, Asparagus, Aubergines, Avocados, Beans, Brussels sprouts, Cabbage, Cauliflower, Celery, Citrus fruit, Courgettes, Cucumbers, Garlic, Leeks, Lettuce, Melons, Onions, Peas for shelling, Spinach, Strawberries, Sweet peppers, Tomatoes, Watermelons and Witloof chicory.

Assessing Sudan's Export Diversification Potential in Agricultural Products

There is considerable variation in the retail sector demands. The supermarket sector in some EU countries (most notably in the UK, Netherlands and Belgium) views the fresh fruit and vegetable quality standards developed by national authorities as minimum requirement for market entry. Because of concerns about consumer safety and traceability, the private sector is developing its own standards or codes governing practices. This is particularly noticeable with some European supermarket retailers who have established a consortium, the European Retailer Produce Working Group (EUREP), representing the leading European food retailers, to formulate harmonized codes of practice covering Good Agricultural Practice (GAP) and Good Retailing Practice, the latter covering storage and packing facilities. EUREPGAP offers a means of incorporating Integrated Crop Management (ICM) and Integrated Pest Management (IPM) practices within the framework of commercial agricultural production. The normative document, "EUREPGAP Fruits and Vegetables", is a means of independent certification that producers are following the accepted principles of good agricultural practice.

While supermarkets often set high standards, they can also provide attractive returns to suppliers because their demand is more stable in terms of volume and price. Sales of "convenience" consumer packs of pre-packed vegetables are growing fast, and these offer an opportunity for countries to add more value domestically by conducting grading and packing for the supermarket shelves prior to export.

Annex Figure 4.1. World trade in fruit and vegetables (2000-01)

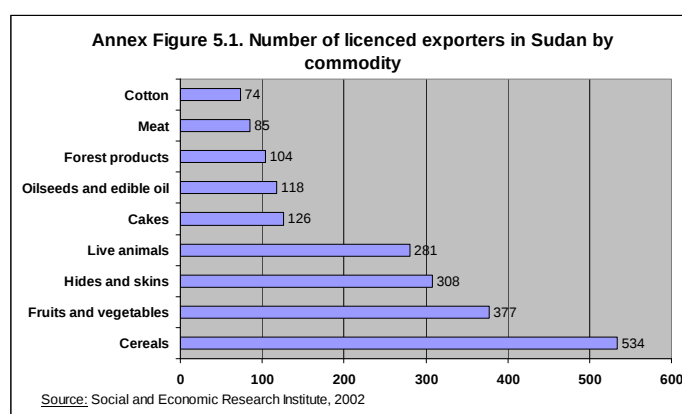


Annex 5. Survey of Licensed Agricultural Exporters in Sudan and their Perceptions

This is based on a Survey of exporters carried out by the Social and Economic Research Institute (Ministry of Science and Technology) in 2002.

Sudan is served by a large number of educated exporters

There were over 2000 registered licensed exporters of agricultural commodities of different types in Sudan (see Table). These included exporters of cereals, fruits and vegetables, hides and skins, live animals and red meat, oilseeds and edible oil and cakes, cotton and forest products. Many of the licensed exporters were involved in exporting more than one commodity as the risks of focusing on one commodity group or specializing on the exports of one commodity alone was high. On the other hand, it was also observed that quite a good number of registered exporters were only operating occasionally, as they were discouraged by the high levies of taxes and fees, and by unpredictable trade policies to engage in the exporting business on a regular basis.



Among the different commodity groups, cereals alone account for over a quarter of the registered exporters. Fruits and vegetables are not far behind with nearly one fifth of traders identified with that commodity group, and the same applies to the number of exporters of live animals and meat taken together. Hides and skins have also a good representation among exporters at over 15%. In general, none of the commodity groups appears to be dominated by a small number of traders. This is a good sign that would be expected to limit monopsonistic behaviour on the part of exporters at the expense of producers.

Not only are traders numerous in Sudan but are also generally of good education standing. The Survey indicated that more than 50% of the exporters had university education and about 17% had postgraduate education, and same percentage had secondary level education while less than 10% had lesser levels of education. This impressive educational profile of exporters is indicative of the fact that many of them inherited their career from their family, passing on to them know-how and valuable experience. The presence of highly educated exporters would also suggest willingness on their part to accept and adopt new marketing innovations and practical approaches that would promote their trading businesses.

The survey also indicated that more than 85% of the exporters were grouped into private sector companies and 12% who acted as self-employed individual exporters, however, none of these exporters had developed any sort of business relationship or representation with international or

regional trading companies.

More than half of the exporters (55%) bought their consignment lots for exports from nearby rural and town markets to ensure availability of the commodity in required quantities and to avoid the demanding effort of collecting the commodity from original sources at high cost (search, grading, storage and transportation cost). The rest of the exporters bought directly from farms (20%), manufacturing firms (10%) and slaughtering houses (5%) and a mix of all these sources (10%).

The best timing for buying the lots was at the beginning of the season when prices were relatively low. Nevertheless, some of the exporters bought their consignments throughout the year according to evolving market demand, but with definitely less buying by the end of the season when prices escalate because of increasing scarcity.

Arab and European countries constitute the majority of total exporters' activities (about 70%), with the Arab countries accounting for the largest part of this. Asia and USA account for about 25% of their activities, while African, Latin American and other non-Arab and non-European countries represent the remaining 5%.

Exporters' Perceptions of problems and constraints

Among the cereal crops group the export of sorghum was highly influenced by unpredictable trade policies, great variability in production and high production cost all of which reduce the crop sustained supply at competitive prices in the world market. Fluctuating sorghum production levels force the government to ban its export during shortage seasons as this crop is the major food staple in the country and the government is ill prepared and unable to sustain high cost storage facilities that can bridge the gap between years of good crops and years of poor harvests.

Exports of live-animals became a booming business during the 1990s to the extent that it led to high speculation. However, this business became highly vulnerable due to unstable trade and taxation policies on the part of the government of Sudan, and more recently import bans by the major importing countries (Saudi Arabia and the some of the Gulf countries) due to outbreaks of contingent diseases such as the Rift Valley Disease in the Middle East and East Africa regions.

As regards hides and skins and groundnuts, about 30% of exporters claimed that the poor quality of the exported commodities from Sudan has been responsible for the low prices accrued to Sudanese exports in these two commodity groups. The first suffering from ill treatment of live-animals from thorny bushes and fire brands and beating with lashes when driving animals through grazing pastures, while the second suffers from infection with Aflatoxin microorganisms.

Exports of perishable commodities such as fruits and vegetables and red meat were largely influenced by the demand in the importing market⁹⁴ and by the availability and cost of storage facilities in Sudan. Owing to shortage of cold storage facilities, the trade of such perishable commodities involved quick transactions to avoid losses. However, shipping options are limited. Shipment by air cargo which requires payment by volume rather than weight, and also contingent on availability of space in passenger aircraft, renders this mode of transportation costly and unreliable. On the other hand, the quantity of exported commodities is often not large enough to warrant specially chartered cargo planes. The limited cold storage facilities in the country and unreliability of transportation expose the business of exportation of perishable commodities to high risks of failure and thus presently limit the exploitation of export opportunities in this sector.

⁹⁴ For example, exports of fruits and vegetables to Europe usually take place during winter months when the supply from local production in that market is limited or non-existent.

Another issue that concerns all commodities, but perishable in particular, is quality control. Despite the establishment of the Quality Control and Measures Corporation and other quality control agencies (Veterinary and Plant Protection Labs), their role in providing effective services to traders is questionable. As a result most of the exporters depend on practical experience in grading their exported products. The input of the Quality Control agency comes too late in the supply chain process, at the time of delivering the exported commodity on board. In cases when the exported commodity is found not complying with the required quality and health standards, the implications for the exporter can be grave indeed. At present there is an unacceptably high risk that consignments that found their way into importing air and sea ports to be returned because of poor quality standards.

Regarding the exports of cotton and gum Arabic, which were monopolized by the State⁹⁵, the exporters who are interested in working in those two commodities were only allowed to export limited quantities of low-price commodities to neighbouring countries such as the cotton zugub to Egypt. Moreover, these limited volumes for export are to be bought from the State companies which add to the cost of their exports and reduce their expected revenues.

Exports of oilseeds, especially sesame, seemed to be the most promising niche for exporters due to the growing world demand and ease of packing and export procedures associated with exports of this commodity group.

For all commodities, road transportation to the port is costly as exporters have to pay the cost for empty returning vehicles from land ports after delivering their consignments on board. This adds to other heavy transaction costs related to export fees and taxes making the price of exported commodities of Sudan uncompetitive in world markets. Sudan is a price-taker in world markets where prices are determined by the forces of supply and demand. High quality and price competition from other countries, as well as speculation among Sudanese exporters at times, were among the quoted reasons undercutting prices of Sudanese exports.

There were issues also about the policy roles of the Ministry of Foreign Trade (MoFT) and that of the Chamber of Commerce (CoC) in facilitating trade. Exporters largely depend on information about trade movement to personal efforts in contacting relatives and friends in importing countries and through other sources including the Internet. Very little information is conveyed through the MoFT and CoC as well as the Commercial Attachés in Embassies abroad. The latter seem to be of no practical value although expected to provide timely information about present and prospective developments in international trade in the commodities of interest to Sudan. Recently in 2005, MoFT established the Trade Point Centre to fill this gap (see elsewhere in this Report).

⁹⁵ The State monopoly of gum Arabic was lifted in 2009.

Annex 6. Growth of Gross Domestic Product (GDP) and Agriculture Sub-Sectors

Annex Table 6.1. Average annual growth rate of GDP

Year	Growth rate of GDP (%)
2001	6.4
2002	6.7
2003	6.1
2004	7.2
2005	8.0
2006	10.0
2007	10.5
2008	8.0

Source: Ministry of Finance and National Economy.

Annex Table 6.2. Annual growth rate of agricultural farming systems (%)

Years	Agriculture	Irrigated	Mechanized	Traditional	Forestry	Livestock
1999	8.5	4.8	47.7	24.6	4.0	8.9
2000	0.8	7.6	-55.7	-5.9	4.9	5.7
2001	4.0	10.2	5.4	-12.6	5.0	6.0
2002	7.3	0.3	27.4	27.3	4.0	2.5
2003	5.2	4.3	77.5	-4.9	4.0	5.3
2004	-3.5	8.9	-53.7	-26.1	2.5	1.0
2005	7.2	7.1	78.7	29.2	2.0	0.2
2006	8.4	11.7	18.0	30.0	4.0	0.4
2007	6.0	12.0	7.8	8.0	2.0	2.0

Source: Bank of Sudan

Annex 7. Agricultural Commodities Production Data

Annex Table 7.1. Area, production and yields of major crops

	Sorghum	Millet	Wheat	Maize	Rice	Ground nuts	Sesame	Sun flower	Cotton
Area (1000 hectares)									
1961-70	1520	574	59	32	2	346	492	0	502
1971-80	2489	1104	201	60	8	858	928	0	535
1981-90	4053	1392	144	55	3	624	875	47	493
1991-00	5560	2109	292	82	3	1037	1498	41	224
2001-07	5936	2232	179	71	7	1121	1490	13	218
Production (1000 MT)									
1961-70	1297	323	65	21	2	329	184	0	171
1971-80	1911	402	220	37	8	736	250	0	187
1981-90	2370	281	197	28	3	400	172	16	153
1991-00	3228	508	504	46	3	713	259	21	66
2001-07	4234	650	431	54	22	740	268	12	78
Yields (MT/hectare)									
1961-70	0.85	0.57	1.25	0.64	0.99	0.98	0.38	0.00	0.34
1971-80	0.77	0.36	1.14	0.67	1.02	0.85	0.27	0.00	0.35
1981-90	0.56	0.20	1.38	0.50	1.00	0.63	0.20	0.18	0.31
1991-00	0.58	0.24	1.76	0.57	0.93	0.70	0.17	0.52	0.30
2001-07	0.71	0.29	2.38	0.75	3.16	0.64	0.18	0.98	0.37

Source: FAOSTAT

Annex Table 7.2. A=Area (000 feddans) and Q=Production (000 MT) of Fruits & Vegetables

	2003		2004		2005		2006		2007		2008	
	A	Q	A	Q	A	Q	A	Q	A	Q	A	Q
Onions	117	971	127	1,016	110	6,880	113	901	115	901	117	238
Tomatoes	78	468	93	556	66	396	68	410	72	432	76	453
Okra	58	241	60	252	42	210	22	220	47	235	48	249
Egg Plant	7	48	7	61	8	66	9	70	9	72	9	76
Potatoes	44	301	48	336	36	252	38	264	39	273	41	284
Pumpkins	86	607	92	644	72	504	78	546	81	567	84	589
Spices	73	146	78	156	70	140	72	144	73	146	74	148
Leaves	11	54	12	55	11	54	11	55	13	65	15	66
Sweet potatoes	20	137	22	141	16	112	17	119	19	133	21	147
Others*/	12	50	12	51	12	61	13	63	13	64	13	66
Mango	65	602	67	603	67	605	68	611	68	632	68	651
Banana	41	491	43	501	43	512	43	516	45	540	47	562
Lemon	26	160	28	196	29	200	30	210	32	224	34	233
Grapefruit	19	114	23	138	24	142	25	147	26	156	28	165
Orange	20	98	22	110	23	115	23	115	24	120	25	125
Date	80	328	82	336	83	332	83	332	84	336	85	339
Gawafa	14	111	16	112	16	113	17	116	17	119	18	123
Others	4	10	4	11	3	9	3	9	3	10	4	10

Notes: */ Include beans, peas, carrots, cucumbers, cauliflower and lettuce. Data for Darfur state are not recorded for the years 2005, 2006 due to security reasons.

Source: Central Bureau for Statistics, Sudan

Annex Table 7.3. Area, production and prices of rosella

Years	Area (000 ha)	Production (000 MT)	Yield (kg/ha)	El Obeid price (SDG/kantar)
1998/99	171.4	16	93.3	39
1999/00	247.1	26	105.2	61
2000/01	121.8	9	73.9	56
2001/02	129.4	16	123.6	92
2002/03	47.9	5	100.2	128
2003/04	94.5	9	95.2	138
2004/05	180.7	17	94.1	79
2005/06	142.0	16	112.7	76
2006/07	269.3	24	89.1	74
Average	156.0	15	98.1	83

Source: Ministry of Agriculture and Forestry

Annex Table 7.4. Meat, milk and hides and skins production

	1961-63		1971-73		1981-83		1991-93		2003-05	
	(1000 MT)	(%)	(1000 MT)	(%)	(1000 MT)	(%)	(1000 MT)	(%)	(1000 MT)	(%)
Cattle meat	105.6	56.4	157.6	58.9	244.8	65.6	224.1	56.1	343.3	49.7
Sheep meat	45.8	24.5	55	20.6	71.1	19	83.4	20.9	145.7	21.1
Goat meat	22.3	11.9	29.6	11.1	31.9	8.5	68.7	17.2	154.3	22.4
Camel meat	13.5	7.2	25.2	9.4	25.5	6.8	23.6	5.9	47	6.8
Total meat	187.2	100	267.3	100	373.2	100	399.8	100	690.3	100
Cow milk	673.3	61.6	789.7	62.7	1,654.00	58.9	2,404.00	66.6	5,452.70	72.7
Sheep milk	75.3	6.9	108	8.6	569.2	20.3	421	11.7	475.3	6.3
Goat milk	314.7	28.8	316.7	25.1	530.9	18.9	719.7	19.9	1,467.70	19.6
Camel milk	30	2.7	45	3.6	53.3	1.9	63.5	1.8	107	1.4
Total milk	1,093.30	100	1,259.30	100	2,807.40	100	3,608.20	100	7,502.70	100
Cattle Hides	13.4	50.9	20.1	53.5	31.2	59.9	38.2	56.5	59.1	51.8
Sheepskins	6.5	24.8	7.9	20.9	10.7	20.6	12.5	18.5	22.8	20
Goatskins	4.3	16.3	5.7	15.2	6.1	11.8	13.2	19.5	25	21.9
Camel Hides	2.1	8	3.9	10.4	4	7.6	3.7	5.4	7.3	6.4
Total hides	26.4	100	37.5	100	52	100	67.6	100	114.3	100

Source: FAOSTAT

Annex 8. Agricultural Commodities Export Data

Annex Table 8.1. Commodity exports of Sudan in value (1000 SDG)

Commodity	1999	2000	2001	2002	2003	2004	2005	2006
Sheep	205117	154871	-	248596	217975	306387	239731	223762
Goats	4119	820	25	6980	4733	6551	7438	6974
Camels	24663	10259	3819	49007	31998	39375	11104	7260
Sorghum	66194	35843	882	15949	5600	6265	1580	1336
Hibiscus	44326	43601	28398	33225	33652	57259	34051	28759
Cake & Meal	13617	8070	8574	4681	6347	3461	25	-
Hides & Skins	7311	40205	57619	57220	85558	69194	50318	57609
Groundnuts	454	12718	20786	13628	448	3606	4172	328
Sesame	295668	339566	253071	164921	193916	345906	240291	311495
Melon Seeds	24051	30834	41384	24964	39728	26641	22981	7937
Cotton	115662	152435	122477	188596	277620	226227	252323	154146
Gum Arabic	45357	53508	48181	66674	77911	131597	248655	109323
Fruits	5379	7576	5915	12302	3339	3519	2799	1647
Vegetables	442	191	423	1031	193	767	1	67
Vegetable Oils	430	15820	22983	6500	584	3126	268	421
Sugar	29507	32418	27763	21351	22697	16177	55242	2282
Gold	134626	147039	125747	126314	138366	120833	158787	165280
Petroleum	688802	3606774	3828288	4073410	5139562	7200243	9117533	10395545
Others	147494	140014	90822	171852	170654	168174	154484	101072
Total	1853219	4832563	4687155	5287200	6450880	8735308	10601781	11575244
Of which agr'l products	882297	938735	642300	915625	1002299	1246058	1170979	913346
Percent	47.6	19.4	13.7	17.3	15.5	14.3	11	7.9

Source: Central Bureau for Statistics, Sudan

Annex Table 8.2. Exports of Fruits & Vegetables (MT)

	2000	2001	2002	2003	2004	2005	2006	2007
Mango	6,095	7,435	5,682	3,504	2,836	2,202	1,092	1,270
Lemon	1,715	1,042	823	187	261	130	133	207
Spices	1,004	1,135	969	611	458	213	79	32
Onion	17	53	570	673	40	124	272	389
Date	66	2,416	476	886	227	341	653	35
Grapefruit	8	4	13	43	27	36	15	24
Guava	1				195			
Galia	1,225	1,201	632	472	429	9	182	838
Watermelon	56		397		390	198	92	548
Banana	56		11	7	47	1,487	754	
Beans	421	244	927	139			53	1,918
Okra				7	11		3	
Garlic	2	118	157		1		5	10
Hibiscus	18,826	16,780	22,102	15,235	23,291	18,921	18,600	13,613
Olibanum		1,726	112	865	375	358	169	76
Lupin		425	275	299	396	140		225
Henna	522	1,321	1,397	1,089	1,368	1,477	1,515	866
Senna pods	1,274	859	1,510	2,099	2,226	1,515	1,043	1,192
Tamarind		419	607	425	430	445	320	427
Argel		39	14	10	12	6	9	2
Melon Seeds	39,545	65,183	43,168	45,100	40,747	30,157	24,255	16,311

Source: Central Bureau for Statistics, Sudan

Annex Table 8.3. Live animal exports (heads)

	Sheep	Goats	Cattle	Camels
1997	1074576	16891	3595	77714
1998	1586193	48891	3686	131570
1999	1616363	40501	435	159439
2000	731242	16599	315	132009
2001	15417	13883	0	185500
2002	1602638	53164	2655	155710
2003	1315399	57639	184	88423
2004	1702562	101899	750	130957
2005	1271787	109654	501	131156
2006	1422109	102378	0	116184
2007	612843	30290	3658	85862
2008	610832	14337	1198	140757

Source: Ministry of Animal Resources and Fisheries

Annex Table 8.4. Meat exports (MT)

	Sheep	Goats	Cattle	Camels
1999	5825.9	336.2	3585.6	20.7
2000	6157.8	311.9	2350.1	9.5
2001	4855.2	35.8	1714.2	12.4
2002	7113.8	353.8	347.1	6.6
2003	7837.1	221.3	178.2	16.4
2004	6329.4	217.1	1481.9	57.4
2005	4710.5	27.2	656.4	27.9
2006	2263.9	7	0	10.2
2007	2130.9	12.4	0	12.2
2008	207.4	1567	2.9	0.7

Source: Ministry of Animal Resources and Fisheries

Annex 9. Value Chain Analysis for Selected Agricultural Commodities

	Sesame		Groundnuts		Gum Arabic	Rosella	Sheep		Meat
Assembly location	El Obeid	Gadarif	El Obeid	Gezira	El Obeid	El Obeid	El Obeid	Khartoum	Khartoum
	(SDG/MT)						(SDG/head)		(SDG/MT)
Shipment value at farm	840.3	1303.6	686.2	1514.7	3851.7	769.6	170.0	160.0	10200.0
Assembly & processing cost*/	95.8	41.6	139.1	163.8	220.2	129.3	3.1	5.3	849.8
Logistics at assembly Port*/	108.7	109.3	210.6	101.4	282.4	85.3	3.5	0.0	26.7
Shipment value at Port of exit	1044.8	1454.5	1035.9	1779.8	4354.3	984.2	177.0	165.3	11076.4
Export parity Port	1763.2	1763.2	1441.3	1441.3	9775.0	1887.5	213.0	164.2	12320.6
Logistics to world market	264.1	209.6	321.9	328.8	174.0	352.5	13.0	0.0	17.8
World Reference Price	2027.3	1972.8	1763.2	1770.0	9949.0	2240.0	226.0	164.2	12338.4
Export Competitiveness Ratio	0.70	0.94	0.93	1.60	0.45	0.64	0.89	1.01	0.90
Total transaction cost*/	204.5	150.9	349.7	265.2	502.6	214.6	6.6	5.3	876.4
of which, Total Taxes	108.0	123.2	122.5	198.1	212.6	64.1	3.1	2.7	290.7
Share of Taxes (%)	52.8	81.7	35.0	74.7	42.3	29.8	47.2	49.8	33.2

*/ includes taxes, fees and charges (labelled 'Taxes' for convenience)