IMPACT OF DOMESTIC SUPPORT PROVISIONS OF WORLD TRADE ORGNIZATION ON SUDAN EXPORTS OF GUM ARABIC

By

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DEDICATION

To my

Mother, Father

Sisters, Brothers

Relatives

With endless love
ACKNOWLEDGMENT

I wish to express my sincere thanks to my supervisor, Dr. Kamil Ibrahim, his keen interest and guidance were helpful to realize this work. Also my sincere gratitude and appreciation are extended to Dr. Ali Abdel Aziz, whose guidance and helpful comments have been invaluable in the completion of this dissertation. Thanks are also due to my colleagues at Ministry of Agriculture for their helpful advice and support. I am also indebted to my parents, sisters and brothers for their continuous support. All the praise to Allah, the almighty and merciful for granting me the strength, health and patience to complete this research work.
The establishment of the World Trade Organization (WTO) was the most important factor influencing world and regional economic recent changes. WTO administers relatively well-defined rules and commitments on international trade. A wide variety of methodologies are utilized to estimate the impact of this Organization and its Agreements. Which covered sensitive sectors like agriculture. The internal policies for the members in the area of domestic support, market access and export subsidy are subject to the provisions and rules of the Agreement on Agriculture.

Since the commitments contained in the country schedules constitute the bases for future commitments and concessions, this study aimed particularly, by using the World Trade Organization (WTO) Agreements as a guide, to tackle the situation of domestic support for the Sudanese Gum Arabic during (1995-2002) via the Aggregate Measurement of support (AMS).

Gum Arabic, which is one of the Sudanese important exports, has been characterized by fluctuation in quantities produced and exported since the 1970s; this study aimed also at investigating the factors affecting Gum Arabic production and exports during (1970-2000).

The study found out that, the Gum Arabic suffered from negative support, which indicate taxes levied on it. Also the study revealed that the fluctuation in supply and demand of Gum Arabic could be attributed mainly to unstable policies with respect to marketing and exports, in addition to adverse environmental conditions namely drought. Also the study found that, the export price methodology of Gum Arabic which aimed at increasing returns through declaring high export prices, without considering the changes that appearing in international markets, beside taxes and fees that were levied on exports, contribute to lessening its competitiveness.
The study mainly recommended that, the taxes and fees should be reduced or removed to enable the producers to benefit from exports prices and to balance between the government revenues and the producers incentives. Also in this part the study recommended to have competing export prices so as to increase the amount of Sudanese Gum Arabic exports and encourage international demand for it.

WTO assumes that Least-developed countries support agriculture. In addition, the commitments within the WTO Agreement on Agriculture do not prohibit members to subsidize and protect their agricultural producers, unless otherwise committed themselves. Depending on these facts the study recommended that, the accession of Sudan should be based on the special treatment provided for LDCs. Also the levels of domestic support should be bound at the highest level allowable under WTO rules. In addition to the policies that need to be issued to enable the country to support and strengthen the agricultural sector in the context of WTO Agreements.

This study has depended mainly on secondary data, which have been collected from many relevant official sources and institutions in Sudan.
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CHAPTER ONE
INTRODUCTION

1-1 Introduction

The Sudanese economy, as a typical Least-developed country economy is characterized by its heavy dependence on agriculture. Sudan’s arable land is estimated to be 200 million feddans, of which only 40 million feddans are under crop production. Traditionally the agricultural sector is divided to four main sub-sectors, irrigated, mechanized rain-fed, traditional rain-fed and the live stock sub-sector (Ministry of Agriculture, 2002).

The Agricultural sector provides employment for 75 percent of the labour force, it participated in the GDP by 47.6 %, 48.7%, 49.8% and 46.4% in 1998, 1999,2000 and 2001 respectively, recording an average of about 48.1% during this period. The live stock sector is growing in importance. it accounts for 46% of agricultural GDP (Ministry of Agriculture, 2002).

Exports of the Sudan constitute the most important source of foreign earnings. Sudan’s agricultural exports can broadly be classified into two categories: raw materials and food. The major raw materials exports include cotton, gum arabic, hides and skins while the major food products include oil seeds (groundnuts and seaseme), live sheep, meet and sorghum. The agricultural exports accounted for about 85% of total merchandise exports for the period 1990-1998. In 1999 the total export value increased by 31% compared to 1998, due to the starting of petroleum exportation which constitutes 35.4% of exports value in 1999. Even after the start of petroleum exportation in 1999, the agricultural products play a significant role in the export value. the average value of the agricultural exports during the period 1995-1999 is approximately 629.2 million USS(Ministry of Foreign Trade, 2002).

Recent changes in world economy, including the completion of the Uruguay Round of Multilateral Trade Negotiations and the emergence of new economic blocs, the creation of a new world trade organization, which is an important outcome of the UR, are expected to have significant effects on agricultural trade. Also, these changes are expected to have effects on production and consumption of agricultural products.

Sudan, which is classified as a Least-developed country, is expected to be affected by these changes in the world economy. These changes will influence agricultural production and trade patterns of the Sudan and will necessitate changes in its agricultural development policies, to maximize net benefits and reduce costs.

Gum Arabic is an essential world forest product, produced in the Gum Arabic belt, which extend through (Sudan, Nigeria, Senegal, Chad, Ethiopia, Mali and
Central Africa). Sudan is the world’s largest exporter of Gum Arabic producing about 75% of the world’s supply. This product plays an important role in the country’s economy, its revenue was about 1.3% of the Sudan’s export revenue in 2000, and stands as the third export crop after sesame and cotton (Bank of Sudan). Gum will continue to form an important part of Sudanese exports since Sudanese Gum Arabic is said to be the best available quality. About half or more of the world’s best quality Gum Arabic production is produced in Kordfan states. It was exported mainly to the European community, United States, Japan, India and France. However, Gum Arabic exports have been gradually declining due to many environmental, macroeconomic, agricultural price policy and international demand factors (Gum Arabic Company, 1999).

1-2 Problem Statement

Gum Arabic is one of the main cash crops grown in Sudan. Its importance comes from its contribution to the agricultural sector and to overall economy in terms of foreign exchanges earning, also it is a source of income to small producers and casual labors. However, since the 1970s the production and exports of Gum Arabic had witnessed clear instability, this instability had been attributed to many factors such as the drought of 1982-1984, agricultural expansion and instable policies with respect to marketing and exports. Gum Arabic production in Sudan witnessed a decline from about 46 thousand ton in season 1974/75 to about 30 thousand ton in season 1995/96 and only 3.5 thousand
ton in season 1999/2000 with fluctuation (Table 1-1). The decline is due to climatic, socio-economic and institutional factors (Ministry of Agriculture, 2000).

Table (1-1) Sudan Gum Arabic production for selected years

<table>
<thead>
<tr>
<th>Season</th>
<th>Total quantity of Gum Arabic production in metric ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969/70</td>
<td>35063</td>
</tr>
<tr>
<td>1974/75</td>
<td>46500</td>
</tr>
<tr>
<td>1995/96</td>
<td>30291</td>
</tr>
<tr>
<td>1999/2000</td>
<td>3577</td>
</tr>
</tbody>
</table>

Source: Gum Arabic Company

Exports of Gum Arabic also declined but at slow rate. It dropped from about 47 thousand ton in season 1969/70 to about 15 thousand ton in season 1974/75 and about 13 thousand ton in season 1995/96 then increased to 24 thousand-ton in season 1999/2000 (Table 1-2).

Table (1-2) Sudan Gum Arabic exports for selected years

<table>
<thead>
<tr>
<th>Season</th>
<th>Total quantity of Gum Arabic exports in metric ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969/70</td>
<td>47840</td>
</tr>
<tr>
<td>1974/75</td>
<td>15845</td>
</tr>
<tr>
<td>1995/96</td>
<td>13722</td>
</tr>
<tr>
<td>1999/2000</td>
<td>24204</td>
</tr>
</tbody>
</table>

Source: Gum Arabic Company

Those trends indicate presence of a problem of Gum
Arabic production and exports in Sudan. If these reduction and fluctuation in the production, exports of Gum Arabic, in addition to the lack of domestic consumption, continue as such, it is expected that many Gum producers would abandon this long-standing tradition in exchange for more financially rewarding activities. This shift is very likely to endanger food security in most of the dry farming areas, and lead to environmental degradation due to absence of Gum trees cover. So one purpose of this study is to investigate the factors that affect decline in production and exports of Gum Arabic during (1970-2000).

Having knowing that Sudan is going to join World Trade Organization, and with its provisions and agreement on agriculture, what will be the prospects and what are the consequences on production and exports of Gum Arabic. In order to answer these questions this study is going to examine the status of Gum Arabic domestic support under WTO provisions during (1995-2002). This will be done through (AMS) which is defined according to WTO as the annual level of support (protection) provided to agricultural product, in favour of, the producer.

1-3 Objectives of the Study

The broad objectives of this study were to investigate the potential and actual performance and limitations of production and exporting of Gum Arabic that constrained the specialization of this economic activity in Sudan. In addition, the study identifies the WTO Domestic Support provisions, components and commitments that help in estimating the impact of applying the WTO Domestic Support regulations on the exports of Sudanese Gum
The specific objective of this study is to calculate the Total Domestic Support of Sudan’s Gum Arabic exports during (1995-2002) under the WTO Aggregate Measurement of Support Method.

1-4 Hypotheses of the Study

1\ the two kind of Gum Arabic (Hashab and Talih) do not enjoy subsidies prior to Sudan joining the WTO instead they were taxed.
2\ Both the Product-specific AMS and the Non product-specific AMS did not exceed the de minimis level.
3\ the Agreement on Agriculture will have a positive effect on the exports of Gum Arabic.
4\ low and variable production and exports of Gum Arabic in Sudan are limited by adverse environmental condition and insatiable policies.

1-5 Research Methodology

This study is based on secondary data, obtained from many related sources such as the Ministry of Finance, Bank of Sudan, Gum Arabic Company and Ministry of Foreign Trade. Also information was collected from reports, researches and papers.
For Aggregate Measurement of Support (AMS), the calculation model developed by (WTO 1995) was used in the analysis.

1-6 Justification of the Study

1\ Sudan is on its way to join the World Trade Organization; consequently, additional efforts have to be
exerted to improve its competitive position of agricultural exports.
2. Studies on the impact of WTO Agricultural Provisions are rare, although these kind of studies are highly needed to help Sudan in preparing for the WTO accession negotiations and to know before hand the expected impact of the agreement on agricultural exports of Sudan.
3. Lack of researches and applied studies in the area of Domestic Support regulations and their impact on enhancing agricultural exports also adds another dimension towards the justification of carrying out this study.
4. Gum Arabic is one of the most important Sudanese exports that can play a significant role in generating hard currency for the country’s economy.
5. Agreement on Agriculture implies specific quantitative binding commitments, so it is very important to calculate and quantify these specific commitments and to study their exact impacts on the agricultural sector of the Sudan.

1-7 Organization of the Study

This study has been divided into five chapters. Chapter one is an introduction and defined the research problem, the objectives and the hypotheses to be tested. Chapter two is about production, marketing and exporting of Gum Arabic. Chapter three presents the evolution of GATT and WTO and Sudan’s commitments under the Agreement on Agriculture. Chapter four presents the assessment of the Aggregate
Measurement of Support on Gum Arabic. Finally chapter five presents the summary, conclusion and recommendations.

CHAPTER TWO

Production, Marketing and Exports of Gum Arabic
African Gum Arabic belt extends in the Savannah region north of the Equator and south of the Sahara desert, extending from west to east continuously from Mauritania, Senegal and Mali, through Burkina Faso, Niger, northern parts of Nigeria and Chad to Sudan, Eritrea, Ethiopia and Somalia in the east and northern parts of Uganda and Kenya. In Sudan it covers the area of middle Sudan between latitudes 10 and 14 north. This area is estimated to cover 520.000 square kilometers (120 million feddans), which is roughly one-fifth the area of Sudan. It spans twelve states; Western, Northern and Southern Darfur, Western, Northern and Southern Kordofan, White Nile, Upper Nile, Jonglei, Sennar, Blue Nile and Gadarif. The belt covers parts of the clay and the sand plains. The clay plains are in south Gadaref, South Blue Nile and the sandy plains in North and West kordofan, North and South Darfur (Ministry of Agriculture and Forestry, 2000).

Ecologically the Gum belt covers most of the woodland Savannah of Sudan. But as a result of droughts and socio-economic changes, the distribution and condition of the tree cover in the Gum belt had been drastically affected, particularly in the sandy areas of North Kordofan and North Darfur.

Gum Arabic is a forest product, mainly produced from Acacia senegal. In Sudan the main two species that produce Gum are Acacia senegal (Hashab Tree) and Acacia seyal (Talih Tree). About 90% or more of the Sudan’s Gum output is of the highest grade Hashab, which is collected from either untended wild trees (Hashab wady) or from cultivated and tended trees (Hashab geneina).

The species is drought resistant and also frost hardly. It can regenerate naturally from the seed, which is called
Gifar or by vegetative growth, locally known as Genain. Gum Arabic has many definitions, the early JECFA (Joint FAO/WHO Expert Committee on Food Additives) specifications defined Gum Arabic as the dried exudation obtained from the stems and branches of Acacia senegal (L) Willdenow or related species of Acacia. Gum Arabic has been known for long in the world’s markets, it came to medieval Europe through the Arabs, hence took the name Gum Arabic.

2-2 Properties of Gum Arabic

The properties of Gum Arabic are affected by the tree species, the climate conditions at the time of exudation, and the conditions of storage, the properties as reported by the Gum Arabic Company are underlying:

1\ Solubility: Gum Arabic is soluble in cold water, other Gums are either insoluble in cold water or form colloidal suspensions.

2\ Film-forming: Gum Arabic superb film-forming properties make it ideal for some confectionery coating and lithographic plate solution.

3\ Color: The top quality of Gum Arabic has no color.

4\ Taste: Gum Arabic has no off-taste. The taste of flavoring product co-spray dried with Gum Arabic is not affected or dulled by Gum Arabic as a carrier.

5\ Cholesterol Reducer: Human dietary in-take studies have indicated a reduction in blood cholesterol level when 25 grams of Gum Arabic per day are ingested into a solution.

2-3 Safety and Toxicity of Gum Arabic

Gum Arabic was evaluated for acceptable daily intake (ADI) not specified for man by the (JECFA) in
1969. Also it was awarded the (Generally regarded as safe) GRAS status by the Food and Drug Administration (FDA, 1974).

2-4 Importance of Gum Arabic

Its importance comes from the fact that, Gum tree is an arid zone species. Hence, it has a positive role in the protecting and improvement of soil. It protects the sandy soil from being blown off and hence checks desert encroachment. It also fixes nitrogen to the soil and adds phosphorus, ammonium nitrate and organic matter, thus increasing the fertility of the soil. The tree is a source of fodder for browsing animals in areas where crop residues are inadequate for livestock feed. It is also a source of fuel wood and building materials. (Anderson, 1987). Gum Arabic is considered an important source of cash for both farmers and government (Bank of Sudan, 2000).

2-5 Applications of Gum Arabic

The use of Gum Arabic date back about 4000 years to the time of the ancient Egyptians. Among its many ancient applications, Gum Arabic was used as a binder in cosmetics and inks, and as an agent in the mummification process. In modern times Gum Arabic has been used extensively in the food, pharmaceutical, cosmetics and other industries e.g.; lithography, textile, inks and paints. Food and pharmaceutical use had been variously put as accounting for 75-90% of Gum Arabic consumption, the remainder being industrial/technical usage (Gliksman, 1980).
2-5-1 Food Applications

Gum is used essentially in food industries as an additive to impart desirable properties by affecting the viscosity, body and texture of food. It is used extensively in the confectionery industries; also it is used in dairy products, bread, soups, gravies and water dessert gels.

2-5-2 Cosmetics Applications

One of the advantages of the use of Gum Arabic in cosmetic formulation is that it is non-toxic and free from dermatological and allergic reactions. In addition to its stabilizing and emulsifying properties, it also imparts spreading properties and adds a smooth feel to the skin.

2-5-3 Pharmaceutical Applications

Gum Arabic is a low calorie, high fiber source and so it is used in diabetic and slimming aids, it is also used for encapsulation of oil-soluble vitamins and pharmaceutical syrups.

2-5-4 Textile, Inks and Paints Applications

Gum Arabic gives body in finishing silk and rayon fabrics without loss of transparency. Also it is used in inks and paints to utilize its suspending, binding and emulsifying properties.
2-5-5 Other Applications

Those include dental preparations, adhesives laundry starches, fireworks, insecticide spray and polishes, (http/www.rdgum.com, 2000).

2-6 Gum Arabic Substitutes

Despite of the main fold uses of Gum Arabic, research and technology has developed new alternatives synthetics with similar characteristics from either starch or cellulose derivatives, these substitutes have similar properties to Gum Arabic with less cost, which make them competitive to Gum Arabic.

Some major food companies started to investigate development of alternatives to Gum Arabic. In particular, modified starches have been used to replace Gum Arabic in western European countries during 1980, in addition to use of more Gum Arabic from Acacia seyal (Talha). In 1998 (GAC) noticed that the Acacia seyal Gum exports had increased from below 5% before 1992 to 14.2% and 10% in the years 1992 and 1993 respectively.

There are many reasons of appearance of Gum Arabic substitutes include: drought of 1971/72 and 1984/85, unstable rising prices of Gum Arabic, lack of quality control and unstable supply of Gum Arabic (Ministry of Foreign Trade, 2000).

2-6-1 The most important substitutes are

1\ Starch and Starch derivatives:
They are used in confectionery industry, and produced by starch manufactures. These improved substitutes have
price, time and place utility advantages over Gum.

2\ Another substitute is Guar Gum:
It is produced by Japan, USA and other countries. Lately entered into Sudan. This substitute competes with Gum Arabic industry but suffers from high prices, which would limit its uses.

3\ Other substitutes in pharmaceutical industry:
There are many substances which were used as a substitute of Gum Arabic in different industries, in pharmaceutical industry the following substitutes were found to be utilized; Carmellose derivatives, Micro crystalline cellulose, Povidone.

2-7 Gum Arabic Quality Control

Before establishment of Gum Arabic Company (GAC) in 1969, as a sole channel responsible for export of Gum, the principal importers in Europe and the USA maintained their own systems of quality control. Local agents used to purchase Gum at the daily auctions. They used to supervise the thoroughness of the hand cleaning and sorting operations, and then ensure the prompt dispatch of the commodity that had been bought. In other words, each importer bought only selected lots from selected areas tantamount to buying against pre-shipment sample, and then had the Gum cleaned and sorted to their required standards before shipment. If there were complaints, the importer simply replaced his local agent and/or the staff of hand sorters. Since the start of the GAC, cleaning process and quality control have been improved to the extent that importers abandoned
purchases against pre-shipment sample. The Gum is sorted into one of several nominal grades. These are:

1\ **Hand picked selected (HPS):** it is the whole nodules and tears which have been carefully selected and which fetch a premium price.

2\ **Cleaned Gum:** this is the exported grade. All impurities such as bark and twigs are removed.

3\ **Cleaned and sifted Gum:** it is the same as cleaned grade but smaller.

4\ **Red:** is the dark Gum selected by hand from the other lumps.

5\ **Dust:** this grade is the waste from the cleaned, sifted and the waste of other grades of Gum.

**2-8 Gum Arabic Processing**

Little quantities of Gum Arabic exported from Sudan are further processed into kibbled and powdered forms. Sudan was the first producer country to secure value added. Processing started since 1991 by GAC, which produces the kibbled grade, and then since 1994 by the Khartoum Gum Arabic Processing Company (GAPC), which produce both kibbled and mechanized powdered Gum in its factory in Port Sudan. This factory has a capacity of 15000 tons per year. Most of the production were exported to Europe and to some extent to Asian and African countries (GAC, 2000).

**2-9 Sudan’s Gum Arabic Production**

Gum Arabic production has along tradition in Sudan. It passed through generations without any significant changes or improvement in their production practices. This may be due to the fact that Gum
Arabic is one of the main products of the traditional rainfed sub-sector; its producers are traditional farmers, who produce food crops for maintenance and cash crops for income. They have poor means of production, use traditional technology and depend on variable and unpredictable rainfall. Gum production also was geared towards export since the last century, but with negligible value added and standard qualities.

Gum is exuded when the trees are injured whether through climatic factors such as drought, heat, or wounds caused by insects, animals or man, this exudation is physiological process to protect the tree against external factors and infection.

Wounds caused by man are the chief source of Gum Arabic produce, the wounding process is known as tapping where by small pieces of park 10-30 cms long and 2-4 cms broad are removed from the branches and the trunk of the trees. The tapping starts when the tree growth stops and leaves are shed, and the tree begins its dormancy stage (Ministry of Agriculture and Forestry).

The Gum is produced by trees aged between three and thirty years. From experience it appears that at the age of 20-25 years the trees would be fully mature, growth and production of Gum seems to slow down considerably after the age 25 (Blunt, 1963).

There are two tapping seasons, the first one in October/November and the second in March/April alternatively, tapping is done only once in a season (GAC, 2000).

2-9-1 Technology of Gum Arabic Production

The technology used in the production of Gum is basically traditional using simple hand tools and seasonal labour. The producers used the traditional axe (Farrar), which was found to cause serious damage to the Gum
trees. The cut made by the axe may result in large scars and then subjects the Gum tree to shorter life span. The large scars were also expected to produce big size and poor quality of Gum produce, which may not fetch high prices in domestic and export markets.

A new improved technology was introduced in the recent years, the (sonky) which is along and sharp knife, the use of which reduces the damage inflicted by the axe. The use of the instrument was expected to extend and sustain the normal (average) life span of Gum trees, and obtain better quality of the product.

A recent study survey, conducted by the (GAC), found that the number of Gum Arabic producers, using the new sonkey instrument was higher representing about 43% while the same number was using the two instruments together and only 14% used the axe. This result signifies the response of Gum producers to the tree sustainability requirements and perhaps to market signals. It is an indication of change in the farmers’ attitude towards the production of high quality Gum over a more extended life span.

Gum Arabic tapping and collection depends on seasonal labour either hired or family labour, the timing and skill in tapping and collection, cleaning and grading of Gum makes a difference in the quality produced. It can determine the market type and accessibility and enhance the product competition in the industrial market abroad against substitutes. The cost of labour accounts for a large percentage of the total cost of Gum Arabic production, particularly when connected with drinking water requirements. Although family labour does not incur a direct cost upon financial capacity of Gum
producer, yet their subsistence cost could be a recognized burden in the total cost of production of Gum Arabic (GAC, 1999).

2-9-2 Collection of Gum Arabic

The first collection is made after 3 to 6 weeks from tapping, followed at intervals of 10 to 15 days, and 4 to 8 collections can be made in the season (Awouda, 1980).

2-9-3 Yield of Gum Arabic

Annual yield of Gum varies widely from one tree to another; this variation is attributed to the variation in the level of husbandry practice and age. It was estimated that an average yield of tree was about 250 grams in a season. High production is expected when tapping is done in an optimal period. So timing and procedure of tapping and collection are essential factors influencing production, in addition to the number of collections per season.

2-9-4 Production Trend

As mentioned before, the environmental factors in addition to the pricing policy adopted had great effect on the supply of Gum Arabic. During the period of study 1970-2000 Gum Arabic production had decreasing trend (table 2-1) & (figure 2-1). In 1969/70 about 35 thousand tons were produced. The quantity declined to about 23 thousand tons in 1973/74 this was due to drought conditions. After that, the production fluctuated till it reached 11 thousand tons in season 1984/85, this due to the sever drought that had
hit parts of the Sudan and led to famine.

In 1990/91, 1991/92 and 1992/93 the production fell to about 11, 7 and 11 thousand tons respectively, these were attributed to tree locusts that attacked Sudan. And to the reduction in the annual rainfall to about 170-mm in 1991/92. Then the production increased to about 39 thousand tons in 1994/95 in response to very high prices in the world market. Then it declined to about 3 thousand tons in 1999/2000 (this was the lowest amount of production throughout the period of study). Since there were no environmental and biological disasters, this reduction could be attributed to the low floor prices and other marketing and financial problems (GAC).

Moreover, the production was negatively affected by harmful practices done by indigenous people such as cutting trees for firewood and charcoal and by migration of small holders to increase their very low income by collecting cotton and harvesting cash crops. Also several areas of Acacia senegal especially in the eastern states have been replaced by the cultivation of higher prices crops (groundnut and sorghum).

*Table (2-1) Sudan’s Gum Arabic Production During 1970-2000*
<table>
<thead>
<tr>
<th>Season</th>
<th>Total quantity of Gum Arabic production in thousand metric ton</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969/70</td>
<td>35.063</td>
</tr>
<tr>
<td>1970/71</td>
<td>38.616</td>
</tr>
<tr>
<td>1971/72</td>
<td>31.468</td>
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<tr>
<td>1972/73</td>
<td>25.940</td>
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<td>1973/74</td>
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<td>1978/79</td>
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<tr>
<td>1994/95</td>
<td>39.303</td>
</tr>
<tr>
<td>1995/96</td>
<td>30.291</td>
</tr>
<tr>
<td>1996/97</td>
<td>17.746</td>
</tr>
<tr>
<td>1997/98</td>
<td>12.479</td>
</tr>
<tr>
<td>1998/99</td>
<td>21.159</td>
</tr>
<tr>
<td>1999/2000</td>
<td>3.577</td>
</tr>
</tbody>
</table>

Source: Gum Arabic Company Khartoum-Sudan 2000.
In addition, there are other factors that have a considerable impact on the Gum production within Sudan that can be summarized as following:
1. Finance is not available to encounter the production costs.
Producers find difficulties in obtaining drinking water and consumer goods in addition to lack of transportation. Lack of Gum Arabic extension services particularly in remote areas. Weakness of organization linkages between producers’ associations since there is lack of communication between them. The harmful practices of cutting Acacia senegal for firewood or charcoal.

2-10 Sudan’s Gum Arabic Local Marketing

Two-market system of Gum Arabic marketing can be traced as to before and after 1969. Before 1969, Gum Arabic marketing aimed at maximum revenue of the producers and government. After 1969, the marketing system of Gum Arabic involved the producer, the middle merchant (trader) and the exporter. The transactions and announcements were all under the direct control of the Ministry of Foreign Trade. Gum passed from hands of collectors to small merchants on to big merchants and finally to The Gum Arabic Company (GAC). Gum is brought by producers and local merchants to the auction market and sold by the auction to buyers. In the auction market both producers and local merchants come together under one roof.

2-10-1 The Producer

The Gum Arabic producer is one who taps, collect, transport and market Gum. In most of production areas the farmers take their crops by animals to the village merchant who buys them in cash or pay in kind. All of these transactions take place
outside the organized and governmentally controlled markets and therefore the producers will not reach the fixed minimum price or get an adequate price for their products. A large number of Gum producers evade selling directly to the auction market either due to low prices compared to smuggling prices, or due to their limited marketing capacity. Producers also sold their Gum to the local merchants at lower prices, in order to obtain essentials for life, since they were not able to meet transportation costs and other marketing costs to the auction markets.

2-10-2 The Local Merchant

Village’s merchants who have trucks at their disposal for transporting the raw Gum from the widely scattered villages or smaller market. They play the role of a link between the producers who are unable to contact the auction directly and the market in the neighboring town. They sell it directly to Gum Arabic Company or to big merchants. Recently in Kordofan production area, with the emergence of some cooperatives, the farmers gather their production and hire lorries to carry Gum to the auction market at Elobied Town to be sold directly under the name of cooperative. In the auction market, the raw Gum is delivered in jute sacks and the merchants bid, the bargain is settled for the highest bid. The prices in the auction markets could be over the declared floor price, but it should not be lower than it. Big merchants who bought Gum Arabic, started the first processing manually. Cleaning, grading, re packing and sorting. Grading of raw Gum is done manually according
to the shape, size and color. In Kordofan young female employees make the operation in merchant’s sheds, beginning by beating the nodules with wooden sticks, then sieves winnow it.

The Gum Arabic is received by the (GAC) according to suitable prices that provide reasonable profit to the merchant.

2-10-3 The Gum Arabic Company (GAC)

In the past the merchants used to export Gum Arabic by direct sale to brokers or trading companies represented in Khartoum or Port Sudan. In September 1969 the Gum Arabic Company (GAC) was formed as a public sector entity, with a registered capital of one million Sudanese Pound. GAC is entrusted with the international marketing of the commodity. It is not allowed by law to go into auction market and compete with merchants. Its main job is to have agents in each central auction market to supervise the policy of minimum producer price. If prices go below the minimum, or if merchants refuse to buy for any reason, then the Gum Arabic Company agent intervenes and buys all the Gum at the fixed producer price (GAC, 2000).

Gum Arabic Company has many objectives some of them are: -
1\ to regulate the trade of Gum Arabic for exports and increase its revenue.
2\ to guarantee the producers a fair price through a fixed minimum floor price, and thus promote and stabilize Gum Arabic production.
3\ guarantee constant good quality and continuous supply.
4\ improve the efficiency of and control the collection of taxes and fees.
5\ create a more effective marketing system, introduce active sales promotion and expand the international market.
2-10-4 Gum Arabic price policy

Gum Arabic domestic marketing is subjected to two types of price policy measures, guaranteed floor price, taxes and commodity levies.

2-10-5 Floor Prices

Since current prices provide an indicator to farmers for making decisions about future investment, uncertainties in farmer income adversely affect their propensity to invest, and thus has a detrimental effect on the growth of agricultural output. Because of wide fluctuations in output, it has become necessary for many countries to intervene in agricultural markets, with a view of bringing about some kind of stability in prices and provide reasonable assurance of income to farmers.

Floor prices are designed to protect producers by securing a price above the lower market price. It has the advantage of reducing price risk faced by farmers, that is, the sharp drop in crop prices. Gum Arabic floor prices are guaranteed by the central government. Prices can go above the minimum floor price, but not below unless for defected Gum. The auction system does not exist in all producing areas, and all producers can not reach the auction market. Selling by this system is not obligatory, producers are thus allowed to sell directly to buyers outside the auction market. This transaction subject the producer to exploit, since the merchant will give prices lower than the declared floor price.

The methodology of calculating the floor price consider
two main indicators; the prevailing export price and its fixation attempts, the producer incentive policy with the aim of providing Gum price that competing with other crops price, cost of production indicator is always neglected because of the nature of Gum as a forestry product (Ministry of Foreign Trade). In the viewpoint of the researcher, the producer floor price through the study period does not reflect the higher export prices, and does not passed them to the producer.

2-10-6 Taxation

Agricultural taxation represents a crucial factor in reducing product competitiveness and reducing producer’s profit. Gum Arabic local marketing is exposed to great deal of taxation some of them are displayed in Table 2-2. In 1999 the government issued some policies aiming to promote exports and to increase exports earnings, the most important policy is the reduction and elimination of different exports taxes. As a result Gum Arabic exports-taxes were removed (Ministry of Foreign Trade, 2000).

<table>
<thead>
<tr>
<th>Kind of Tax</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aushore and Gibana</td>
<td>8% of floor price</td>
</tr>
<tr>
<td>Production tax</td>
<td>2% “ “ “</td>
</tr>
<tr>
<td>Zakat</td>
<td>10% “ “ “</td>
</tr>
<tr>
<td>Forestry support</td>
<td>5% “ “ “</td>
</tr>
<tr>
<td>Producing states support</td>
<td>5% “ “ “</td>
</tr>
<tr>
<td>Roads support</td>
<td>20% “ “ “</td>
</tr>
</tbody>
</table>

Source: Gum Arabic Company, 2002.

2-10-7 The main constraints upon local marketing of
**Gum Arabic**

These include: -
1\ lack of implementing the annual price policy at the production areas, to protect the small holder from the exploitation of village merchants that usually give prices lower than floor price.
2\ delay of floor price announcement.
3\ distance of the production area and inadequate transportation, enforcing producers to sell their product to the village’s merchants at lower prices.
4\ the high rate of national taxes and local duties.
5\ absence of storage facilities at production cities and rural markets.
6\ smuggling because of not equivalent boarder trade and the higher rate of taxes and fees imposed on Gum Arabic.

**2-11 Sudan’s Gum Arabic exports**

Gum Arabic is one of the major export commodities of Sudan, it contributes considerably to foreign currency earning, the value of Gum Arabic export and its contribution in total export revenue are given in (Table 2-3).

<table>
<thead>
<tr>
<th>Year</th>
<th>Gum Arabic exports value in (million US$)</th>
<th>Total exports earnings in (million US$)</th>
<th>% Contribute</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>55.7</td>
<td>305.3</td>
<td>16.7%</td>
</tr>
<tr>
<td>1992</td>
<td>23.8</td>
<td>319.4</td>
<td>7.5%</td>
</tr>
<tr>
<td>1993</td>
<td>40.1</td>
<td>417.1</td>
<td>9.6%</td>
</tr>
<tr>
<td>1994</td>
<td>78.2</td>
<td>524.3</td>
<td>15%</td>
</tr>
<tr>
<td>1995</td>
<td>51.4</td>
<td>555.7</td>
<td>9.2%</td>
</tr>
<tr>
<td>Year</td>
<td>Import</td>
<td>Export</td>
<td>Rate</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>1996</td>
<td>29.5</td>
<td>620.2</td>
<td>4.8%</td>
</tr>
<tr>
<td>1997</td>
<td>26.4</td>
<td>594.2</td>
<td>4.4%</td>
</tr>
<tr>
<td>1998</td>
<td>23.7</td>
<td>595.7</td>
<td>4%</td>
</tr>
<tr>
<td>1999</td>
<td>19.4</td>
<td>780.1</td>
<td>3.4%</td>
</tr>
<tr>
<td>2000</td>
<td>24.2</td>
<td>1806.7</td>
<td>1.3%</td>
</tr>
</tbody>
</table>


2-11-1 The main importing countries

Gum Arabic from Sudan is shipped to many countries in the world. France was the most important importer of Gum Arabic from Sudan during the period 1998-2001 followed by the United Kingdom, United States, Germany, Italy, India and other countries. Table (2-4) demonstrates the direction of Gum Arabic Exports during 1998-2001. It indicated that the United States had no direct imports of Gum Arabic from Sudan in 1999, though it might has its needs indirectly through re-export of Gum Arabic from France, United Kingdom and Germany. In 2000/2001 The United States started to import again from Sudan, also Sudan manage to restore its markets in Egypt in 2001. Other new importers are Taiwan, Thailand, Syria, Jordan and South Korea. Their small imports recorded an increasing trend between 1998-2001. The appearance of Emirates and Chad do not represent direct exports of Gum Arabic from Sudan to them, actually they indicate the exports of Gum Arabic company through its agents in Dubai and Injamena.
Table (2-4) Main Importing Countries of Sudan’s Gum Arabic During 1998-2001

<table>
<thead>
<tr>
<th>The Country</th>
<th>Quantity (ton)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1998</td>
<td>1999</td>
<td>2000</td>
<td>2001</td>
</tr>
<tr>
<td>France</td>
<td>8460</td>
<td>9340</td>
<td>10520</td>
<td>8300</td>
</tr>
<tr>
<td>Emirates</td>
<td>-</td>
<td>-</td>
<td>2700</td>
<td>-</td>
</tr>
<tr>
<td>Germany</td>
<td>1803</td>
<td>1920</td>
<td>2660</td>
<td>1463</td>
</tr>
<tr>
<td>United States</td>
<td>1880</td>
<td>-</td>
<td>2280</td>
<td>2740</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>3424</td>
<td>4180</td>
<td>2110</td>
<td>2630</td>
</tr>
<tr>
<td>Japan</td>
<td>1000</td>
<td>980</td>
<td>130</td>
<td>1300</td>
</tr>
<tr>
<td>Sweden</td>
<td>900</td>
<td>1020</td>
<td>1000</td>
<td>680</td>
</tr>
<tr>
<td>Italy</td>
<td>1720</td>
<td>1007</td>
<td>540</td>
<td>1080</td>
</tr>
<tr>
<td>Chad</td>
<td>-</td>
<td>-</td>
<td>436</td>
<td>571</td>
</tr>
<tr>
<td>India</td>
<td>1200</td>
<td>1040</td>
<td>200</td>
<td>820</td>
</tr>
<tr>
<td>Balgica</td>
<td>-</td>
<td>-</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Finland</td>
<td>400</td>
<td>220</td>
<td>100</td>
<td>300</td>
</tr>
<tr>
<td>Korea</td>
<td>40</td>
<td>140</td>
<td>60</td>
<td>107</td>
</tr>
<tr>
<td>Thailand</td>
<td>-</td>
<td>20</td>
<td>60</td>
<td>240</td>
</tr>
<tr>
<td>China</td>
<td>140</td>
<td>20</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>Taiwan</td>
<td>20</td>
<td>40</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Syria</td>
<td>-</td>
<td>-</td>
<td>22</td>
<td>-</td>
</tr>
<tr>
<td>Jordan</td>
<td>-</td>
<td>-</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Egypt</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>11</td>
</tr>
</tbody>
</table>


2-11-2 Exports Trend

The total exports of Gum Arabic over the period 1970-2000 presented in (Table 2-5) (Figure 2-2), indicate the fluctuation in exported quantities during the period in
decreasing trend. these fluctuations in Gum exports were highly affected by the fluctuation in production and instable policies with respect to marketing and exports. In 1969/70 the exported quantity was about 47 thousand tons, it dropped to about 17 thousand tons in 1985/86 after the sever drought that hit Sudan. In 1991\92 the exported quantity reached about 14 thousand tons due to the locusts attack as well as drought conditions in this year. Also in 1994\95 and 1995\96 the exports witnessed another reduction when they were about 16 and 13 thousand tons respectively, since there were no shortage in supply in the two years, the drop could be attributed to the reduction in the international demand. In 1999\2000 the exports increased to about 24 thousand tons in response to the increase in the world demand, which could be attributed to the new export-price policy adopted by the company to encourage demand for Gum Arabic, by lessening the export-price and invade new markets.

Table 2-5 Sudan’s Gum Arabic Exports and Prices during 1970-2000

<table>
<thead>
<tr>
<th>Season</th>
<th>Total quantity of Gum Arabic exported in thousand metric ton</th>
<th>Price per metric ton in dollar</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969/70</td>
<td>47.840</td>
<td>225</td>
</tr>
<tr>
<td>1970/71</td>
<td>43.871</td>
<td>253</td>
</tr>
<tr>
<td>1971/72</td>
<td>45.128</td>
<td>255</td>
</tr>
<tr>
<td>Year</td>
<td>Value 1</td>
<td>Value 2</td>
</tr>
<tr>
<td>----------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>1972/73</td>
<td>36.214</td>
<td>275</td>
</tr>
<tr>
<td>1973/74</td>
<td>20.804</td>
<td>938</td>
</tr>
<tr>
<td>1974/75</td>
<td>15.845</td>
<td>1625</td>
</tr>
<tr>
<td>1975/76</td>
<td>26.200</td>
<td>1250</td>
</tr>
<tr>
<td>1976/77</td>
<td>34.373</td>
<td>1250</td>
</tr>
<tr>
<td>1977/78</td>
<td>35.180</td>
<td>1250</td>
</tr>
<tr>
<td>1978/79</td>
<td>42.666</td>
<td>1250</td>
</tr>
<tr>
<td>1979/80</td>
<td>33.301</td>
<td>1380</td>
</tr>
<tr>
<td>1980/81</td>
<td>35.553</td>
<td>1450</td>
</tr>
<tr>
<td>1981/82</td>
<td>30.321</td>
<td>1450</td>
</tr>
<tr>
<td>1982/83</td>
<td>41.248</td>
<td>1450</td>
</tr>
<tr>
<td>1983/84</td>
<td>33.235</td>
<td>1450</td>
</tr>
<tr>
<td>1984/85</td>
<td>26.828</td>
<td>1600</td>
</tr>
<tr>
<td>1985/86</td>
<td>18.717</td>
<td>1900</td>
</tr>
<tr>
<td>1986/87</td>
<td>17.744</td>
<td>4950</td>
</tr>
<tr>
<td>1987/88</td>
<td>18.603</td>
<td>4950</td>
</tr>
<tr>
<td>1988/89</td>
<td>19.352</td>
<td>2800</td>
</tr>
<tr>
<td>1989/90</td>
<td>26.912</td>
<td>2300</td>
</tr>
<tr>
<td>1990/91</td>
<td>24.978</td>
<td>2300</td>
</tr>
<tr>
<td>1991/92</td>
<td>14.068</td>
<td>2550</td>
</tr>
<tr>
<td>1992/93</td>
<td>15.730</td>
<td>3200</td>
</tr>
<tr>
<td>1993/94</td>
<td>22.755</td>
<td>4000</td>
</tr>
<tr>
<td>1994/95</td>
<td>16.847</td>
<td>4200</td>
</tr>
<tr>
<td>1995/96</td>
<td>13.722</td>
<td>3500</td>
</tr>
<tr>
<td>1996/97</td>
<td>22.548</td>
<td>2200</td>
</tr>
<tr>
<td>1997/98</td>
<td>20.989</td>
<td>1200</td>
</tr>
<tr>
<td>1998/99</td>
<td>19.928</td>
<td>1200</td>
</tr>
<tr>
<td>1999/2000</td>
<td>24.204</td>
<td>1250</td>
</tr>
</tbody>
</table>

Source: Gum Arabic Company and Bank of Sudan 2000.
2-11-3 Export Prices of Gum Arabic
Gum Arabic export floor price is declared annually by the Ministry of Foreign Trade with Bank of Sudan and Gum Arabic Company as consultant board. The general increase in Gum export prices can be seen in (Table 2-5)(Figure 2-3). In season 1974\75 the international price of Gum Arabic was 1625$. Then it decreased to about 1250$ in the following four seasons. From (Table 2-5) the export quantities in these seasons were fluctuating in an increasing trend with the decrease in price, thus the demand for Gum Arabic had increased. In 1984\85 the prices reached 1600$, this was attributed to the reduction in production caused by the drought, at the same time this has resulted in reduction of the export quantities. In 1986\87 the prices reached 4950 $ due to the adoption of a new price policy by the company aiming to benefit from the high international demand for Sudanese Gum Arabic after the drought and acute shortage in the international stocks. The high price accompanied by increase in production and decrease in exports indicates that high prices decrease the international demand. Consequently in season 1988\89 and the following seasons till 1990\91 the prices fell down. This drop in prices led to increase in exports. In 1992\93 the prices started to increase till reached 4200$ in 1994\95, these were accompanied by decrease in exports. Then there were drop in prices in the following years, it reached 1250$ in 1999\2000. Due to low international demand for Sudanese Gum Arabic. We can conclude that the Gum Arabic export decline in the last years mainly to adoption of new pricing policy which aimed for higher lucrative price levels. Faced with such inflated Gum Arabic price, industrial countries were
encouraged to use substitutes, and to import from another producing countries. Copper (1999) attributed growth in use of substitutes to a combination of factors. Some of these were the international marketing of Gum Arabic, such as an inability of Gum Arabic to satisfy the requirements for acceptable and reliable specified quality, irregular and insufficient supplies, combined with instable, incomplete and cost-effective prices.
2-11-4 Sudanese Gum Arabic Smuggling

In 1999, Mr.Copper (FAO Consultant) who conducted a survey on international marketing of Gum Arabic reported that it is not easy to put specific figures of
international trade of this commodity because a considerable proportion of it flowing in international trade is from re-exports from country to another. It is worth mentioning that there are many countries appearing in international trade of Gum Arabic as exporting countries where in fact they don’t have indigenous resources of Gum. This situation represents smuggling processes or illegal cross-border trade between countries, the thing Sudan suffer from especially at seasons of low local prices. Table (2-6) shows the important exporting countries, Table (2-7) shows the percentage share of Sudan and Chad the main exporting countries, in the international trade of Gum Arabic, from this Table we can conclude that, the share of Sudan in the international trade of Gum Arabic during the period 91-98 fluctuate greatly from year to another it dropped from 80% in 1991 to 53% in 1996.

The share of Chad in the international trade of Gum Arabic during the same period, increase from 7% in 1991 to 39% in 1998. It is worth mentioning that Chad boarder with Sudan extending along the most producing states in Sudan.

Table 2-6
Gum Arabic Important Exporting Countries and their Exports during 1991-1996 Quantity in metric ton
--- | --- | --- | --- | --- | --- | --- |
Sudan | 25709 | 15861 | 1293 | 22529 | 16167 | 16810 |
Chad | 2188 | 2450 | 3696 | 4662 | 7021 | 7315 |
Nigeria | 3734 | 7485 | 5224 | 6999 | 4569 | 4959 |
Mauritania | 32 | 48 | 55 | 166 | 258 | 256 |
Senegal | 262 | 261 | 459 | 362 | 662 | 229 |
Mali | 112 | 31 | 77 | 249 | 295 | 242 |
Niger | 27 | 155 | 228 | 240 | 110 | 242 |
Central Africa | 74 | 78 | 33 | 119 | 126 | 639 |
Cameron | 95 | 647 | 841 | 1031 | 161 | 560 |
Eritrea | - | - | - | - | 262 | 472 |
Ethiopia | 35 | 58 | 98 | 329 | 127 | 15 |
Arabic countries | 117 | 43 | 87 | 30 | 11 | 20 |
Total | 32385 | 27117 | 23731 | 36716 | 29769 | 31759 |

Source: Gum Arabic Company, Khartoum.

Table 2-7
Percentage Share of Sudan and Chad in the International Trade of Gum Arabic during 1991-1998

--- | --- | --- | --- | --- | --- | --- | --- | --- |
Sudan | 80% | 59% | 55% | 61% | 54% | 53% | 71% | 61% |
Chad | 7% | 9% | 16% | 13% | 24% | 23% | 25% | 39% |

Source: Arabic Gum Company, Khartoum.

2-11-5 Gum Arabic Export Price Policy and International Demand Elasticity

The methodology of Gum Arabic export price policy which aimed at increasing returns through declaring high export prices, without considering the changes that
appearing in the Gum Arabic markets, resulted in sharp decline of Gum Arabic exports in addition to a reduction of international demand to it. It is worth mentioning that the demand for Arabic Gum that used in some food and drink industry beside pharmaceutical industry is inelastic. Due to unsuitable of using other substitutes, but the demand for it in other uses is elastic. The high cost of imported Gum Arabic from Sudan facilitated the economies of resorting to Artificial Substitutes, with less cost burden.

In addition to artificial substitutes the appearing of many countries in international trade of Gum Arabic, with less exporting prices, participate in lessening the Sudan’s share in the international trade, as the international demand destined partly to those countries, thus, Gum Arabic price elasticity in international market increase, and grow to have great effect on international market acceptance to its price. Table (2-8) shows the export prices of some countries.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sudan</strong></td>
<td>2343</td>
<td>2958</td>
<td>3503</td>
<td>4426</td>
<td>3881</td>
<td>2460</td>
</tr>
<tr>
<td><strong>Chad</strong></td>
<td>1243</td>
<td>2434</td>
<td>2548</td>
<td>2680</td>
<td>2902</td>
<td>1865</td>
</tr>
</tbody>
</table>

**Table 2-8**

Gum Arabic Export Price for some Countries during 1991-1996, Thousands American Dollars for the Ton
<table>
<thead>
<tr>
<th>Country</th>
<th>1496</th>
<th>1943</th>
<th>2603</th>
<th>2002</th>
<th>2012</th>
<th>1621</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nigeria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mauritania</td>
<td>2313</td>
<td>2396</td>
<td>3291</td>
<td>4373</td>
<td>3554</td>
<td>2059</td>
</tr>
<tr>
<td>Senegal</td>
<td>2092</td>
<td>4559</td>
<td>3586</td>
<td>4097</td>
<td>3861</td>
<td>2573</td>
</tr>
<tr>
<td>Mali</td>
<td>1134</td>
<td>3194</td>
<td>1688</td>
<td>1767</td>
<td>1793</td>
<td>1122</td>
</tr>
<tr>
<td>Niger</td>
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<td>2594</td>
<td>3746</td>
<td>2292</td>
<td>1700</td>
<td>1926</td>
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<tr>
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<td>3251</td>
<td>4566</td>
<td>3360</td>
<td>1852</td>
</tr>
<tr>
<td>Eritrea</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2981</td>
<td>2087</td>
</tr>
<tr>
<td>Ethiopia</td>
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<td>2672</td>
<td>4980</td>
<td>3556</td>
<td>4071</td>
<td>1000</td>
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<tr>
<td>Somalia</td>
<td>1816</td>
<td>2184</td>
<td>3000</td>
<td>4212</td>
<td>4000</td>
<td>2750</td>
</tr>
<tr>
<td>Kenya</td>
<td>1333</td>
<td>2090</td>
<td>3038</td>
<td>3055</td>
<td>2692</td>
<td>2030</td>
</tr>
<tr>
<td>Tanzania</td>
<td>1636</td>
<td>1730</td>
<td>1417</td>
<td>1340</td>
<td>1249</td>
<td>1131</td>
</tr>
</tbody>
</table>

Source: Gum Arabic Company, Khartoum.

Hassab Elgawi (1998) reported that there is a negative relationship between Gum Arabic export price and the quantity exported this mean that any increase in export price lead to reduction in the quantity exported. A simple regression model utilized in this study to examine the relation between these two variables the result was:

\[ \text{Quantity of export} = 37401.6 - 4.9 \times \text{(Export price)} \]

The interpretation of this result is that, in the absence of changing in export price the amount exported would be fixed at 37401.6 M Ton but when increasing the export price by one dollar, the amount exported may decline by 4.9 M Ton.

### 2-11-6 Internal and External factors affecting the export of Gum Arabic

These can summed up in

1. Decline in consumption of Gum Arabic in the world market and promotion of the use of other substitutes. The reasons for this situation can be summarized here below:
   i. Instability of price policies and adverse climate in Sudan which lead to instability in production.
ii. Lack of strategic stock before 1995 in Sudan so as to absorb the sudden drop in production.
2\ smuggling to neighbor countries especially after 1994 due to increase of world prices of Gum Arabic accompanied by decreasing of domestic prices. This increased the competition to Sudan from other producing countries.
3\ high costs of taxes, subsidies and fees. Which are imposed by the Federal and States Government regulations, decreasing the ability of Sudan to compete with other African countries.
4\ lack of local processing and consumption of Gum despite high production of Gum in Sudan, its domestic consumption is very weak compared to production and exports. Also the processing of Gum started very late in 1990s and in extremely low quantities.
5\ the export prices of Gum Arabic in domestic currency had been heavily influenced by successive devaluation of the Sudanese Pound.
CHAPTER THREE

Evolution of GATT and WTO

Sudan’s commitments under the Agreement on Agriculture

3-1 The General Agreement on Tariffs and Trade (GATT)

In the year 1947, 23 countries in Geneva have signed an agreement called; The General Agreement on Tariffs and Trade (GATT), and entered into force in 1948 as a framework to regulate international trade among its signatories. The objectives were to raise standard of living, ensuring full employment, steady and predictable international trade besides expanding the production and exchange of goods. These objectives were agreed to be achieved through substantial reduction of tariffs and other barriers to trade (GATT, 1991).

GATT was established after the Second World War in the wake of other new multilateral institutions dedicated to the international economic co-operation, namely the Bretton Woods institutions now known as The World Bank and The International Monetary Fund. The GATT was governed by provisional measures, and remained as an agreement without a formal organization to enforce it. Despite its provisional nature, the GATT has remained the only multilateral instrument governing international trade ever since (GATT, 1991).

Tariff reduction negotiations were opened among the 23 founding contracting countries in 1946, in an effort to give encouragement to trade liberalization and to begin to correct the protectionism measures which remain in place from the early 1930s, GATT does not prohibit
protection for domestic industries. However, a basic principal is that where such protection is given, it should be extended essentially through the tariffs, and not through other commercial measures. The main aim of this provision is to make the extent of protection clear and to minimize the trade distortion. A general prohibition of quantitative restrictions is a basic provision of GATT. The main exception to this provision allows their use in the balance of payment difficulties. Another basic provision is trade without discrimination or most-favoured nation which indicate that all contracting parties are bound to give to each other treatment as favorable as they give to any country in the application and administration of import and export duties and charges. However, the General Agreement permits such integration of national economies through regional trading arrangements, as an exception to the general rule of most-favoured nation treatment, provided that certain strict criteria are met (GATT, 1991).

The GATT is clearly not the free trade organization since it permits tariffs and other protection, in certain circumstances. The special conditions for developing countries were added in 1965 to the General Agreement, three new articles encouraged developed countries to help developing countries as a matter of conscious and purposeful effort. Recognizing the need of developing countries to enjoy more favorable treatment of access to world markets for their products and for developed countries to refrain from introducing new barriers to exports of primary and other exports of special interest to less-developed countries (GATT, 1991).
3-2 Trade Rounds of GATT

Since 1947 the contracting countries have held periodic eight multilateral trade negotiation rounds. These rounds have been effective in extending and reinforcing a multilateral trading system. The first trade rounds were largely concerned with the reduction of tariffs, while the later rounds began to introduce new issues such as environment and investment. Also they began to revise and reinterpret the original articles of the General Agreement. The increasing number of contracting countries of the agreement continued their negotiations through these rounds till the fifteen of April 1994 when the World Trade Organization (WTO) was established to constitute the legal and institutional basis for the multilateral trading system (WTO, 1995).

GATT rounds since its establishment are as follows:

<table>
<thead>
<tr>
<th>Round</th>
<th>Date</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geneva</td>
<td>1947</td>
<td>23</td>
</tr>
<tr>
<td>Annecy</td>
<td>1949</td>
<td>33</td>
</tr>
<tr>
<td>Torquay</td>
<td>1950</td>
<td>34</td>
</tr>
<tr>
<td>Geneva</td>
<td>1956</td>
<td>42</td>
</tr>
<tr>
<td>Dillon</td>
<td>1960-1961</td>
<td>45</td>
</tr>
<tr>
<td>Kennedy</td>
<td>1962-1967</td>
<td>48</td>
</tr>
<tr>
<td>Tokyo</td>
<td>1973-1979</td>
<td>99</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1986-1993</td>
<td>118</td>
</tr>
</tbody>
</table>
3-3 The Uruguay Round (UR)

As mentioned before, since 1947, eight consecutive rounds of negotiations were held till 1994. The last and the largest among them was the Uruguay Round, in September 1986 the Ministerial Meeting in Punta del Este (Uruguay) launched a new round known as Uruguay Round. The ministers adopted a Ministerial Declaration which covers issues on: (I) market access (II) agriculture, textiles and clothing (III) introducing new issues in the international trade agenda, such as agriculture, textile, anti-dumping, trade in services, trade related aspects of investment, protection of intellectual property rights as a step to subject such sensitive issues to multilateral rules.

On 15 April 1994 The Final Act embodying the results of the Uruguay Round of Multilateral Trade Negotiations was adopted and signed by Ministers from most of governments participating in the Uruguay Round. At a meeting in Marrakech where the World Trade Organization (WTO) was brought into being (WTO, 1995).

The Final Act is the legal instrument in which participants in the (UR), certify that the annexed agreements, including the schedules of concessions and commitments in trade in goods, the schedules of specific commitments in trade in services, the legal texts and how to ratify these agreements are the results of their negotiations (WTO, 2000).

The General Agreement on Tariffs and Trade as it results from the Uruguay Round negotiations is referred to as “GATT 1994”. It embodies updated and modified copy of the original General Agreement on Tariffs and trade, now referred to as “GATT 1947” (WTO, 1995).
3-4 The World Trade Organization (WTO)

As mentioned before, since January the first 1995, the WTO constitutes the permanent institutional framework for the multilateral trading system ending the provisional application of the GATT 1947. The WTO Agreement includes provisions on establishment, functions and structure, decision-making procedures and accession, it will take charge of administering the new global rules, achieved after seven years of negotiations among more than 120 countries, the WTO establishes a multilateral frame work of principles and rules for trade in goods and services, it brings into the multilateral trading system, for the first time, protection of intellectual property and investment (WTO, 2000).

The members recognize certain objectives, to which they wish to contribute through the multilateral trading system, the main objectives are ensuring full employment and a large and steadily growing volume of real income and effective demand, expanding the production of and trade in goods and services. This could be done through the (WTO) general obligations and principles, and the negotiation of specific commitments (WTO, 2000).

The WTO shall provide the frame work for the administration, implementation and monitoring operation of trade relations among its Members in matters related to the many agreements contained in the Final Act of the Uruguay Round, plus a number of pluri-lateral agreements. It also administers the Understanding on Rules and procedures governing the settlement of disputes and provide solution for conflicts that may arise among its members. Finally, it provides the forum for further negotiations between its Members, in matters dealt with under the Agreement, these functions done through the WTO various bodies, which include: Ministerial Conference, General Council, Councils and Committees (WTO, 1995).
The expression “The WTO Agreement” is understood to cover the totality of all the agreements, because all the other agreements are annexed to the Agreement establishing the WTO, the first three Annexes to the WTO Agreement were considered as integral part of it, and binding on all members (WTO, 2000):
Annex 1A, Multilateral Agreement on Trade in Goods; it includes:
- GATT1994
- Agreement on Agriculture
- Agreement on Sanitary and Phyto sanitary Measures
- Agreement on Textiles and Clothing
- Agreement on Technical Barriers to Trade
Agreement on Trade-Related Investment Measures (TRIMs).
Agreement on Application of Article VI of GATT 1994 (Anti-dumping)
Agreement on Application of Article VII of GATT 1994 (Customs Valuation)
Agreement on Preshipment Inspection
Agreement on Rules of Origin
Agreement on Import Licensing Procedures
Agreement on Subsidies and Countervailing Measures (SCM)
Agreement on Safe Guards
Annex 1B: General Agreement on Trade in Services (GATS)
Annex 1C: Trade-Related Aspects of Intellectual Property Rights (TRIPS)
Annex 2: Understanding on Rules and procedures for the settlement of Disputes
Annex 3: Trade Policy Review Mechanism (TPRM)
Annex 4: Plurilateral Trade Agreement: it include,
Agreement on Trade in Civil Aircraft and Agreement on Government Procurement (WTO, 1995).

3-4-1 Basic Principles of the WTO

As mentioned before, the objectives of the WTO Agreement were to establish an orderly and transparent framework within which barriers to trade could be gradually reduced, and international trade thereby expanded. To achieve this the Agreement contained within its text certain underlying principles. The main principles were as follows (WTO, 1995):

1\ Most Favoured Nation Clause (MFN)
This requires that members should treat each others in the same way, that trade must not be discriminatory. Members were bound to grant to the products of other members treatment no less favorable than that given to products of any other country.

2\ Tariff Reduction
When GATT was established tariffs was the main form of trade protection, and negotiations in the early ears focused mainly upon tariff reduction. The principle of protection by tariffs prohibiting the use of quantitative measures, with some specific exceptions.

3\ National Treatment
The national treatment principle condemns discrimination between foreign and national goods or
services and service suppliers or between foreign and national holders of intellectual property rights.

4\ Transparency
Fundamental to transparent system of trade is the need to harmonize the system of import protection, so that barrier to trade can then be reduced through the process of negotiation. Therefore the WTO limited the use of quotas, with the objective of guaranteeing the fullest transparency possible in the trade policies of its members in goods, services and the protection of intellectual property rights.

5\ Predictability and Growing Access to Markets
Predictability and growing access to markets for goods and services is an essential principle of the WTO, which fulfilled through various provisions so as to guarantee security, predictability and continued liberalization of trade.

3-5 WTO Accession Procedure and Accession of Sudan

The most important disadvantage of WTO membership is that countries lose part of their sovereignty through the binding of internal rules and regulation and subject them to multilateral rules, where the main advantage come from the fact that, only members can benefit from the rights embodied in the WTO agreement, beside the expansion of trade opportunities for member countries. In the accession procedure, an applicant submits a communication to the Director-General of WTO indicating its desire to accede to WTO under Article XII of the WTO Agreement, after circulation of the communication to all WTO Members the General
Council establish a Working Party (WP) of the concerned applicant, who is required to submit its memorandum on the Foreign Trade Regime. The memorandum should include comprehensive information about (I) economy and economic policies in general including trade in goods and services (II) legislative and judicial system, and governmental organization affecting foreign trade (III) information on import licensing procedure, etc. Then, the WTO secretariat would check the consistency of the memorandum with the format regarding WTO accession given the number (WT/ACC/1). Members are free to submit questions with a view to explain the details of applicant’s trade regime and legislation and applicant is expected to answer these questions, then the first meeting of the WP could be held, during this the bilateral market access negotiations on goods and services could be initiated, after the conclusion of bilateral negotiations through signature between each negotiating Member and the applicant, the schedule of commitments to the WTO are consolidated, and then reviewed multilaterally in the WP and annexed to the draft protocol of Accession as integral part. A summary of the discussions and commitments is reflected in the Report written by WP to be submitted to the General Council together with a draft Decision and Protocol of Accession. After examination of those documents, the General Council adopts the Report of the WP and approves the draft decision by a two-third majority of the WTO Members’ positive.

In accordance with the WTO Agreement on Agriculture (AOA), an acceding country has to negotiate its concession in, market access, export subsidies and domestic support. The agricultural market access is negotiated as a part of market access concessions on other products during bilateral negotiations on goods, the commitments on domestic support and export subsidies are negotiated on bilateral or
plurilateral basis, rely on information given by the acceding country in its Memorandum and the document "WT/ACC/4", the document should be supplemented by the relevant supporting tables, which include information on, Green Box, Blue Box, calculation on the total AMS, product-specific AMS, market price support (WTO, 1995).

WTO Members examine the measures in the supporting tables, in order to judge whether those measures comply with the relevant standards layout in the AOA. The quality of the initial supporting tables has significant influence over the progress and the results of the negotiations on domestic support and export subsidy commitments, it is worth mentioning that, the commitments included in the schedules constitute the bases for future commitments and concessions.

Sudan application to accede to the WTO was received by WTO secretariat in 1994 and a Working Party (WP) on its accession was established in the same year. The country Memorandum on Foreign Trade Regime (MFTR) was submitted in 1999. Sudan received till 2001 about 300 questions from different sources on the (MFTR), the Sudan offer on market access on goods and services as well as documents on agriculture are being prepared (Ministry of Foreign Trade).

As we see, accession negotiation is a very difficult process especially for developing and LDCs, because WTO Agreement covered for the first time areas which had not been covered in the GATT such as trade in services, investment, agricultural subsidies, trade-related aspects of intellectual property right, this make the accession process technically and politically very complex. In addition, Article XII provide the WTO Members to seek concession from the newly acceding countries which may accede their developmental and
financial and even their political abilities, also these countries lack, clear understanding of the WTO agreement, experts, resources and effective relevant institutions.

In conclusion, the newly acceding countries especially from developing and LDCs are facing great difficulties in their WTO accession process. Especially on how to benefit from the Special and Differential Treatment provisions in the WTO agreements. For example the negotiation of transitional periods is being strongly resisted by major developed countries.

Also the acceding countries are being required to accept obligations and commitments more than those taken by original WTO member themselves. Accessing countries facing extensive requests to liberalize market access in goods and services, which may be against their present developmental needs. In view of developing countries this status should be corrected to avoid fragmentation of the trading system in terms of different rights and obligations for original members and newly acceding countries (Ministry of Foreign Trade).

3-6 The Uruguay Round Agreement in concern with Agriculture (Agreement on Agriculture)

More than most other sectors, agriculture has always been subject to great government interference in nearly all countries, both developed and developing. Developed countries continue to provide high level of protection to their agriculture mainly through different trade barriers, at the same time, they provide great support to their farmers through wide range of domestic programs and continue to give high and increasing subsidies on agricultural exports, as a result agricultural trade becomes highly distorted. The original GATT allowed countries to use some non-tariff measures to provide subsidies to agricultural products and exports, so world markets for agricultural products were heavily distorted, reflecting government policies much more than economic factors such as cost of production and demand.

The Agreement on Agriculture and some of other GATT 1994 provisions and other UR Agreements are considered the significant first step to organize and reduce distortion in the agricultural trading system. The importance of this agreement comes from the fact that it subjects domestic agricultural policies to WTO rules and discipline. In addition the agreement covered a wide range of quantitative and qualitative policies, directly affecting the domestic policies of the specific country, on issues related directly or indirectly to the agricultural sector, which subject it to political and social complication. Also the developing countries lack information about the real application of developed countries agricultural policies, beside the lack of information about their own to evaluate the current and expected future impacts of their commitments on the sector all this make the status of developing and least-developed countries to comply with the agreement provisions very complicated.

The primary objective of the agreement is to establish a basis for starting a process of reform of trade in agriculture, and reduce the distortion in agricultural trade caused by agricultural protectionism and domestic support. This is done through negotiations on support, protection and effective rules and disciplines. To achieve its objectives the agreement specifies binding commitments in each of the following areas: market access, domestic support and export subsidies for the products covered in the agreement and members should achieve these binding commitments (WTO, 1995).
3-6-1 Market Access

Countries may make policies to protect local producers by keeping their prices high, than if the local markets liberally
opened and producers exposed to free competition. These policies can take the form of: tariffs, variable levies, import
quotas, restrictive licensing procedures, etc. All these policies isolate domestic producers from the effects of world prices
and therefore increase instability on international market.

There are three elements in the commitment on market access: tariffication, tariff reduction and access opportunities.
Tariffication means that specific non-tariff quantitative barriers (quotas, variable levies, minimum import prices,
discretionary licensing etc) need to be eliminated and converted into an equivalent tariff. Ordinary tariffs, including those
resulting from tariffication, are to be reduced for developed countries by an average of 36 percent over a six year
implementation period, and by 24 percent over ten years for developing countries, no reduction commitments for least-
developed countries LDCs, but they should tarifiy their non-tariff barriers and bound it, the bound tariff should not be
exceeded. Where there are no significant imports, minimum access equal to 3 percent of domestic consumption in 1986-88
was to be established for 1995 rising to 5 percent of base year consumption at the end of the implementation period.
There is special safe guard clause that allows the imposition of additional duties when there are either import surges or
particularly low prices (both compared with 1986-88 levels) (FAO, 1998).

3-6-2 Domestic Support policies

Domestic support policies include wide range of measures taken by countries aimed at raising the income of farmers and
agricultural producers such as direct payments, administrative price to raise the price of farm output or reduce the price
of inputs. Some of such measures may have effect on prices or the volume of production leading to the distortion of trade.

The Agreement describes two types of domestic support, one quantitative subject to reduction commitments, the second
qualitative and exempted from reduction commitments. For the first one, the total support given in 1986-88, measured by
the Total Aggregate Measure of Support, should be reduced by 20 percent in developed countries (13 percent in
developing countries). Reduction commitments refer to total levels of support and not to individual commodities.
Domestic Support measures not subject to reduction are those that (have no or at most minimal trade distorting effects or
effects on production) (FAO, 1998).

3-6-3 Export Competition Commitments

Where the domestic price of the commodity is higher than the world price of it, the sale of it on the world
market can only occur at a loss unless the exporter is provided with a subsidy, this have the most direct impact on world
markets, it significantly distorts trade.

Export subsidy is generally practiced by developed countries and it has been one of the major
components of agricultural policies in the EU and the USA, but has not, generally played a very
important role in developing countries.

In the Agreement export subsidies are still permitted and agriculture still receive special treatment in the area of export
subsidies; however the Agreement introduces constraints on such policies, where previously there were none.

Unlike the reduction commitments in market access and domestic support, reductions in export subsidies will be
implemented on a product-specific basis. The measures which are subject to reduction commitments are: direct subsidies,
subsidies to reduce cost of marketing, sale for export of non-commercial stocks at low prices, payments on exports that
are financed by government, favorable transport and freight charges on export. Exports benefiting from such subsidies
must be reduced as follows: the volume of such exports by 21 percent over 1995-2000 and the expenditure on export
subsidies by 36 percent over the same period (14 percent and 24 percent respectively for developing countries) (FAO,
1998).

3-7 Other UR Agreements that Affect Agriculture

As mentioned before, the commitments on agriculture were included mainly in the Agreement on Agriculture,
however agriculture is also affected by a number of other UR agreements. The most important of them are the
Agreement on the Application of Sanitary and Phytosanitary Measures (SPS), The Agreement on Technical Barriers to
Trade (TBT), the Agreement on Subsidies and Countervailing Measures (SCM), the Agreement on Trade Related
Aspects of Intellectual Property Rights (TRIPS), the understanding on Rules and Procedures Governing the Settlement of
Disputes, The General Agreement on Tariffs and Trade (GATT) and the Agreement on Textiles and Clothing, all these
Agreements have direct or indirect impact on agriculture. Underlying some of these Agreements, which could be applied
by developed countries in away that may constitute backdoor of protection for agriculture.
The Agreement concerns the application of food safety and animal and plant health regulations. The SPS Agreement provides an international framework for sanitary and phytosanitary arrangements among countries based on scientific evidence as a basis for SPS trade restriction, however the Agreement will not result in the imposition of world wide SPS standards, nor does it stop countries imposing higher standards than those prevailing elsewhere (FAO, 1998). Developing and least-developed countries should improve their standard control procedures to prevent the loss of export markets and to avoid restriction in market access due to sanitary requirements being used as non-tariff barrier.

There are two elements to the Agreement on TRIPS: all members have agreed to recognize minimum rights for owners of intellectual property and to establish national enforcement mechanism, with it members must provide within their existing domestic legal system procedures to enable rights to be enforced effectively by both foreign and national holders (FAO, 1998).

The price of some technically advanced agricultural inputs including seeds, may rise as a result of TRIPS, also there are questions of access of developing and least-developed countries to scientific and technological knowledge.

As mentioned before, the establishment of WTO is the most important on going changes, in the international and regional economic environment, which will influence agricultural production, agricultural development policies and trade patterns of Sudan. There exists consensus that the global benefits of WTO will be considerable but unevenly distributed between and within developed and developing countries.

Sudan like most of least-developed countries is undergoing a process of economic reform under the auspices of structural reform program adopted by the government. Undoubtedly the agreement would have impacts on such programs, the size of these impacts on the agricultural development prospects in the Sudan is influenced by the nature of these changes and by the agricultural production and trade structures of the Sudan as well as the nature and pace of economic policy reforms already under implementation in agriculture and other sectors.

As mentioned, Sudan has applied to join the WTO and the negotiations of the accession are underway. All kinds of support or protection policies were subject to the provisions of the Agreement on Agriculture, under which members have to submit schedules of concessions and commitments in the areas of Domestic Support, Market Access and Export Subsidy along with supporting materials in the form of tables.

Commitments in the area of domestic support are expressed in terms of Total Aggregate Measurement of support and Annual and Final Bound Commitments level. Sudan as LDC is not required to reduce its TAMS but he should calculate it and bound it at specific agreed level. Since the commitments included in the schedules constitute the basis for future
commitments and concessions, Sudan should calculate its TAMS with the aim to establish positive TAMS, during the accession process, so that negotiations on the bound level start from higher level.

In the area of product-support, a recent study has shown that most of the Sudan’s agricultural products were subject to heavy taxes instead of being supported, table 3- shows the estimates of product- specific AMS for different crops, which were negative for wheat, groundnut and hibiscus flower, indicating imposition of heavy taxes, while it is positive for sorghum and cane sugar.

In the case of sorghum since Sudan do not adopt and apply any kind of market price support policies on sorghum this positive AMS is due to the low official exchange rate at that time which lead to artificially low values of sorghum parity prices. In the case of cane sugar, since 1998 sugar producers received considerable domestic support through government intervention by determining administered market prices (Ministry of foreign Trade, “Basbar, 2002”).

As mentioned before there are important facts about the member commitments concerning agricultural Agreements:

- First the commitments within WTO Agreements, do not prohibit members to subsidize and protect their agricultural producers, unless other wise committed themselves.

- Second the quality of the initial supporting table has significant influence over the development and the results of the negotiations on domestic support commitments.

- Third Under the Agreement rules if a country mention it does not provide any kind of support or protection measures, it is prohibited from undertaking such polices in the future.
Putting these facts into consideration, Sudan is advised to change these figures in a way compatible with its interests and future development policies.

Table 3-1 Product-Specific AMS
Market Price Support in (million SD)

<table>
<thead>
<tr>
<th>Basic Products</th>
<th>Base period (98-2000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>-3608</td>
</tr>
<tr>
<td>Sorghum</td>
<td>6826</td>
</tr>
<tr>
<td>Groundnut</td>
<td>-38933</td>
</tr>
<tr>
<td>Hibiscus flower</td>
<td>-1993</td>
</tr>
<tr>
<td>Cane sugar</td>
<td>13135</td>
</tr>
</tbody>
</table>

Source: Ministry of foreign Trade, “Basbar, 2002”.

3-8-2 Market Access

The fundamental obligation under market access provisions is the requirement for tariffication of non-tariff measures and the subsequent reduction of the resulting tariffs by 24% on average over a 10 year period for developing countries and 36% on average, for developed countries (WTO, 1995).

Sudan as a least developed country is exempted from undertaking reduction commitments, but is required to tariffy its non-tariff measures and bind it at specific rate, together with its ordinary applied tariffs. Actual applied tariffs in Sudan for importable crops is very low range between 5% - 20%. When non-tariff barriers are considered the tariff equivalents turn out to be relatively high. Although relatively high tariff equivalent will allow Sudan to bind its tariff at higher rates a recent study which had estimated tariff equivalents for the major
agricultural products in Sudan, found that the tariff equivalent for these products is very low, closed to the applied tariffs, this clearly indicate that the level of protection through non-tariff measures to agricultural crops in Sudan was significantly low, so some degree of protection would be required to improve agricultural crops profitability and to encourage farmers to grow such crops. Table (3-2) shows tariff equivalents for some crops.

Table 3- 2 Tariff Equivalents

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Wheat</th>
<th>Sorghum</th>
<th>Groundnut</th>
<th>Hibiscus</th>
<th>Cane Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998-2000</td>
<td>7</td>
<td>41</td>
<td>-21</td>
<td>-28</td>
<td>106</td>
</tr>
</tbody>
</table>

Source: Ministry of foreign Trade, “Basbar, 2002”.

The negative denote there is no protection through non-tariff barriers, in addition, this level is very low compared with the bound tariff of some of developing and least developed countries members of the WTO, some of them are COMESA Members e.g. Kenya. Table (3-3) shows the bound tariff for some of them.

Table 3-3 UR Tariff Commitments for Selected Countries

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Kenya</th>
<th>Senegal</th>
<th>Mozambique</th>
<th>Tanzania</th>
<th>Bangladesh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>100</td>
<td>180</td>
<td>400</td>
<td>240</td>
<td>200</td>
</tr>
<tr>
<td>Maize</td>
<td>100</td>
<td>180</td>
<td>400</td>
<td>240</td>
<td>200</td>
</tr>
<tr>
<td>Vegetable oils</td>
<td>100</td>
<td>180</td>
<td>400</td>
<td>240</td>
<td>200</td>
</tr>
<tr>
<td>Cane Sugar</td>
<td>100</td>
<td>180</td>
<td>400</td>
<td>240</td>
<td>200</td>
</tr>
</tbody>
</table>
To determine how high Sudan should offer its ceiling binding and in which case a higher degree of protection may be desirable than otherwise, is not an easy job, one key consideration in this regard is the extent of production seemed to be essential for a particular commodity. In practice, some commodities may be considered relatively more sensitive than others may, in addition international markets for some commodities may be more volatile than others. However, since all country commitments at the UR depends fully on the negotiations between the acceding country and the WTO members, so the extent to which a country manages to bind its tariff rate will ultimately depend on negotiations among its trading partners. Sudan should bind its tariffs and negotiates this issue in a way compatible with its present and future interests. Also it should seek tariff reduction offer for its exportable agricultural crops and provide offer for the crops which it hasn’t comparative advantage in it.

3-8-3 Export Subsidies

The Agreement stipulates that each member undertakes not to provide export subsides otherwise than in conformity with the Agreement and with the commitments as specified in the members’ schedule. Base level budgetary outlays and quantities of products benefiting from such subsides determined with reference to the 1986-1990 as base period must be reduced over a period of 10-years by 76% and 86% of this level
respectively over a 6-year period for developed countries (WTO, 2000). Export subsides is considered as the most important economic policy that lead to trade distortion in the international markets. Farmers of developed countries due to a huge amount of export subsidy granted to them, could export their products at low prices, that can not be competed by the farmers of developing and least developed countries, since they are not supported, instead their exports are usually subjected to heavy taxes. Such unfair competition, in addition to imports of such subsidized crops by developing and least developed countries participate in removing investments from agriculture sector to a profitable one. This leads to destruction of their agricultural sector beside social and political problems.

Sudan earns great amount of its foreign exchange from agricultural exports, as a result of the expected reductions in export subsidies by developed countries, the import bill of food and agricultural products is expected to increase, the rises in these prices should give Sudan the chance of passing on the higher prices to its farmers, increase production and become more of food seller than a buyer. Failing to do this, will not only deprive Sudan from expanding its agricultural exports, but would also necessitate more food imports at the expected high prices.

Sudan as a least-developed country is exempted from export subsidy reduction commitments. However, Sudan does not provide export subsides, in fact it taxes exports. A recent study has shown that in Sudan exportable crops suffered more taxation than staples and importable crops Table (3-4).
As mentioned before, failing to provide comprehensive and reliable information may cost the acceding country its credibility, however, Sudan is advised to mention in its country schedules commitments, that it is provide some export subsidy, because the initial information in the supporting table has significant effect over the results of the negotiations on export subsidies. If a country stated that it does not provide any kind of export subsidy, it would be prohibited under WTO rules from adopting such policies in the future.

**Table 3-4 Direct and Total Protection to Agricultural Products in Sudan**

<table>
<thead>
<tr>
<th>Staples</th>
<th>Importable</th>
<th>Exportable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct</td>
<td>Total</td>
<td>Direct</td>
</tr>
<tr>
<td>-10.0*</td>
<td>-16.0</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-38.0</td>
</tr>
</tbody>
</table>

*The negative protection indicates taxation.

**3-9 Regional, Bilateral and Preferential Trading Arrangements**

Sudan is a member of several bilateral and multilateral trade and economic organizations, which among other things, aim at promoting increased trade among members through co-operation and reduction of trade barriers. Sudan is a member of the Common Market for Eastern and Southern African States (COMESA), the African Common Market Agreement,
the Organization of Islamic and Arab League, Sudan is also a signatory of the Trade Facilitation and Development Agreement among the Arab countries which calls for the reduction or complete removal of tariffs and non-tariff barriers for all goods exchanged between member countries. The importance of such organizations and associations comes from the fact that, Sudan and developing countries through unifying their efforts in these forums, could introduce and defend their interests and rights, in the international organizations such as WTO.

Sudan also benefited from several preferential trade arrangements, which provided duty free or low-duty access for its exports to markets of industrial countries. The Generalized System of Preference (GSP) gives Sudan preferential treatment on its exports. Sudan was a signatory to the Lome convention which, in addition to the development assistance, provided preferential treatment for some of its exports to the European markets. Due to WTO Most Favored Nation basis, Sudan’s exports of raw materials (Cotton, Gum Arabic) to the European markets are expected to decline as a result of reduction in the margin of preference enjoyed under Lome convention and the (GSP).

The UR and the new WTO rules on regional trading agreements (RTAs) had implications for participation of a WTO member in bilateral and RTAs. The RTAs rules would have to be compatible with the over all rules of WTO. Although the RTAs among developing countries were permitted and encouraged, the WTO stipulates that the volume of trade in such free zones should exceed 5 billion-dollar annually, which is very difficult provision to be achieved especially for developing and least-
developed countries involved in such arrangements. It is important for Sudan to review its bilateral and regional preference trading provisions so as to avoid inconsistencies with the multilateral rules.

3-10 Implications of WTO Agreements on Developing and Least Developed Countries

Negotiations on WTO Agreements for Developing and LDCs is very hard job, due to shortage of finance, experts, qualified institutions and required information. Negotiation in agriculture is very important for Developing and LDCs because of the following:

- Food security is an acute problem to them, given their lack of enough foreign exchange to use extensively on food imports.
- Majority of agricultural producers in developing countries are subsistent farmers whose production would have little effect to the international trade.
- Agriculture provides major chances of employment and livelihood.
- The agricultural exports account for more than half of the total exports earnings in many of developing and least-developed countries.

The main actors and interests in the agricultural negotiations during the UR were the United States of America (USA), the European Union (EU) and to a lesser extent the Cairns Group. The Americans are very much interested for more liberalization in agricultural trade and reduction of support and protection i.e. support enjoyed by EC producers under the Common Agricultural Policy (CAP). It is worth mentioning that USA and EU support the producers with 340 billion
dollar annually. The EU is much less interested in far reaching liberalization, but is keen to reach a workable compromise, that could be enshrined in the GATT, in order to minimize future trade friction between itself and USA (UNCTAD, 2000).

The Cairns Group consisted of 14 countries, from both the developing and developed world, whose membership consists of Canada, Australia, New Zealand, Thailand, Indonesia, Malaysia, the Philippines, Argentina, Brazil, Colombia, Chile, Uruguay, Fiji and Hungary. As net exporters of agricultural commodities they generally shared a common interest in desiring greater liberalization in farm trade, the Cairns contingent argued strongly for a reduction in the protectionism and domestic support measures enjoyed by farmers in developed countries (UNCTAD, 2000).

Developing countries outside the Cairns group also had great interest in the negations, although their influence over the proceedings was relatively low, for the large group of developing countries which were net importers of food, the main concern was over the impact of the round on the cost of food imports (UNCTAD, 2000).

Underlying some disadvantages of the Agreement on Agriculture on the agricultural sector of developing and least developed countries:

- The Agreement permits the continued use of the sort of subsidies applied particularly by developed countries in this sector. Whereas the developing and least developed countries have been constrained in the use of domestic support measures in this sector.
- Developed countries have substituted very high tariff equivalents for their non-tariff barriers. For some products, the tariffs are in the range of 250 percent to 300 percent. At the same time, the level of their domestic support and export subsidy are very high (Ministry of Foreign Trade).

- With respect to tariff bindings, developing countries have offered these on a very wide range of agricultural products, also developed countries have taken advantage of the tariffication process to impose very high tariffs on many agricultural imports (UNCTAD, 2001).

- As mentioned before, in the Agreement on Agriculture, the developed countries committed themselves to reduce their tariffs, domestic support and export subsidy by 20 percent to 36 percent over six years, that is, by the end of the year 2000. However, even at the end of this period, their general level of tariff protection, their domestic support and their export subsidies will remain very high. So their domestic markets for agricultural products are still in accessible and their high subsidies hinder the ability of others to compete in their markets and in the international markets.

- Most of developing countries hadn’t any domestic support and export subsidy for agriculture; also they didn’t have non-tariff barriers to convert to tariff equivalents. They are now prohibited from raising their tariffs, and introducing domestic support and export subsidy measures, even if their development plans would necessitate these policies in the future.

- Importing food, even if cheap, may not be feasible for developing and least developed countries, because
of their acute shortage of foreign exchange. Also these countries may wish to increase their food production for food security purposes.

In addition, there are many arguments that can be raised against the other WTO Agreements, from the developing and least developed countries point of view, some of them are:

- In the future Multilateral Trade Agenda which is called new issues, the developed countries have played a dominant role in bringing and introducing issues of interest to them to be a subject of study by the WTO. The most notable examples are inclusion of trade in services, trade and investment, trade and environment.

- In the case of intellectual property, the developed countries have succeeded in gaining advantage by ensuring great protection for intellectual property rights (TRIPs), developing and least-developed countries were put under strong bilateral and multilateral pressure during the UR negotiations on TRIPs as a result of which they finally made major concessions in this area.

- Developing countries were given transitional periods to assume equal obligations under different agreements. These periods will be over at the end of 1999. But developing and least developed countries are still not in a position to assume their full obligations, particularly those under the Trade-Related Aspects of Intellectual property Rights (TRIPs) Agreement, the trade-Related Investment Measures (TRIMs) Agreement. The reasons include the lack of significant human, technical and financial resources required to work out the full implications, draft and approve the necessary legislations, establish
administrative and judicial mechanisms, and educate and train people in the public and private sector (Ministry of Foreign Trade).

- Since the establishment of WTO, the experience has shown that the developing and least developed countries have not been able to participate in WTO matters in a way that effectively serves their interests, due to their lack of knowledge, resources and coordination. This move the balance of rights and obligations in the multilateral trading system as contained in the WTO in favor of the developed countries.

From all this disadvantages some recommendations could be drawn such as:

- Monitoring of the implementation of the agreements of great importance to developing countries, such as the Agreement on textiles and clothing, Agreement on Agriculture, and also of the provisions on technical and other assistance by developed countries. This important to ensure that the few concessions taken from developed countries during the UR negotiations are implemented as stipulated.

- Awareness and active participation in the negotiations of different WTO bodies to ensure that the emerging interpretations and practices concerning provisions in the agreements do not result in either an increase in obligations or a decrease in the rights of developing and least-developed countries.

- Exchanging information between and within developing and least-developed countries on their individual experiences.
- Developing and least-developed countries need to gather their efforts to develop their own positive agenda and initiatives, instead of, just responding to a WTO agenda set by the developed countries. They should also cooperate to improve their ability to discuss and negotiate the complex new issues on the WTO agenda.

- With respect to the reduction of domestic support and export subsidies in agriculture it will be important to try to balance various domestic interests. For the next rounds of negotiations in agriculture, developing and least-developed countries should be careful not to be subjected to measures which prevent the progress of their agriculture sector and which hinder their efforts to ensure food security for the whole population. Also they should demand and ask for a significant reduction of tariffs domestic support and subsides by developed countries and prepare a strong argument for this requirement.

3-11 Domestic Support under WTO
The GATT had traditionally concerned itself with trade measures and had not been much involved in purely domestic production policies, except where these had a trade impact. The Uruguay Round Agreement on Agriculture, however, disciplined domestic support to agricultural products and in this respect it overrules the provision of GATT 1994. The specific domestic support provisions stipulated in the Agreement were aimed largely at easing developed country trade conflicts and, in particular, at the removal of policies which had resulted in over production in the past. The intent is to discipline and reduce domestic support while at the same time leaving some scope for governments to design domestic agricultural policies in the face of, and in response to, the wide variety of the specific circumstances in individual countries (WTO, 1995).

3-11-1 Provisions in the Agreement on Domestic Support

Under the Agreement, all domestic support in favor of agricultural producers is subject to rules. The agreement entails two types of commitments on domestic support: one qualitative and the other quantitative. The qualitative commitment establishes a definition of domestic support policies, which are exempt from the reduction commitments, while the quantitative commitment establishes schedules of commitments limiting subsidization covering agricultural products.

3-11-1-1 Exempt measures

Support measures, which are exempt from reduction commitments, are classified in a number of categories as
shown below (WTO, 1995).

(i) The Green Box

The fundamental requirement for the exclusion of such policies from reduction commitments is that they have no, or at most minimal, trade distorting effects or effects on production. They must be provided through publicly Funded government programs, not involving transfers from consumers and must not have the effect of providing price support to producers. The list of measures included in the Green Box includes the following:
- General services, including research, pest and disease control, training, extension, inspection, marketing and promotion services, and infrastructural services.
- Food security stocks.
- Domestic food aid.
- Direct payments to producers, including income insurance and safety-net programs, disaster relief, producer or resource retirement schemes, investment aids, environmental programs, and regional assistance programs.

Most of the support to agriculture in Sudan falls under the Green Box category, which is exempted from the reduction commitment. Although the Green Box allows support to many agricultural services and infrastructure investments such as those listed above, little support is given under these items in Sudan (Ministry of Finance and National Economy, 2002).

(ii) Developmental measures (Special and Differential Treatment for Developing countries (SDT))

This excludes from the reduction commitment some
support measures that fit into the developmental category, whether direct or indirect, designed to encourage agricultural and rural development and that are an integral part of the development programs of developing countries. They include:
- Investment subsidies which are generally available to low-income or resource-poor producers in developing countries.
- Domestic support to producers in developing countries to encourage diversification from growing illicit narcotic crops.

It is clear that the AOA through the special and differential treatment, provide room for considerable support to agricultural producers in developing countries. So there is a good chance for Sudan to provide, investment subsidies like credit facilities if made generally available to low-income or resource-poor producers. This could be provided above the de minimis, as a special treatment for developing and Least-developed countries.

(iii) The Blue Box

Direct payments under production limiting programs are exempt from the reduction commitments if:
- Such payments are based on fixed area and yield.
- Such payments are on 85 percent or less of the base level of production.
- Livestock payments are made on a fixed-number of head.

(iv) De minimis exemptions
All domestic support measures in favor of agricultural producers that do not fit into any of the above exempt categories are subject to reduction commitments. The de minimis exemptions allow any support for a particular product to be excluded from the reduction commitment if that support is not greater than 5 percent of the total value of production of the agricultural product in question. In addition, non-product-specific support, which is less than 5 percent of the value of total agricultural production, is also exempt from reduction. The 5 percent applies to developed countries where as in the case of developing countries the de minimis ceiling is 10 percent.

3-11-1-2 Non-exempt measures

Support provided under non-exempted policies is subject to reduction commitments. The reduction commitments are expressed in terms of a (Total Aggregate Measurement of support or Total AMS) which is the sum of expenditures on non-exempted domestic support, aggregated across all commodities and policies. For evaluating the level of support that is provided to the agricultural sector, The Agreement refers to four different measures of support, as follows (WTO, 1995):

- **Product-specific AMS:** the total level of support provided for each basic agricultural product (e.g. price support, direct payment, etc.).
- **Non-product-specific AMS:** The total level of support provided by policies that are directed at the agricultural sector as a whole, excluding product-specific support.
- **Equivalent Measurement of Support (EMS):**
Product-specific support for which it is impractical to use the AMS methodology.

- **Total AMS:** this is the total value of all non-exempt domestic support provided to agricultural producers, and is the sum of the product-specific AMS for each commodity, the non-product-specific AMS and the Equivalent Measurement of Support.

The methodology for preparing domestic support commitments were contained in a document called Modalities, the Modalities require a 20 percent (13.3 percent for developing countries and none for least developed countries) reduction in the Base Total AMS, to take place in equal annual installment over the implementation period. These planned annual reduction commitments are included in country schedules, which are legal documents. For each year of the implementation period, Members compute Current Total AMS, which should not exceed the level committed in schedules.

Other related provisions on AMS include:
- Reduction commitments refer to the total AMS; i.e. there are no commodity-or policy-specific reduction commitments.
- Any modification to domestic support measures, or introduction of new measures that do not satisfy the criteria for exemption, shall be included in the calculation of the current AMS.
- Least developed countries do not have to make any reductions to their AMS but can not exceed their Base AMS.
CHAPTER FOUR

Assessment of the Aggregate Measurement of Support on Sudanese Gum Arabic

4-1 Price Policy

Prices serve as appropriate substitution ratios in a whole range of choice problem (saving gap, foreign exchange gap and the agricultural bottleneck). Prices may affect the size of foreign exchange gap in developing countries by influencing export revenue, import requirement and the inflow of foreign capital. They also allocate resources, and pattern of development. Agricultural policy can be categorized into three main components: price policy, macro policy and investment policy. Agricultural price policy has been viewed as an instrument to speed the process of economic development therefore; a well-defined price policy is needed to fulfill the agricultural target of the policy. Generally the objectives of price policy have been to maintain fair prices to the producers as well as to the consumers and avoid of undue fluctuations in prices over time and space (world bank, 1986).

4-1-1 Subsidy Policy

It is one of the price policy techniques, the economic purpose of it is to reduce price or increase output, some of its measures are:
Producer subsidy: the government pays the producer a definite amount of money on each unit sold.
Input subsidy: government subsidizes input to reduce farmer’s cost of production and marketing.

4-1-2 Economic impact of domestic support

Trade policies, which are taken by governments to regulate international trade are greatly influenced by such measures of support, free trade policy is a policy, which means an absence of any government interference
with the free flow of international trade, on the other hand any departure from free trade, aimed to give some protection to domestic producers from foreign competition is called protectionism.

Policy measures not directly designed as trade interventions, but designed to reduce costs to producers, have the effect of allowing producers to supply more at the same price, thus shifting to the right the supply curve. Figure (4-1) illustrates a situation where these measures move a country from being a net importer (S1) to being self-sufficient (S2) and eventually becoming a net exporter (S3) (FAO, 2000).

More precisely, producers’ subsidies will bring the following effects:
- There will be change in the home price, it would decrease leading to increase in domestic consumption.
- Production will increase, leading to a reduction of imports and eventually to the generation of export surpluses.

Producers will gain from the reduced cost of production at the expense of the government budget, which will bear the cost of the subsidy.

This situation could explain to some extent the effects of continued support to farmers by the European Union over a
Table (3) Agricultural areas characteristic and Management in relation to Space Information

<table>
<thead>
<tr>
<th>Farming Systems</th>
<th>Irrigated Agriculture</th>
<th>Mechanized Agriculture</th>
<th>Traditional Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field size/ shape</strong></td>
<td>Large, standard, fix regular</td>
<td>Large/regular (registered unregular(unregistered)</td>
<td>Small</td>
</tr>
<tr>
<td><strong>Field pattern</strong></td>
<td>Adjacent, charrets roods</td>
<td>Adjacent, blocks,roods</td>
<td>Scatter</td>
</tr>
<tr>
<td><strong>Planting season</strong></td>
<td>All seasons</td>
<td>Rainy season</td>
<td>Rainy season</td>
</tr>
<tr>
<td><strong>Soil type</strong></td>
<td>Clay/moisture</td>
<td>Clay/moisture</td>
<td>Sand/dry</td>
</tr>
<tr>
<td><strong>Natural vegetation (construct)</strong></td>
<td>Space</td>
<td>Dense</td>
<td>Sparse</td>
</tr>
<tr>
<td><strong>Administration</strong></td>
<td>Government</td>
<td>Private sector</td>
<td>Local farmer (inhabitant)</td>
</tr>
<tr>
<td><strong>Information status</strong></td>
<td>Good records</td>
<td>Some records</td>
<td>No records</td>
</tr>
<tr>
<td><strong>Space data used</strong></td>
<td>TM:elarged to scale 1:50000 and 1:100000</td>
<td>TM:elarged to scale 1:50000 and 1:100000</td>
<td>Aerial photographer</td>
</tr>
<tr>
<td><strong>Area estimation</strong></td>
<td>Possible</td>
<td>Possible</td>
<td>Impossible</td>
</tr>
<tr>
<td><strong>Production estimation</strong></td>
<td>Possible</td>
<td>Possible</td>
<td>Impossible</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td>Positive</td>
<td>positive</td>
<td>Negative</td>
</tr>
</tbody>
</table>
By the light sandy soil in the rest of the country these soil often with aspire cover of bush; are common in areas of traditional agriculture. In cases where the land is cleaned for farming and the field subsequently abandoned on left follow. It is difficult to determine if the result is agricultural land or former agricultural land. In areas of irrigated and mechanized agriculture the situation is different (comparison in table 3). Figure (1) and (3) (images)

Output: -

The methodology of crop survey benefits greatly from the objectivity of the area sampling. Once the area frame is in place, and the sample size adjusted to give the designed coefficient of variation, the system should work extremely well. During 1986/87-crop season the area frame was constructed and used and used with positive results in the irrigated and mechanized sectors. The results of the survey were amalgamated with other information available to give the final crop-production estimates.

Table (4) Crop production estimates 1987 (000 metric tones)

<table>
<thead>
<tr>
<th>Crop type</th>
<th>Irrigated</th>
<th>Mechanized</th>
<th>Traditional</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorghum</td>
<td>459</td>
<td>2.395</td>
<td>428</td>
<td>3282</td>
</tr>
<tr>
<td>Sesame</td>
<td>-</td>
<td>165</td>
<td>99</td>
<td>264</td>
</tr>
<tr>
<td>Wheat</td>
<td>147</td>
<td>-</td>
<td>-</td>
<td>147</td>
</tr>
<tr>
<td>Millet</td>
<td>5</td>
<td>11</td>
<td>269</td>
<td>285</td>
</tr>
<tr>
<td>Groundnuts</td>
<td>186</td>
<td>-</td>
<td>213</td>
<td>399</td>
</tr>
<tr>
<td>Total</td>
<td>797</td>
<td>2571</td>
<td>1.009</td>
<td>4.377</td>
</tr>
</tbody>
</table>
The figures of the survey were matched against food needs and showed an adequate supply of food grain for the year because the questionnaire responses were entered into a computer system which has a mapping capability. It is possible to present the results in a map that is particularly useful to administration. For example, maps (1) and (2) indicate the interaction of pest infestation and crop condition. Note the areas in which pest infestation is high and crop condition poor.

Map (1) Crop Condition Rating (sorghum)
Map (2) Pest infestation

These maps assisted the definition of cause and effect relationships. For any and all of these areas, satellite data can be pursued and crop estimates studied to understand the interaction of terrain type, agricultural practices, and crop production. These interactions and many others will become more apparent as data accumulate over time. These data from the area sampling frame, the satellite and aircraft remote sensing system should be entered into the computerized geographic information system (GIS). The systems should then produce a whole range of maps comparing information from different years and sources to guide decision-taking in such matters as food security and crop production.

Recommendation:
- Acquisition of Ground Receivable station for real-time space data flow.
- Established of monitoring system to detect crops performing during the growing system.
- Update and re-established the R.S and GIS Unit of the statistic Administration.
- Established of Regional center or institute for space technique training at different levels up to postgraduate degree.
number of years. However, the EU support measures aimed at reducing costs were accompanied by direct trade interventions, mainly under the form of tariffs and export subsides, which made domestic prices to be well above world prices.

Government interventions through protection and support provided to the agricultural sector, distorted the agricultural international trade and generated high levels of agricultural production inefficiency in many countries. High levels of support to farmers in developed countries generated large surpluses, which were sold on the world market through the use of export subsidies, often greatly reducing the world price of many agricultural products. In developing countries, artificially low world prices created a downward pressure on domestic prices, and hinder their ability to compete in the international
markets, the effect was to distort the international pattern of trade away from those directed by comparative advantage.

4-1-3 Calculation of Aggregate Measurement of Support (AMS)

The AMS is calculated for the base period, 1986-88 (and called Base AMS) and for every year during the implementation of the Agreement (and called Current AMS). In calculating AMS, budgetary outlays as well as revenue forgone should be taken into account. Annex3 of the Agreement mentions four categories of support for inclusion in the AMS (WTO, 1995):
- Market price support.
- Non-exempt direct payments dependent on a price gap.
- Non-exempt direct payments based on factors other than price.
- Other non-exempt measures, including input subsidies.

Market price support is measured by multiplying the gap between the applied administered price and a specified
fixed external reference price by the quantity of production eligible to receive the administered price. For each product, the implicit subsidy of price support measures is added to other product-specific subsidies (e.g. a product –specific input) and direct payments which are not dependent on price gap to arrive at a product-specific AMS, which is then evaluated against the relevant de minimis level.

All non-product-specific subsidies are calculated separately and are added together to get the non-product specific AMS, which should be included in the Total AMS only if it exceeds the relevant de minimis level. Box 1 illustrates procedures for calculating AMS.
Box 1. Measurement of Total AMS

Market price support for a product = (administered price at the farm gate – fixed external reference price) x eligible production
Where,
Eligible production = quantity of production receiving the administered price.

Market price support for an input (service) = (administered price at the farm gate – market price) x quantity of input (service) receiving subsidy

Product-specific AMS = sum of all positive support to a basic product (market price support + other types of support not dependant on price gap)

Product-specific AMS should be included in Total AMS only if it exceeds the de minimis level; i.e. if (product-specific AMS/market value of total output of the product) x 100 is greater than 5 (or 10 in the case of developing countries)

Non-product specific AMS = sum of all positive non-product specific AMS

Non-product specific AMS should be included in Total AMS only if it exceeds the de minimis level (5% for developed countries or 10% for developing countries); i.e. if (non-product specific AMS / market value of total output of agriculture) x 100 is greater than 5 or 10 respectively.

Total AMS = (product-specific AMS exceeding de minimis + non-product specific AMS exceeding de minimis)

A. Product-specific AMS

<table>
<thead>
<tr>
<th>Item</th>
<th>Value of output</th>
<th>Share in total value of output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market price support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsidies for inputs specific to the product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct payments not dependent on price gap</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total product-specific AMS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. Non-product specific AMS

Non-exempt agricultural inputs:
- Tractors
- Diesel

Agricultural services:
- Irrigation water
- Agricultural credit

Total Non-product-specific AMS

Total value of agricultural output

Non-product-specific AMS as % of total agricultural value

C. Total AMS for a country = Total product-specific AMS (for each product provided it exceeds the de minimis level) + Total non-product specific AMS (provided it exceeds the de minimis level)

4-2 Calculation of Gum Arabic AMS

As mentioned before, the basic idea behind the AMS calculation is to quantify, in monetary terms, the support provided by all policies that do not fall within any of the exempt categories discussed later. Most of the support to agriculture in Sudan falls under the Green Box category, which is exempted from reduction commitment. The non-exempt support to agriculture in Sudan consists mainly of market price support to products and support to agricultural inputs and services (Ministry of Finance). So the calculation of Gum Arabic AMS focuses on estimating the non-exempt support in Sudan under the following categories: Product specific AMS (Market price support); Non-product AMS; and the De minimis.

A. Product-specific AMS

The AOA requires that AMS value to be calculated on a product-specific basis for each agricultural commodity that receives:
- Market price support.
- Non-exempt direct payments.
- Support provided by other Non-exempt measures.

The product-specific AMS is then obtained by summing the three resulting values. In case of Gum Arabic there is no any kind of direct payments given in favour of the producer, also there is no any kind of support provided by other Non-exempt measures such as subsidies for inputs, so market price support is the only item to be calculated under product-specific AMS, according to the AOA, market price support for a commodity is to be calculated by establishing the difference between the
fixed external reference price and the applied administered price, then multiplying the obtained figure by the quantity of production eligible to receive the applied administrative price minus the fees. Calculation of the Product –specific AMS provided through Market price support requires availability of data for the following items:
- Total production for the agricultural commodities in question.
- Farm gate price as close as possible to the point of the first sale.
- Free on board prices (FOB) expressed in local currency.
- Marketing cost from port of export to farm gate including transport cost.
- Eligible production which receives the support.
- Exchange rates.
For the purpose of this study:
Intervention price = floor price declared by the Gum Arabic Company and Ministry of Foreign Trade.
Fixed external reference price = export parity price = F.O.B unit value Port Sudan times exchange rate minus marketing cost.
Total production = Eligible production = Amount exported.
Farm gate prices = Auction prices of the rural Gum Arabic Markets in Sudan.
Table (4-1) and (4-2) explain Market price support infavour of Gum Arabic producer. The results can be described as follows, In case of Gum Arabic (Talha) the AMS market price support during (1995-1997) was found to be positive this could be attributed mainly to the low official exchange rate at that time, which lead to artificially low values of (Talha) parity prices. During the
(1998-2000) the negative figures indicate that (Talha) receive no market price support, and was significantly taxed. In case of (Hashab) the most notable thing is that while producer price is administered by Government, its overall price support was negative. That denote Gum Arabic (Hashab) like many export crops, appeared to have received heavy taxes.
B. Non-product-specific AMS

Support, which is Non-product specific, shall be totaled into one Non-product-specific AMS. Although accurate and reliable data on Non-product domestic support is lacking, there is strong evidence that the Government has been providing subsidies to agriculture through low land rent and water use charges. And to some extent, many of the agricultural inputs (e.g. Petroleum products, Irrigation facilities, Insecticides, Improved seeds etc.) are delivered to farmer at prices below the import parity prices in the
irrigated schemes (Ministry of Agriculture). In case of Gum Arabic, there is no any kind of support under this measure given to Gum Arabic producer. This may due to the nature of Gum Arabic as a forestry crop. Hence Non product-specific budgetary outlays should be estimated and calculated for other crops that received such kind of support, excluding Gum Arabic.

C. Domestic support: The De minimis

As explained earlier if the AMS for a particular product constitutes less than 10 percent (5 percent for developed countries) of the total value of production of that commodity, the de minimis clause exempts that support from inclusion in the calculation of the current Total (AMS), it is very important to note that the de minimis provisions are specified in relation to total production, not to total marketed production. As shown in Table (4-3) the values of the product-specific AMS as percentages of the total value of Gum Arabic, clearly indicate that the support provided through market price to Gum Arabic in Sudan was very low over the period of the study. In the few cases where market price support was positive it constituted a small portion of the total value of production of Talha Gum Arabic. And it is below the de minimis level over the period of the study. This suggests that Sudan can utilize the de minimis level allowed for developing countries, which allows for a support up to 10% of the value of each product. Table (4-4) shows the estimated level of product-specific support, which could be allowed under the de minimis clause based on data for (1995-2002) for Gum Arabic.

The above analysis suggests that instead of taxing producers Sudan has the opportunity to subsidize the producers of these products by the amounts shown in
Table (4-4) as allowed amounts of product-specific support.
Sudan as a Least-developed country is exempted from reduction commitments in the TAMS but he should calculate it according to AOA methodology and bound it at certain agreed level. So primary high Base TAMS could be bound at higher level. To obtain this Base TAMS Domestic Support for Gum Arabic and other agricultural products, should be at a considerable amount by utilizing the de minimis level allowed for developing countries.
Given the estimates of product-specific AMS for Gum Arabic, that were less than what is allowed under the de minimis exemption, the implication of this on Gum Arabic policies, could be suggested as follows:
- Sudan would not be required to bind its AMS for Gum Arabic, and will be entitled to increase its support up to 10% of the value of total production of it.
WTO suppose that LDCs support agriculture, in case of Gum Arabic, it comes out that the total product-specific AMS has negative value, which obviously denote negative support due to high taxation levied upon it. Also it comes out that, the product-specific AMS for Gum Arabic should be excluded from the Total AMS of the country, since it is below the de minimis level, that mean in case of Gum Arabic there is no any kind of support under the WTO two elements (product-specific AMS and non-product specific AMS), this result cope with the
WTO provisions that try to discipline such trade distorting supports. The benefit to Gum Arabic exports under WTO measures come from the fact that, if the government remove the taxes and the importing countries reduce tariff to ease market access, which is one of WTO provisions, the price of Gum Arabic are expected to rise, such arise, if allowed to be transmitted to producers, should help raise domestic production, resulting in the improvement in farmer’s income, trade balance and the over all growth of the economy.

CHAPTER FIVE

Summary, Conclusion, Recommendations

5-1 Summary and conclusion

Agriculture is the backbone of the Sudan economy. The country’s efforts to achieve economic progress and transformation are dependent on the performance of the agricultural sector.

Gum Arabic is one of the major foreign exchange earners to Sudanese economy for so many years. Sudan has a virtual monopoly in Gum Arabic. However, its share in the national economy and the share of Sudan in the world production of Gum Arabic have been declining. The Agreement on Agriculture (AOA) is a major outcome of the Uruguay Round (UR). It represents a fundamental overhaul of the previous GATT rules for agriculture. It includes new discipline in the area of
market access, export subsidy and domestic support. Trade restrictions constitute the main problem facing trade in agricultural products. The new agricultural trade rules, which have been written in the final act of the UR, are expected to affect the agricultural sector in Sudan. The new WTO disciplines on agriculture generally require to avoid interventions that affect price mechanism. In the case of domestic support provision the quantitative cuts in support of agriculture are relatively small and spread over a number of years, so a large degree of distortion in the world market of agricultural products will remain. Governments should point their policies towards investments in infrastructure of the agricultural economy, also governments should consider a shift in resources a way from direct input subsidies to enhanced credit provision.

The main objective of this study is to calculate the Gum Arabic Domestic Support under WTO provisions and Agreements as a guide. The situation of the support had been tackled during (1995-2002) via the Aggregate Measurement of Support (AMS). It had found out that the Sudanese Gum Arabic exports suffered from negative support which denote that it is subject to taxes. It is also found out that the Product-specific AMS was below the de minimis level which means it shouldn’t be included in the Total AMS of the country which indicate that Sudan would have limited chance of establishing a positive AMS in its country schedule.

Sudan policies concerning Gum Arabic domestic support are likely comply with the UR AOA since Sudan taxes the Gum Arabic, instead of subsidizing it. The broad objective of this study is to know the potential
and actual performance and limitations of production and exporting of Gum Arabic.
The study revealed that Gum Arabic producers suffer from many problems such as lack of drinking water, high cost of transportation and taxes, lack of extension, absence of finance and overall the low price of Gum. All that enforce them either to remove their Gum trees or to smuggle their output illegally through borders. Such instable economical policies in the Sudan put the whole activity of Gum production under risk.
The study also represented that the factors that have a considerable impact on Gum Arabic production within Sudan could be grouped into four main headings:
1\ the physical factors which include soil, topography and climate.
2\ Biotic factors which include man, animals, locusts and insects.
3\ socio-economic factors such as; incomes, migration, agricultural expansion.
4\ institutional factors such as; marketing, transport, water, research and extension.
It also reveals that the Gum Arabic export decline in the last years could be attributed mainly, to adoption of new pricing policy, which opted for higher lucrative price levels irrespective the change in the international markets.

5-2 Recommendations

1\ Sudan should seek more access to the international markets for its Gum Arabic exports.
2\ Gum Arabic production should be increased because the expected rising in world prices of Gum Arabic due to
WTO provisions is envisaged to give more incentives to producers.
3\ the exchange rate of the Sudanese Pound must be stable, so that Sudan can benefit from the increase in international price of Gum Arabic.
4\ Gum Arabic Company must declare the floor price early and try to reach the farmer in his village.
5\ Direct and indirect taxes levied upon Gum Arabic should be reviewed so as to increase the positive incentives for the producers, and reduce the marketing cost.

6\ An elastic price policy should be applied on Gum Arabic exports so as to compete with the substitutes and other producing countries.
7\ At the producer level, the establishment of credit sources (e.g. cooperatives) to ensure steady supply of Gum Arabic.
8\ The future of Sudan’s policies in the area of domestic support, export subsidy, and import tariffs should be monitored in order to be consistent with new WTO disciplines and at the same time serve its future developmental aims.
9\ Policies are required to be maintained and issued to enable the country to strengthen the agricultural sector and protect it through domestic support that comply with the WTO provisions.
10\ Sudan commitments in relation to Market access, Domestic support and Export subsidy should be bound at higher level to avoid undesired current and future impact.
11\ Sudan accession should be based on the special treatment provided for LDCs.
12\ Sudan should review and analyze the commitments
and concessions of its trading partners, so as to benefit from potential regional and international market opportunities.

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