Strengthening capacity among stakeholders for the production and trade in gums and resins in selected African countries

The study on "Strengthening capacity among stakeholders for the production and trade in gums and resins in Africa" was conceived by the African Forest Forum (AFF) through funds from the Swiss Agency for International Development and Cooperation (SDC) and implemented by the Network for Natural Gums and Resins in Africa (NGARA) between July 2019 and December 2022. The study was conducted as a means of using dryland resources and commodities found in the drylands of the Sahel and the Horn of Africa to build resilience to climate change for communities depending on these resources/products through improving their livelihood support options, employment opportunities and national incomes among actors and producing countries. It was implemented in four countries, namely; Burkina Faso, Kenya, Niger and Tanzania. The study specifically sought to address the following objectives:

i. review the distribution of gums and resins producing species, profile production potential areas and carry out ground resource assessment and mapping to verify information on resource base for updating existing maps of gums and resins for selected sites;
ii. identify key actors and their role in the production and trade of gums and resins with focus on women and youth;
iii. identify and profile types of gums and resins exploited/traded by each of the different actors;
iv. undertake value chain analysis on gums and resins at country level, in addition to assessing their marketing and trade;
v. undertake training needs assessment on actors in gums and resins, and from the identified gaps, update existing training curriculum and manuals; and
vi. carry out a review of existing national policies, legislation and institutional frameworks relevant to gums and resins.

Various approaches were developed to address the above objectives:

i. Existing areas producing gums and resins, potential areas of production and agro-ecological shifts due to climate change and variability in the producer countries were identified and described briefly based on desk reviews followed by field visits to selected sites to confirm status of occurrence and distribution. Key species producing gums and resins were identified and described to variety level where applicable based on local knowledge or by taxonomists. Meanwhile, an expert in GIS was recruited for each country alongside the national expert to carry out resource mapping and estimate production potential in selected sites;

ii. For identity and profiling types of gums and resins exploited/traded in each country, samples of gums and resins were collected from the producing areas by species and variety, where applicable and representative samples sent to NGARA Secretariat for physical and chemical profiling at the Kenya Forestry Research Institute (KEFRI) Forest Products Laboratories. All the samples received were described on the basis of their physical appearance followed by proximate analyses using standard Association of Official Analytical Chemists (AOAC, 2000) methods;

iii. As regards actors in the sector, initial information was gathered from desk review followed by field appraisals. Mixed methods were used to collect data including semi-structured interviews with key informants, focus group discussions and participant observations during field appraisals. Special emphasis was given to the role of women and youth. The focus was on volume collected, marketed, pricing along the value chain, seasonality, challenges and opportunities. At each node in the value chain the place and role of women and youth were examined. For other players not directly involved in the value chain information focused on their role in the gums sector;

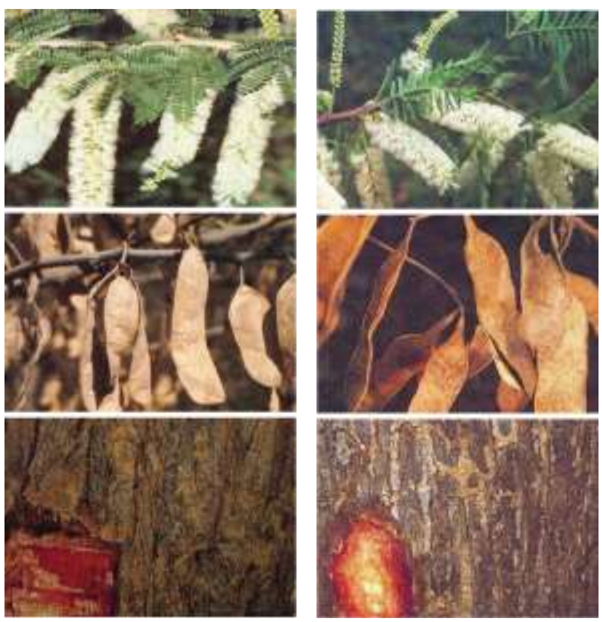
iv. A template on value chain analysis prepared during the harmonization workshop was used as the main tool for generating the required information. Also a Training Needs Assessment (TNA) tool was developed during the harmonization workshop for generating the required information. Gap Analysis was used to assess training needs and prepare a training manual that responds to the training needs. Both qualitative and quantitative data were collated;

v. Finally, a desk review on existing policies, legislation and institutional framework was carried out from available information in the producer countries followed by a SWOT analysis to provide implications of the same in production and trade on gums and resins.

The following are the key findings;

The main sources of gum Arabic of commerce in all the four countries are *Senegalia* (*Acacia) senegal* and *Vachellia* (*Acacia*) *seyal*.

However, there exist other commercial gums that are marketed as gum arabic in some countries, especially in West Africa Sahel. These include *Senegalia laeta* and *Senegalia dudgeoni*, that are part of the *Senegalia* (*Acacia) senegal* complex.



Senegalia laeta *Senegalia dudgeon*

In Tanzania commercial gum arabic locally traded is not consistent with the current definition of gum arabic of commerce but rather an admixture of acacia gums namely; *V. drepanolobium*, *V. seyal*, *S. senegal* and *V. nilotica*, an aspect that needs to be investigated.

Vachellia drepanolobium *Vachellia nilotica*

The countries have good potential for increasing production but are currently operating far below the potential. In Kenya for example the current production is only about 3% the country's potential.

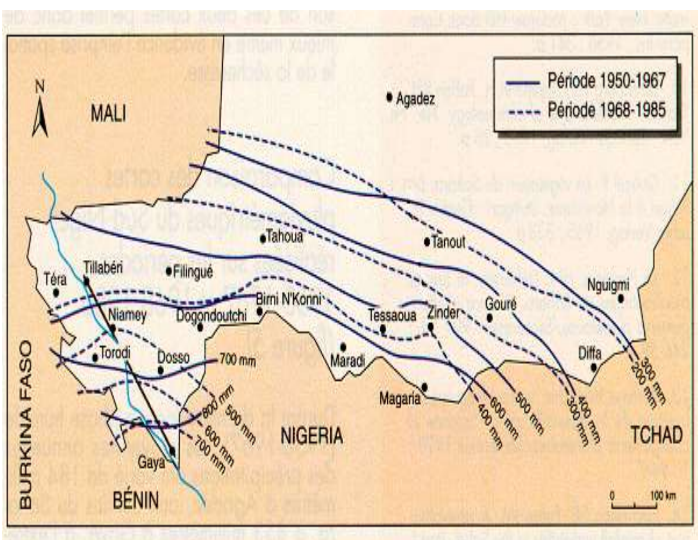
Besides gum Arabic there exist other gums of commerce. In Burkina Faso and Niger there is combretum gum from *C. nigrans* while in Tanzania there are commercial gums from *V. drepanolobium* and *V. nilotica*, which are mistakenly marketed as gum arabic but have commercial applications if marketed separately.

Combretum nigricans

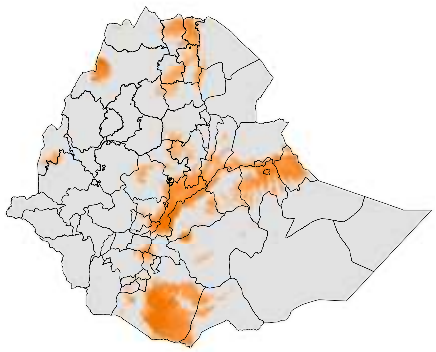
There also are gum resins in Kenya, which have a huge domestic and export market. They include *Commiphora myrrha*, the source of true myrrh, *Commiphora holtizziana* the source of medicinal type of opoponax commonly known as hagar and *Boswellia neglecta* the main source of frankincense commercially known as olibanum. The country has an annual production potential of about 10,000 MT but producing about 3,600 MT.

Commiphora myrrha *Boswellia neglecta*

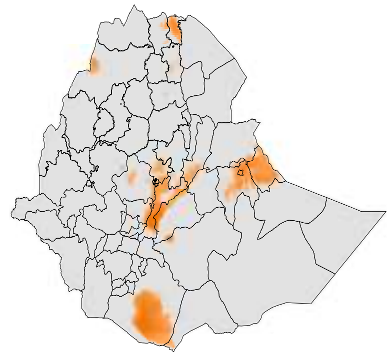
As regards agro-ecological shifts due to climate and land use changes, there were observable differences in trend in the distribution of the resources among countries in the Sahel and around the equator. There were clear shifts in gum arabic production southwards among countries in the Sahel as shown by the isohyets for Niger e.g. during the so-called "wet" period from 1950 to 1967 and the drought period from 1968 to 1985, which highlighted the generalized decrease in rainfall marked by a significant retreat of the isohyet curves towards the south for about 200 kilometres.



Around equator there was shrinkage in the areas producing gum arabic as seen for Ethiopia. Similar observations were confirmed from resource assessment trend analysis studies.



Current areas for gum arabic production in 2020



Potential production in 2050

An analysis of stakeholders revealed that there are two main categories; actors along the value chain and those providing support to the sector. The former are the major players and fall in three categories, namely; collectors, merchants (traders/wholesalers) and exporters/processors. Collectors constitute the first group in the value chain with women being principal players and make more than 75% of the collectors in Kenya and Tanzania and about 46% in Burkina and Niger. Youth form the second group and participate in gum collection while looking after small stock and calves or assisting their mothers in fetching water or fuel wood. Men from poorer financial backgrounds also participate in gum collection while herding with some taking up gum collection as a livelihood strategy. Generally, collectors have the lowest level of education (no formal or primary school), financial status and limited understanding about existing national policies and/or regulations for which programmes need to be prepared considering the status of this group. Most of the gum is collected by hand with no specific tool for harvesting and no specific containers for collecting in the field and storage. There is need to develop suitable tools for harvesting and collection/storage of the gum to improve on the quality of gum collected. Virtually all the gum collected at this stage is in its natural state i.e. without cleaning and/or grading. Meanwhile, gum-resins (Frankincense, Myrrh and Hagar) are only produced in Kenya (and the Horn of Africa, in general) with frankincense (olibanum) collected mostly from wild harvest of Boswellia trees though Myrrh and Hagar (opoponax) are mostly obtained from tapping. Tapping is mostly done by organized groups of young men who establish camps at the beginning of each season. Most of them are hired by gum resin merchants for the exercise.

Merchants constitute the second group in the value chain comprising village traders and wholesalers. The former are based in village trading centers and purchase gums or resins from collectors, which they bulk for sale to wholesalers or exporters. Most of the traders have basic education (primary or secondary school certificates) but low financial base and occasionally rely on receiving advances from wholesalers or exporters. They have some knowledge on national policies and some carry out cleaning, sorting and grading. They therefore employ staff, a majority of whom are women. Wholesalers are based in major trading centers in counties or regions of producer countries and are the ones who carry out most of the cleaning, sorting and grading. In Kenya and Niger gum is normally graded while in Burkina and Tanzania it is sold as cleaned. Exporters and Processors form the last category in the value chain. Most of the gum arabic produced in the producer countries is exported in the raw form. The numbers of exporters operating in the countries are few and some of them operate discreetly. There is no formal processing of gum Arabic in the countries. In Kenya there is only milling of gum Arabic into fine powder supplying the local market, especially the pharmaceutical and confectionary industries in Nairobi. Most of the gum resins are also exported in raw form, especially to China and Far East countries like Malaysia and Taiwan. However, there are companies in Kenya which are processing gum resins into essential oils or formulating into cosmetics, which provides good opportunities for value addition.

Stakeholders supporting the sector fall in three categories; government (National & Regional/County), development partners and Non-Government Organizations (NGOs). Governments support the gums and resins sector by creating an enabling environment through formulation of various policies and laws (Acts as well rules and regulations). Various development partners have been involved in the development of the gums and resins sector in the countries by providing technical and financial support while NGOs are active in supporting the gums and resins sector by building capacities of the local communities in terms of organizational and management aspects and linking them to markets, among others.

Regarding production and trade, the countries are producing far below their production potential. Production in Burkina Faso has remained below 100 MT on average over a five-year period, Kenya below 500MT (local and export quantities combined), about 171 MT for Niger while in Tanzania it is about 767 MT. Data on trade statistics for both the export and local consumption are still poorly documented and will be reported in a separate report. This is partly attributed to lack of proper institutional organization in some countries that makes it impossible to capture the volumes of gum collected and sold. It is also said that there is illegal trade to neighboring countries (transboundary) e.g. from Burkina Faso to Mali and Niger, Niger to Nigeria and Chad and Tanzania to Kenya where purchase prices are more attractive. In Kenya, there is good domestic market and about half of the gum and resins produced is consumed locally. The value chain, though different among countries has relatively clear pattern from collectors to traders or merchants then exporters/processors. It was observed that in all countries the circuit is organized in free competition.

Policies and regulations have a big influence in providing an enabling environment to the development of any sector in a country. However, this is an area which has not been properly addressed for the gums and resins sector in the producer countries compared to other agricultural and related natural resource sectors. An evaluation of the existing policies and regulations revealed that there are neither policies nor laws that explicitly address the gums and resins sector though there exist various policies and laws (including regulations) that indirectly cover forest resources/commodities that are relevant to the gums and resins sector. On institutional aspects, only Kenya has established the Gum Arabic and Resins Association (GARA) to articulate interests of the sector. These aspects should be therefore the focus of subsequent work, if the gums and resins sector is to be enhanced in member countries.

To establish the knowledge and skills among key stakeholders in the gums and resins sector, member countries carried out training needs assessment to determine the skills available and gaps. It was observed that collectors needed training in the field of harvesting and post-harvest handling, formation and/or strengthening user groups or cooperatives, and climate change awareness; traders, merchants and exporters/processors require knowledge of species producing gums & resins, gums and resins including uses, harvesting of gums and resins, formation and/or strengthening user groups or cooperatives, legal and policy issues and climate change awareness; extension agents and policy makers on species producing gums & resins, gums and resins including uses, harvesting and post-harvest handling. Based on these needs a training manual was developed.

It was recommended that programmes be developed in producer countries on restoration of degraded areas with identified gums and/or gum-resin species to ensure long term sustainability and that technical application should be developed for various commercial gums to avoid supplying them as gum arabic to safeguard the international market. Secondly, capacity programmes for various stakeholders' should be developed based on the training manual. Finally, development of appropriate policies, laws and institutions need to be addressed since most are too general to adequately guide the sector. Establishment and/or strengthening commodity based institutions were highly recommended.

Excerpts from a regional synthesis report compiled by B. Chikamai and M. Abdou of NGARA. For the main report refer to the AFF website