



Feinstein
International Center



Gerald J. and Dorothy R.
Friedman School of
Nutrition Science and Policy



TAKING ROOT: The Cash Crop Trade in Darfur





<http://unep.org/Sudan/>

First published in November 2013 by the United Nations Environment Programme
© 2013, United Nations Environment Programme

United Nations Environment Programme
P.O. Box 30552, Nairobi, KENYA
Tel: +254 (0)20 762 1234
Fax: +254 (0)20 762 3927
E-mail: unepub@unep.org
Web: <http://www.unep.org>

This publication may be reproduced in whole or in part and in any form for educational or non-profit purposes without special permission from the copyright holder provided acknowledgement of the source is made. No use of this publication may be made for resale or for any other commercial purpose whatsoever without prior permission in writing from UNEP. The contents of this volume do not necessarily reflect the views of UNEP, or contributory organizations. The designations employed and the presentations do not imply the expressions of any opinion whatsoever on the part of UNEP or contributory organizations concerning the legal status of any country, territory, city or area or its authority, or concerning the delimitation of its frontiers or boundaries.

Report authors: Margie Buchanan-Smith, Abdul Jabar Abdulla Fadul, Abdul Rahman Tahir, Musa Adam Ismail, Nadia Ibrahim Ahmed, Mohamed Ismail Gido Adam, Zakaria Yagoub Kaja, Ali Mussa Abaker Eissa, Mohamed A. Abouna Mohamed, Abdul Hameid Hemma Mohamoud Jumma

Editing: Liz Vincent
Front and Back Cover Photos: Albert Gonzalez Farran/UNAMID.
Report layout: Bridget Snow Design
Maps: UNOCHA, Khartoum

Printed by: New Life Press, Khartoum

UNEP promotes environmentally sound practices globally and in its own activities. This publication is printed on recycled paper using eco-friendly practices. Our distribution policy aims to reduce UNEP's carbon footprint.



TAKING ROOT: The Cash Crop Trade in Darfur



Gerald J. and Dorothy R.
Friedman School of
Nutrition Science and Policy



ACKNOWLEDGEMENTS

The research team would particularly like to thank the traders, farmers, government officials, and other key informants we interviewed, who generously gave their time and answered our many questions. Merry Fitzpatrick and Heather Stobaugh carried out an excellent literature review for this study. Thomas Taylor and Matthew Cape-Lloyd provided valuable support in producing the graphs. Dr Abdul Ghaffar in Nyala provided us with much-needed data. We are grateful to a number of people who took the time to read an earlier draft and who provided very useful comments that have strengthened this final version: Magda Nassef, Brendan Bromwich, and Abuelgasim Adam of UNEP, Yahia Mohamed Awad Elkareem of the FEWS NET team in Sudan, Amar Ali of the Dal Group, Laura James, Dr. Abdelatif Ijaimi, Jack Van Holst Pelekaan, and Mohamed Osman Hussein. A number of people provided invaluable advisory support to the study, including Dr. Ibrahim El Dukheri, Dr. Abdelatif Ijaimi, Abdulrahim Norein, and Yahia Mohamed Awad Elkareem of FEWS NET, Dr. Abbaker Omer, Youssif El Tayeb, Dr. Hamid Omer, and Belihu Negesse. Their help in finalising the conclusions and recommendations is particularly appreciated. We are grateful to Hassan Mahmoud Ahmed and Claudia Hergarten in OCHA for preparing the maps, to Liz Vincent for copy-editing the report, to Bridget Snow for designing the report, and to Albert Gonzalez Farran of UNAMID for providing the photos. Special thanks to Helen Young of Tufts University for all her support in making this study possible, to Youssif El Tayeb and the DRA team for their unfailing guidance and logistical support, and to Magda Nassef and the UNEP Sudan team for their great support to the fieldwork, finalising the report, and the dissemination events.

This study was funded by UKAID under their support to UNEP's Sudan Integrated Environment Programme.

Contents

Executive summary	7
1 Introduction	10
1.1 Why this study	10
1.2 Outline of the study	11
1.3 Scope and methodology	11
2. Overview of the cash crop trade in Sudan	16
2.1 The significance of cash crops to Sudan’s economy: a historical and current perspective	16
2.2 Cash crops in Darfur	19
2.3 A review of the federal policy context affecting cash crops.....	20
3. Groundnuts	23
3.1 Policy context	23
3.2 Production	25
3.3 Groundnut by-products	33
3.4 Trade	34
3.5 Agro-processing	40
4. Sesame	43
4.1 Sesame production in Darfur	43
4.2 Trade in sesame in Darfur.....	44
5. Gum Arabic	46
5.1 Sudan’s place in the international market and rising domestic demand	46
5.2 National production and the policy context.....	47
5.3 The production of gum arabic in Darfur and the impact of the conflict	49
5.4 Trade in gum arabic from Darfur and the impact of the conflict.....	50
5.5 Processing of gum arabic	52
6. Tombac	54
6.1 <i>Tombac</i> production in Darfur.....	54
6.2 Darfur’s <i>tombac</i> trade	55

continued on next page

7. Oranges	57
7.1 Orange production in Darfur	57
7.2 Trade in oranges.....	58
8. Conclusions and recommendations	62
8.1 Conclusions	62
8.2 Recommendations.....	65
Acronyms	68
Glossary	69
References	70
Annex 1. Research team carrying out the study	72
Annex 2. Data on groundnut and sesame production	74

Executive Summary

Purpose and scope

The purpose of the study is to understand the impact of a decade of conflict in Darfur on the trade in some of Darfur's major cash crops. How has the cash crop trade adapted, and to what extent, if at all, has it recovered? What are the major constraints faced? The ultimate objective is to identify how the cash crop trade can be supported to better sustain livelihoods in Darfur, and to support the eventual recovery of Darfur's economy. The study covers groundnuts, Darfur's most important cash crop, as well as sesame, gum arabic, *tombac* (chewing tobacco), and oranges. The main focus is trade and agro-processing, although the study also explores trends in production during the last decade.

A historical overview and policy context

In the 1960s, cotton, gum arabic, and groundnuts were Sudan's major exports. By the 2000s, sesame had become Sudan's most valuable export crop, and groundnut exports were of minimal significance, although national groundnut production is still two to three times higher than national sesame production. Government policy has been a major determinant of the fluctuating fortunes of Sudan's cash crops. Darfur makes a substantial contribution to national cash crop production, producing around one-third of the national groundnut harvest and at least 30% of the gum arabic trade in Sudan. Its share of national sesame production is much lower, probably less than 10%, most of which is used for local consumption within Darfur. The Jebel Marra area is one of Sudan's major production areas for oranges. In North Darfur there is an important *tombac* economy on which many livelihoods depend; North Darfur State is the major production area for *tombac* in Sudan.

During Sudan's oil-rich years, relatively little attention was paid to the agricultural sector, although that has changed with the secession of South Sudan and falling oil revenues. While some aspects of agricultural policy have been revitalized, the long-running tension between investing in the irrigated and semi-mechanised

farming sectors versus the traditional rainfed sector persists. The former two sectors continue to receive greatest attention as primacy is given to macro-economic stabilization objectives over poverty reduction or employment generation.

Groundnuts

Each of Darfur's five states produces groundnuts, especially South and East Darfur. With the outbreak of conflict in 2003, groundnut production fell by 40 to 50% as large numbers of farmers became displaced. Those farmers still *in situ* have mostly reduced the area under cultivation because of insecurity and because of the high costs of production, a particular constraint since the breakdown of the traditional *sheil* system of credit that was crucial to groundnut production pre-conflict. Groundnut production recovered marginally in 2008 and surged in 2012 as farmers responded to the high price of groundnuts and groundnut oil in 2011/12. 2012 was also a very good rainy season. The market was unable to absorb this increase in production and, unusually, groundnut prices fell in the months after the harvest. Many farmers probably made a loss on their groundnut production in 2012/13 as labour shortages had forced up the costs of production; agricultural labourers from South Sudan were no longer present, and many young men had left farming to prospect for gold in North Darfur. Less vulnerable to pests, and to losses from grazing livestock because the nuts are underground, groundnuts appear to be a relatively conflict-resistant crop and can withstand breaks in the rainy season better than cereals. Nevertheless, groundnut productivity shows a downwards trend over at least the last decade, a consequence of the lack of committed research and extension.

The volume of groundnuts in the market in Darfur has similarly slumped during a decade of conflict. Many large-scale traders left the business, either due to bankruptcy early in the conflict or because they moved to more stable parts of Sudan; this latter trend accelerated with the deterioration in security in Nyala in recent months. Meanwhile, the number of small-scale

traders in Darfur's main towns has risen, although for many this is a form of petty trade. Rising taxation within Darfur is a major constraint to the groundnut trade. Taxation levels are substantially higher than other states in Sudan, and revenues are not being reinvested back into the sector. Transport costs have also risen two to four times. Traders therefore need more capital, yet informal credit mechanisms no longer function as trust has broken down during the conflict years. Lack of liquidity is one reason the market was unable to absorb the increase in production in 2012/13. The quality of groundnuts being traded during the conflict years appears to have deteriorated, and there is little investment in quality control. There is very low awareness of the risks of aflatoxin; poor harvesting and storage practices contribute to high aflatoxin levels.

The number of large-scale groundnut oil processing plants in Darfur has fallen substantially. Those still working are usually operating at 50% capacity, not only because of falling production but also because of the unreliable power supply and high levels of taxation. Meanwhile, the number of small-scale mills has increased, partly to meet the growing demand in urban areas and also because of a lack of other business opportunities. The groundnut agro-processing sector has thus shifted from trading outside Darfur to meeting local consumption needs in urban areas.

A new and buoyant market has developed in the last decade in Darfur's main towns for groundnut cake and groundnut leaves for livestock fodder, fuelled by the burgeoning dairy industry. The market value of groundnut shells, now used for poultry feed, in brick-making, and as fuel, has also increased: the price has risen 800% in Nyala in the last decade.

Sesame

Sesame production fell sharply in the early years of the conflict. This is a particularly conflict-sensitive crop, as it must be harvested at exactly the right moment of maturity, but harvesting with such precise timing is not compatible with insecurity and unpredictable access to farmers' fields. Sesame takes longer than groundnuts to mature, so it is more vulnerable to being grazed by livestock. Petty traders, mostly women, are an important part of the market

chain for sesame in Darfur, but there appears to have been little sesame in the market in recent years. The rising international price for sesame has contributed to this being an important export at national level. However, Darfur's markets for sesame are poorly integrated with markets in Central Sudan.

Gum arabic

Sudan used to be the world's leading producer of gum arabic, accounting for 80% of supplies on the world market in the early 1990s. This share had fallen to around 45% by 2012. The long-term decline in gum arabic production in Sudan is strongly related to an unfavourable policy environment; for many years, producers received very low prices. Many acacia trees were cut down as farmers switched to growing cereals and cash crops instead. In 2009, the gum arabic trade was liberalized in Sudan and the Gum Arabic Board established, widely regarded as one of Sudan's more effective commodity boards. Since then, the farm gate price and production have risen. But in Darfur production is badly affected by the conflict. *Acacia seyal* trees are often in remote areas, which have become highly insecure. Production from *Acacia senegal* has been negatively affected by displacement. Since liberalization of the gum arabic market there has, however, been a rise in the number of gum arabic traders in Nyala, although their business is constrained by a lack of credit and by high taxation. There has long been a flourishing informal cross-border trade in gum arabic from Darfur to Chad. This has continued during the conflict years, especially from West Darfur, driven by a clear price incentive: in 2012/13 the price of gum arabic in Chad was 25% higher than in El Geneina.

Tombac

Tombac production fell by an estimated 50% in the early years of the conflict. To some extent, this is a conflict-resistant crop as it can be cultivated in chunks of time when there is greater security rather than on a daily basis, and it is unpalatable to livestock. But it is also a labour-intensive crop to produce; the *sheil* system of credit was therefore important for production pre-conflict. Households still producing *tombac* during the conflict are now doing so on a much smaller scale. In 2013, production slumped as

heavy rains destroyed the water harvesting infrastructure in North Darfur, and for the first time *tombac* suffered a major pest infestation, from the red spider mite. *Tombac* prices were relatively stable until 2007, when stocks ran out and prices doubled. The trade has since been negatively impacted by the trade embargo between Sudan and South Sudan and by conflict in Blue Nile and South Kordofan States, all of which are important markets for North Darfur's *tombac*. Interestingly, the *tombac* trade has not suffered from the same crippling increases in taxation as other cash crops in Darfur. It is an important source of revenue to the North Darfur State government, and there may be concerns that high taxes would encourage traders to move to South Darfur. The Tombac Traders Union also appears to have strong lobbying power. The proposed ban on the sale of *tombac* in parts of Sudan could be a major threat to livelihoods in North Darfur dependent on *tombac*, unless there is a strategy to develop alternative livelihoods and an alternative economy.

Oranges

Somewhat surprisingly, the orange trade out of Jebel Marra appears to be thriving in recent years despite the trade having to cross major lines in the conflict. A number of agreements have been made between otherwise hostile groups in the Jebel Marra area to keep trade flowing and thus to support livelihoods. The quantity of oranges brought to Darfur's main towns appears to have risen, fuelled by increased demand associated with urbanization. The number of orange traders in the towns has also increased, many of whom moved from the Jebel Marra area during the conflict. But there are also some major constraints associated with the conflict, including: (1) the closing of one of Jebel Marra's main markets for oranges, Dirbat; (2) constantly shifting trade routes out of Jebel Marra according to the prevailing conflict dynamics; (3) the longer time it now takes to transport oranges which increases losses; and (4) high taxation. All of these combined contribute to much-increased transport costs, which have in turn undermined the competitiveness of Darfur's oranges in Central Sudan. Although Jebel Marra oranges are generally preferred for their taste and sweetness, they now cost twice as much as oranges from Northern State or those imported from Egypt.

Conclusions

Long-term constraints to cash crop production and trade in Sudan include the lack of investment in agricultural research and extension, and the declining competitiveness of Sudan's exports in international markets because of poor quality. Sudan struggles to meet rising international standards and regulations. Darfur-specific constraints include poor transport and infrastructure, which act as a barrier to market integration with Central Sudan and inhibit the competitiveness of Darfur's cash crops domestically and internationally. There are now many more constraints associated with the conflict, including declining production, the increased costs (and inefficiencies) of trading in the current environment, and the decline in commercial agro-processing. The overall picture in Darfur is of a contracting cash crop economy. The conflict has exacerbated the long-term decline in the groundnut and gum arabic trade in particular. Yet there is a large untapped potential for cash crop production and trade. Greater security and stability are critical for that potential to be realised. A conducive policy environment is also essential, demonstrated by the recent positive experience of a change in policy in the gum arabic sector. The priority should now be revitalizing the groundnut sector. The study makes a number of recommendations to boost cash crop production, trade, and agro-processing, a) at federal level, b) specifically for Darfur, and c) for the individual cash crops covered by this study.

1. Introduction

1.1 Why this study

The greater Darfur region is a major area of production for a number of Sudan's cash crops. See Box 1. A decade of widespread and violent conflict, however, has taken its toll on both cash crop production and trade in Darfur. The purpose of this study is to understand and document that impact over the last decade in order to better understand the impact on the livelihoods of different groups in Darfur and the implications for Darfur's future. The study set out to track how the cash crop trade has adapted to the context of conflict, the major constraints faced, and the extent to which trade has recovered, if it all. The ultimate objective is to use this analysis to identify ways in which the cash crop trade can be supported to better sustain the livelihoods of different groups in Darfur, and to support the growth and eventual recovery of Darfur's economy.

Groundnuts, Darfur's most important cash crop in terms of volume and value, is the central focus of the study, although it also explores production and trade in four other cash crops: gum arabic, oranges, *tombac* (chewing tobacco), and sesame. Darfur produces a number of other cash crops: for example, *kerkadeh* (hibiscus), dried tomatoes, dried okra, onions, potatoes, and watermelon seeds, but it was

beyond the scope of the study to include these, some of which have been researched by other organizations. The United Nations Development Programme (UNDP), for example, has done in-depth work on the value chain for *kerkadeh* and some other cash crops, including groundnuts and oranges.¹ This current study was designed with the aim of adding value to what is already known. Apart from UNDP's work, it is striking how little has been written about cash crops in Darfur in the last couple of decades. A review of literature on the topic revealed how little dedicated research there has been. What is available on the cash crop trade is almost always discussed in the general context of trade and market functions for all agricultural and livestock commodities. Much more appears to have been written about the impact of climate change on agriculture than the impact of a decade of conflict on agriculture and specifically on cash crops, which are a critical component of the rural economy. This study aims to fill this gap. The timing of the study was fortuitous: in the 2012 agricultural season, groundnut production in Darfur reached its highest level since the conflict began a decade ago. This presented an opportunity to explore why this was the case, and also the constraints to trade, which have been thrown into sharp focus during 2013.

Box 1.

The significance of cash crop production in Darfur

Darfur is a major region for groundnut production in Sudan, regularly accounting for around one-third of the national groundnut harvest. Darfur is renowned for its high-quality groundnuts. Darfur was traditionally an important source of supply of gum arabic, as the gum arabic belt that traverses Sudan from east to west passes right through the Darfur region. The Jebel Marra area is one of Sudan's major production areas for oranges, supplying Central Sudan as well as Darfur. Darfur is also the leading source of supply of *tombac* in Sudan, most of which is grown in North Darfur. Sesame is also produced in Darfur. This is an important and high-value export crop for Sudan at the national level, although it is grown on a relatively small scale in Darfur. Not only are these five cash crops important to the overall economy in Sudan, they are also a critical component of the household economy and of livelihoods in different parts of Darfur. Of the five Darfur states, South Darfur State is the most important for cash crop production. Nyala, Darfur's largest town and major commercial centre, has long been the centre for agro-processing of cash crops in Darfur.

¹ See, for example, Shumba, 2010.

studies under the livelihoods theme of the United Nations Environment Programme’s (UNEP) “Sudan Integrated Environment Programme” (SIEP). It is the second in-depth trade study carried out by the Feinstein International Center (FIC) of Tufts University, in collaboration with the national NGO, the Darfur Development and Reconstruction Agency (DRA), and with state government.² The first study, “On the Hoof,” published in September 2012, explored the impact of the conflict in Darfur, as well as other factors, on Darfur’s livestock trade since 2003 (UNEP, 2012). This second study of the cash crop trade is the natural complement, focusing on the agricultural sector. Both these studies are part of a larger programme of work on trade and markets in Darfur that aims to deepen understanding and analysis of how the conflict is impacting on trade, and thus to identify how livelihoods can be supported through market interventions and how market infrastructure can be maintained through the conflict years to speed Darfur’s eventual economic recovery when there is greater peace and stability. Where possible, these initiatives aim to identify peace-building opportunities through trade where it can act as a bridge between different livelihood and ethnic groups that may otherwise be hostile to one another.

These in-depth studies of trade in particular commodities complement a community-based market monitoring network, set up and managed by DRA since 2010, that monitors trade in Darfur’s key livestock and agricultural commodities on an ongoing basis.³ They are an opportunity to investigate in greater detail some of the trends that DRA’s market monitoring and trade analysis (MMTA) project has identified and the reasons behind them. Led by Tufts/FIC, this cash crop study feeds into Tufts’ overall research program on livelihoods in Darfur that began in 2004. Not only is a healthy cash crop economy critical to livelihoods in Darfur, it can also play a key role in the sustainable and equitable management of natural resources; for example,

the environmental contribution of the acacia trees that produce gum arabic—see Section 5.2 below. Sound and sustainable production of all the cash crops covered by this study will contribute to a well-managed natural environment in Darfur. Understanding trade relationships is also essential to understanding and supporting interaction between different livelihood groups in terms of their collaboration over management of natural resources.

1.2 Outline of the study

After describing the scope and methodology of the study, Section 2 of this report provides an overview of the cash crop trade in Sudan, including historical trends, the contribution of cash crop production in Darfur, an overview of the federal policy context, and a summary of the common constraints to the trade in cash crops. The following sections present the research findings for each of the five cash crops covered by the study. Section 3, on groundnuts, is the most in-depth. This is followed by sesame in Section 4, gum arabic in Section 5, *tombac* in Section 6, and oranges in Section 7. Section 8 draws together the overall conclusions of the study and makes policy and programme recommendations for action to strengthen cash crop production and trade in Darfur and at the national level.

1.3 Scope and methodology

Scope

In terms of the scope of this cash crop trade study, as mentioned above, groundnuts—Darfur’s major cash crop in terms of volume and value—were the main focus. They are grown in all five of Darfur’s states. They have also become an important crop for livestock fodder. Four other cash crops were covered, although in slightly less depth than the trade in groundnuts: sesame, gum arabic, *tombac*, and oranges grown in Jebel Marra. Reviewing the trade of five cash crops means that certain patterns can be detected

² Two government secondees joined the study team, from the Ministry of Agriculture in West Darfur and from the Ministry of Agriculture in South Darfur.

³ The MMTA project will eventually cover all five Darfur states. At the time of writing, it is well-established in North and West Darfur and has recently commenced in Central Darfur. It is supported with advisory input from Tufts/FIC. See <http://www.dra-sudan.org> and also <http://sites.tufts.edu/feinstein/2011/market-monitoring-in-darfur>.

that throw light on common constraints to the cash crop trade in general and ways in which the cash crop trade can be supported.

The study mainly explores **trade and agro-processing** of cash crops; for example, how trade patterns and flows have changed during the conflict years and why. To the extent possible, it also explores how the **production** of cash crops has been affected by the conflict, based on available production data and according to interviews with producers and other key informants who could be accessed in Darfur's main towns. This has produced a substantial amount of information that strengthens the analysis, particularly on groundnut production. But the study had neither the resources nor the

access to rural areas to carry out an in-depth investigation of cash crop production. Changes in patterns and levels of activity of agro-processing during the last decade have also been investigated. This complements the work that UNDP has carried out in recent years in conducting value chain analysis (Shumba, 2010).

As well as documenting how the cash crop trade in Darfur has been impacted by conflict, the study has explored the policy context for trading cash crops, at state and at federal levels, and how this has supported and facilitated trade as well as evidence of obstacles and disincentives.

A set of 13 research questions were identified at the outset of the study. See Box 2.

Box 2.

Research questions guiding the study

- (1) Overall, how has the trade in cash crops (collectively and individually for different commodities) been affected by, and how has it responded to, the constantly shifting dynamics of conflict in Darfur since 2003? How has it adapted, and to what extent (if at all) has the cash crop trade recovered?
 - a. Which cash crops have continued to be traded throughout the conflict years, and for which cash crops has the trade more or less collapsed, and why?
 - b. Specifically, how has the volume and value of the cash crop trade in Darfur been affected during the conflict years?
- (2) What are the current patterns of trade in different cash crops, and how does this compare with the pattern of trade pre-conflict? To what extent has the cash crop trade between Darfur and the rest of Sudan been affected, and to what extent has cross-border trade been affected (including trade with South Sudan and the impact of secession)?
- (3) How have trading routes of different cash crops been affected during the conflict years, including:
 - a. What arrangements have had to be made to enable the flow of cash crops within and outside Darfur?
 - b. How have the costs of transportation changed during the conflict years?
 - c. What does this tell us about security and conflict dynamics?
- (4) How have the trading costs of cash crops (including taxes and fees, both formal and informal) changed over the last decade, and why? What has been the impact on the flow of trade?
- (5) How has the organisation of the trade in cash crops been affected during the conflict years, in terms of:
 - a. How have the institutions and actors involved in trading different cash crops changed during the conflict years, and why?

Continued on next page

- b. How has the concentration of market power amongst traders changed during the conflict years? What determines access to the market in order to become a trader, and how has this been impacted by the conflict context?
 - c. What determines who trades with whom?
 - d. What are the gender implications of how the cash crop trade is organised?
- (6) How has the policy context, at both state and federal levels, affected the trade in different cash crops over the last ten to fifteen years? What evidence is there of how the policy context in neighbouring countries may have affected the cross-border trade in cash crops from Darfur?
 - (7) What is the relative significance of the formal versus the informal trade in cash crops in Darfur?
 - (8) To what extent does agro-processing of cash crops take place within Darfur? How has this been impacted during the conflict years, and what is the potential for agro-processing in the future? What can we learn from value chain analysis about current inefficiencies in the cash crop trade and how these could be resolved?
 - (9) How significant is the Darfur conflict in impacting on the cash crop trade compared with other factors (e.g., the policy context) that may have affected the trade in the last decade?
 - (10) What do the findings of the study imply about trends in cash crop production in Darfur and how production has been affected by the conflict and other factors in the last ten years? Specifically, in relation to production:
 - a. What are the gender implications of cash crop production?
 - b. What price do farmers receive for cash crops compared with the final market price?
 - (11) To what extent has a contraction in Darfur's cash crop trade during the conflict years impacted on national exports, and how is the cash crop trade in Darfur affected by export policies?
 - (12) What are the implications of all of the above for the livelihoods of those dependent on the cash crop economy in Darfur, both those currently dependent on the cash crop economy for their livelihoods and those formerly dependent on the cash crop economy?
 - (13) What are the implications of all of the above for economic growth and recovery in Darfur, and the role that cash crop production and trade could play in that recovery?

Methodology

The methodology for such an in-depth trade study in Darfur was pioneered in an earlier trade and market study, "Adaptation and Devastation" (Buchanan-Smith and Fadul, 2008), and further

developed in the livestock trade study, "On the Hoof," in terms of carrying out research in the current context in Darfur where security is an issue, access is constrained, and reliable data are sparse. This cash crop trade study benefited from

these experiences and from the methodology used for the UNEP study (2008) into the timber and woodfuel trade entitled “Destitution, Distortion and Deforestation.” The research team has applied a very similar methodology for this cash crop trade study, although insecurity in South and East Darfur was more acute in 2013, restricting access, and has been a greater constraint to data collection outside Nyala than for the livestock trade study in 2011.

The methodology used was as follows:

1. **A literature review:** The study commenced with a review of the relevant and available literature in English, to make sure it was drawing and building upon previous work and existing knowledge. A review of the relevant Arabic literature in Sudan was also commissioned.
2. **A period of fieldwork to collect primary data in Darfur:** The core research team of seven researchers, all with experience in Darfur and all of whom had existing knowledge and experience of cash crop production and trade in Darfur (see Annex 1), carried out fieldwork in El Fasher, El Geneina, Nyala, and Zalingei, between March and May 2013. Key informant interviews were conducted with cash crop traders and middlemen, with agro-processors, with some cash crop producers who could be accessed in the main towns, and with transporters and truck drivers. Interviews were also carried out with the chairperson or senior members of the Chamber of Commerce, with members of the Farmers Union, and with members of the Traders Unions, with government officials, especially from the Ministry of Agriculture and the Ministry of Finance, with market clerks, and, where possible, with staff from the Agricultural Bank of Sudan. Interviews were also conducted in El Obeid market, which is an important outlet for some cash crops from Darfur. Two secondary markets were identified for a further period of fieldwork, particularly focussed on groundnuts: El Lait in North Darfur, an important market for groundnuts as it is located in a groundnut production area, and Fora Boranga in West Darfur, an important market for cross-border trade with Chad. Local researchers were recruited to carry out this phase of the study, both of whom worked for community-based organisations (CBOs) that participate in DRA’s market monitoring network. Familiar with their local market, they have strong contacts with cash crop traders and producers. Insecurity in South Darfur meant that the original plan to recruit and train local researchers to cover key secondary markets in South Darfur had to be abandoned.
3. **A review of federal government policy and analysis of official statistics on cash crop production and trade** was carried out by a national consultant in order to identify trends and to understand the macro policy environment within which Darfur’s cash crop trade is operating.
4. **Interviews with cash crop traders and key informants in Khartoum and Omdurman:** A two-person team conducted a number of interviews with wholesale traders of cash crops in Khartoum and Omdurman, with businessmen involved in agro-processing, with key informants in government, especially in the Ministry of Agriculture and the Ministry of Commerce, with international agencies supporting the cash crop trade (e.g., the World Bank), with the Gum Arabic Board, with at least one exporter, and with key resource people with a particular knowledge of cash crop production and trade in Darfur. These interviews were completed over a couple of weeks in March/April 2013.
5. **Analysis workshop:** A 2-day analysis workshop was held in Khartoum with the research team after the main part of the fieldwork had been completed.

6. **Advisory group:** An informal advisory group of key resource people from Darfur and from Khartoum was asked to advise on the study, at the beginning in terms of its scope and design, and again at the end, commenting on the findings and especially helping to refine the conclusions and recommendations.

This study relies on both quantitative and qualitative data. Quantitative data cover indicators such as prices, yields, trading costs, and estimates of numbers of traders and of quantities traded in different markets. We have indicated where these are estimates, and therefore the numbers need to be treated with caution, and where there may be inaccuracies in the data. Qualitative data cover issues such as trade routes, trader profiles, and market organisation, and evidence of geographical shifts in market activity. In order to capture the impact of the conflict on trade, interviewees were asked to make comparisons between the cash crop trade in 2013 and in 2002/3, before conflict in Darfur became widespread. These comparisons often rely on recall, as reliable written records are scarce. Triangulation has been used wherever possible. Most of the primary data have been collected during the respective periods of fieldwork, and include price data collected by the DRA MMTA project. Secondary sources include government ministries, the Central Bank of Sudan (CBOS), the World Bank, and international aid agencies, including FEWS NET.

The main constraints faced in carrying out this study were:

- (1) Lack of access to key markets due to insecurity and restrictions on travel (especially for the international team leader of the study) was a major constraint, especially within South Darfur. As far as possible, telephone interviews were carried out with traders in markets that could not be reached, but this is very much “second-best” to interviewing traders face-to-face.
- (2) Lack of reliable data and official statistics has been a major constraint in carrying out trend analysis over the last decade or more. In some cases, historical data have not been kept or are hard to access. In other cases, data exist but are contradictory from different sources, raising questions about their reliability. This is particularly an issue for production data. Especially since 2003, data on cash crop production in Darfur must be treated with some caution because of the Ministry of Agriculture’s limited access to many rural areas. For some indicators, for example, on cross-border trade from Darfur, much of which is informal, there are simply no records. The team has relied upon recall and key informant estimates where data are lacking, triangulating as far as possible. Even where official data exist, the team has triangulated with feedback from key informants to assess its reliability.
- (3) In an insecure environment, traders are suspicious of questions and in-depth interviews and are often reluctant to participate. The team used local networks and trusted personal relationships to overcome this constraint.

2. Overview of the cash crop trade in Sudan

2.1 The significance of cash crops to Sudan's economy: a historical and current perspective

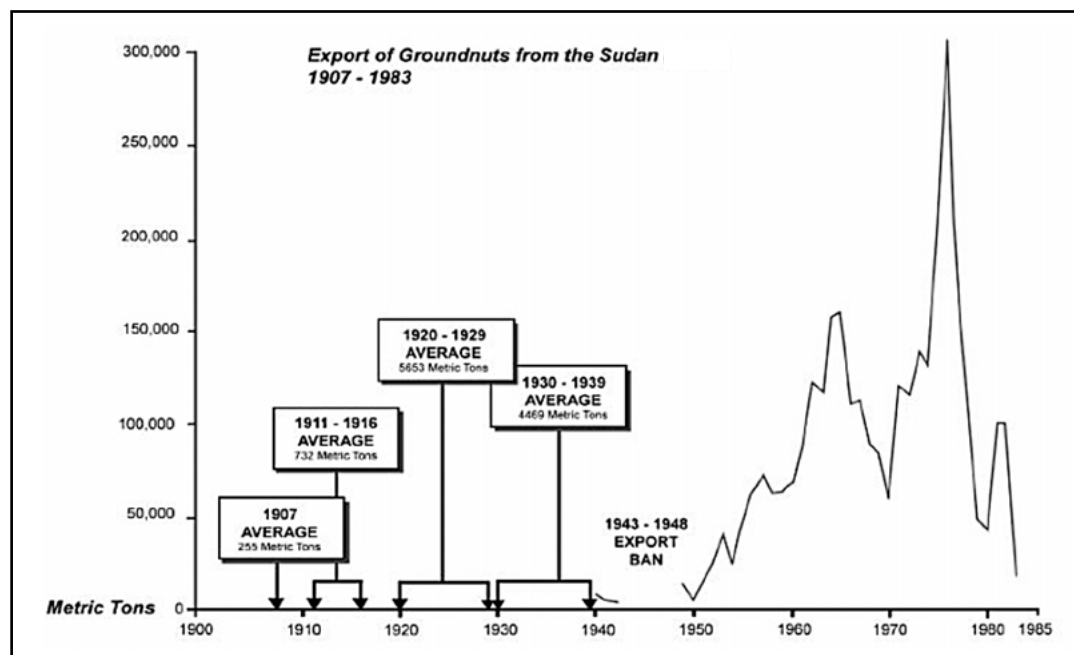
A historical review

A historical review of Sudan's exports of cash crops at the national level shows how the relative significance of different cash crops has changed over time. Back in the 1960s, cotton was Sudan's major export (not produced in Darfur), accounting for more than 50% of Sudan's total exports. The second most important export was gum arabic until it was overtaken by groundnuts, also in the 1960s (Metz, 1991). By the late 1960s, however, groundnut exports and production in Sudan experienced a major slump. Although there was a significant recovery between 1970 and 1976, groundnut exports again declined in the late 1970s. See Figure 1. Sudan's production and export of gum arabic collapsed in the early 1970s.

By the 2000s

By the 2000s the picture had changed again, and sesame had become the most important cash crop export. (In the 1970s, it had been the third-most valuable export (Metz, 1991)). In 2012, the value of sesame exports was three times the value of the next most important agricultural export, gum arabic.⁴ This is mainly due to the big increase in international sesame prices. Meanwhile, cotton exports had fallen a long way behind, to fourth place after sorghum. Groundnut exports were also of minimal significance. See Table 1 and Figure 2. Yet total groundnut production in Sudan is usually two to three times the level of sesame production in terms of metric tonnes (mt), indicating that groundnut production has switched from being export-oriented a few decades ago to now being principally traded domestically for local consumption.⁵ See Figure 3. This graph also

Figure 1. The export of groundnuts from Sudan historically



Source: Morton, 2005

⁴ Excluding livestock. Source: Central Bank of Sudan Foreign Trade Statistical Digest, October to December 2012, http://www.cbos.gov.sd/sites/default/files/digest_q4_2012.pdf.

⁵ As Morton (2005) describes, the highest-quality groundnuts from Darfur used to be exported, and the damaged or lower quality groundnuts were pressed for oil for local consumption.

shows how national groundnut production declined from the late 1990s, although it has more recently recovered in 2011 and 2012. Figure 4 shows the volume of groundnut and sesame exports since the late 1990s. (Note the different

scales for sesame and groundnuts on the chart). This reveals the substantial decline in groundnut exports, especially during the 2000s, while sesame exports have remained high, although they fluctuate considerably year to year.⁶

Table 1. Cash crop exports from Sudan, January to December 2012

Commodity (by order of value)	Value (US '000s)	Quantity
Sesame	223,540	208,916 mt
Gum Arabic	67,102	69,268 mt
Dura (sorghum)	13,970	55,880 mt
Cotton	11,769	7,574 bales
Cake and meal	3,670	18,350 mt
Groundnuts	3,400	5,667 mt

Source: Central Bank of Sudan

Figure 2. Relative significance of Sudan's different cash crop exports

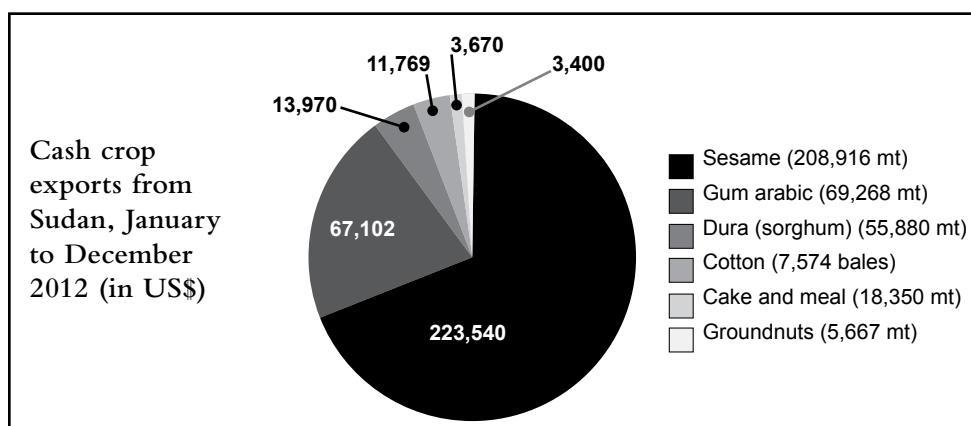
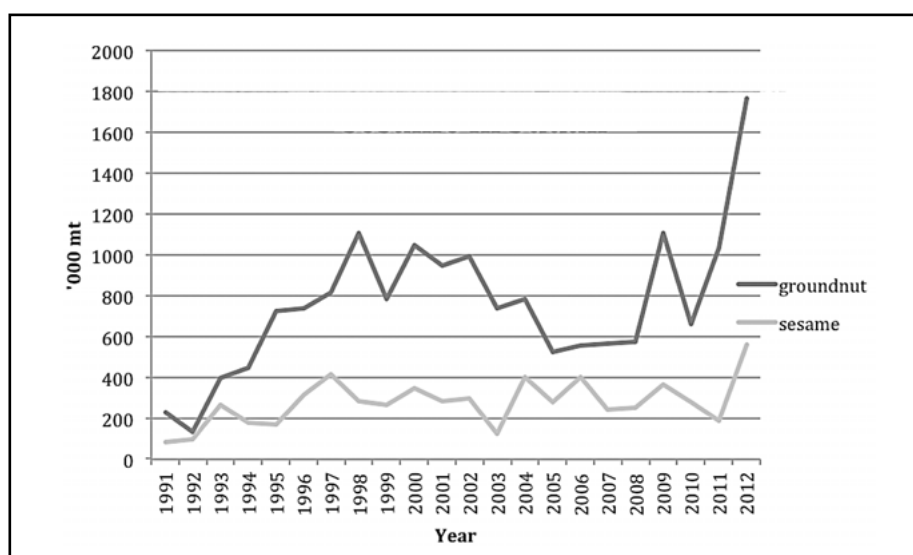


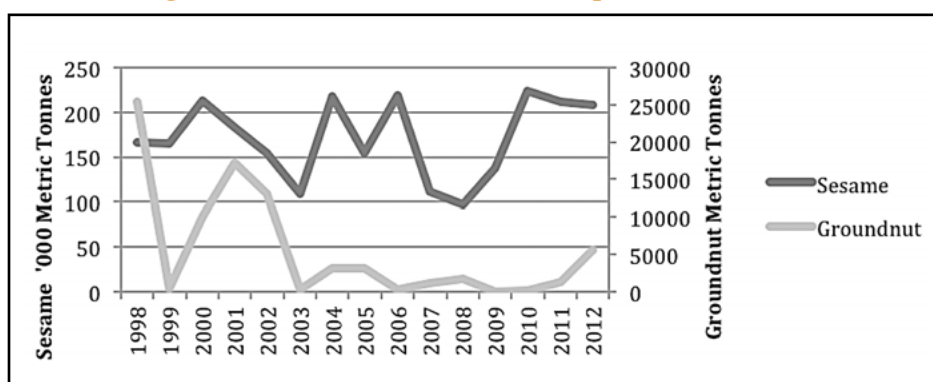
Figure 3. National production of groundnuts and sesame in Sudan



Source: Ministry of Agriculture and Forestry, Khartoum

⁶ In the words of a government official at the federal level, “We are almost out of the international market for groundnuts.”

Figure 4. Groundnut and sesame exports from Sudan



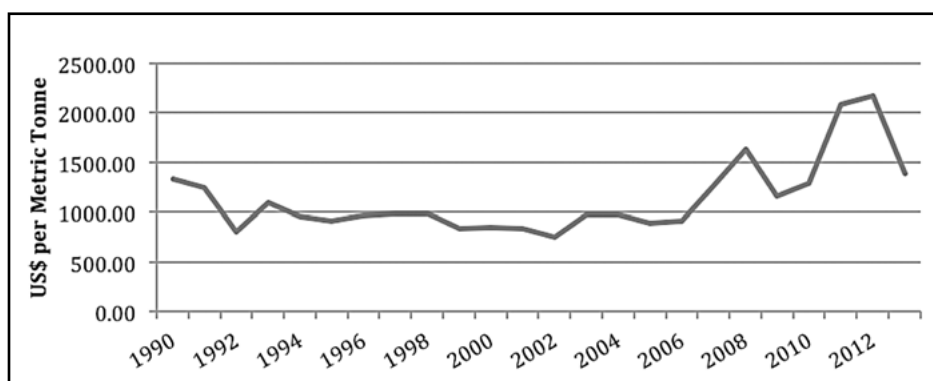
Source: Central Bank of Sudan

Explaining the fluctuating fortune of Sudan's cash crops

The reasons for the fluctuating fortunes of these different cash crops are largely to do with government policy, described in Section 2.3 below. As Figure 5 demonstrates, international groundnut prices have risen since 2006, although Sudan's exports of groundnuts have remained low. As noted by SIFSIA-N (2008), the overall decline in groundnut production since the 1990s has been mainly due to marketing and processing constraints within Sudan. As most of Sudan's agriculture is rainfed, including groundnuts and sesame, production levels vary widely year to year according to the amount of rainfall and its distribution. (Annual variability in rainfed

groundnut production is generally less than the annual variability of yields for rainfed millet, sorghum, and sesame, which was 30 to 40% between 1973 and 2005 (World Bank, 2007⁷). In international markets, this puts Sudan at a disadvantage when competing with countries that have more reliable supplies year to year. Looking to the future, climate change may mean increased variability in rainfall and therefore in production if there are more extreme climatic events. Authors such as Hoffmann (2011) note that agricultural production systems and related trade may experience major shifts over the coming decades as a result of adaptation to climate change.

Figure 5. International price of groundnuts



Source: World Bank

⁷ This is because groundnuts are more tolerant to dry periods during the growing season than cereals and are more pest resistant.

Agriculture in the wider economy

Sudan had been a predominantly agricultural economy until oil was discovered (in 1978) and became a major contributor to the economy. By 2000, the petroleum sector represented almost 7% of GDP (Anon., 2011) and 80% of Sudan's exports (Behnke, 2012). It also generated a substantial service sector. The agriculture sector (livestock, crops, forestry, and fisheries combined) contributed just under half of national GDP in the late 1990s. Indeed, even with the drilling of oil since 2000, the contribution of the agriculture sector to Sudan's GDP has been consistently between 30 and 40%, while oil contributed 15% maximum in 2007/08 (Behnke, 2012). The contribution of oil to Sudan's GDP has since declined with the secession of South Sudan in 2012. Before oil exports peaked in the early 2000s, crop exports had dominated, followed by livestock exports. After 2000, however, crop and livestock exports combined fell to between 5 and 10% of national exports (ibid). See Figure 6.

2.2 Cash crops in Darfur

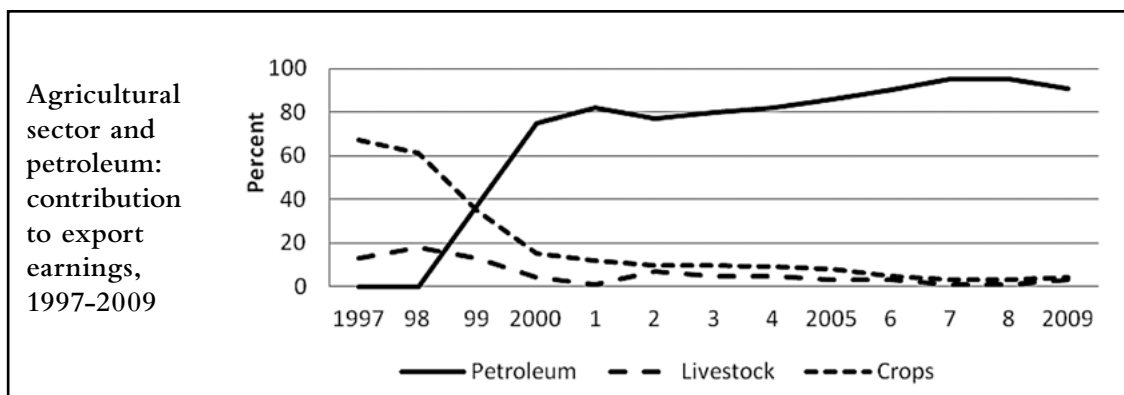
In Darfur, cash crops have long been a major component of the region's economy, at least since the Mahdia period in the late nineteenth century, when Darfur began to transition from being a largely subsistence-oriented economy to becoming a more monetised economy (Morton,

2005).⁸ Gum arabic was Darfur's first major cash crop. In the 1940s, sales of gum arabic matched sales of cattle, Darfur's other major marketed commodity. After the Second World War, groundnuts became Darfur's third-most important commodity (and second-most important cash crop after gum arabic), at a time when demand for groundnuts in Europe was increasing and Indian exports were falling. The extension of the railway to Nyala in 1959 boosted trade out of Darfur, and this in turn boosted production of both gum arabic and groundnuts. In the heyday of trade in both commodities, in the 1970s for gum arabic and in the 1960s for groundnuts, Darfur produced around 20% of Sudan's exports of gum arabic and just over one-third of Sudan's total groundnut production.

By the 2000s, Darfur still made a substantial contribution to national cash crop output, producing around 30% of Sudan's groundnuts and over 30% of gum arabic production (World Bank, 2007). Figures on Darfur's share of national sesame production vary from around 12% (ibid.), to 3 to 5% according to the Ministry of Agriculture. Much of Darfur's sesame harvest is used for local consumption, which means that production may be under-reported.

The other two cash crops reviewed in this study—oranges and *tombac* from Darfur—are mainly produced and consumed domestically within Sudan, and in the case of *tombac*, also in

Figure 6. The relative significance of crops and livestock to Sudan's export earnings



Source: Central Bureau of Statistics, unpublished data, taken from Behnke (2012)

⁸ This historical perspective and data are based on Morton, 2005.

South Sudan. Neither is particularly significant to the national economy but each is highly significant to the local economy and to livelihoods in the areas where they are grown within Darfur. *Tombac* was introduced into Darfur in the 1820s and had become an important cash crop for domestic trade and for some cross-border trade with neighbouring countries by the 1940s (Morton, 2005⁹). Darfur is by far the main area of production of *tombac* in Sudan. South Sudan is a major market for *tombac*, so the secession of South Sudan and the breakdown of political relations between the respective governments of Khartoum and Juba and resulting trade embargo negatively affected Darfur's *tombac* trade. The introduction of citrus into Darfur was more recent. This happened in the twentieth century, but it was not until the 1970s that citrus production, dominated by oranges, took off in the Jebel Marra area, by which time this, too, had become an important cash crop traded in the main towns of Darfur as well as in Khartoum and Omdurman. Oranges from Jebel Marra are the produce of choice, particularly valued for their flavour, although they must now compete with imports into Khartoum from South Africa and Egypt.

Declining productivity of many of Darfur's main cash crops is, however, a major constraint. Available data show that yields of groundnuts and sesame in Darfur are substantially lower than yields in research stations in Western Sudan, and lower than dryland yields elsewhere in the world (World Bank, 2007). The reasons are attributed to poor and declining plant protection services¹⁰ as well as poor extension and research (ibid).¹¹ Reports from the respective state Ministries of Agriculture in Darfur and from farmers indicate that yields may have fallen further during the conflict years. See, for example, Section 3.2 below on groundnuts.

Darfur's cash crop trade has also suffered from lack of transport and road infrastructure, which means that transport costs are high. This has acted as a barrier to market integration between Darfur and the rest of Sudan. There are

no paved roads connecting Darfur with the rest of Sudan (although one is finally under construction to El Fasher at the time of writing, from El Obeid, passing through En Nahud, Umm Keddada, El Kuma to El Fasher). Since the late 1950s, the cash crop trade from South Darfur has benefited from the railway, but even before the conflict erupted in 2003 the cost of transporting commodities by rail had increased five-fold between 1995 and 2003. It is only therefore worth transporting and trading higher value cash crops (El Dukheiri et al., 2004). As documented below, the costs of transportation have rocketed since 2003, exacerbating this fundamental constraint.

2.3 A review of the federal policy context affecting cash crops

A long-running tension in agricultural policy in Sudan has been the trade-off between investing in federally owned irrigation systems and the semi-mechanised farming sector versus investment in the traditional rainfed agricultural sector on which the majority of the population is dependent for their livelihoods, including most of Darfur's population. Since the 1970s, government policy has tended to favour the irrigated and semi-mechanised farming sectors; this policy choice persists today.

In the 1970s national agricultural policy was interventionist, with price controls imposed on many agricultural products. Yet there was inadequate investment in agricultural research, weak service provision for the agricultural sector—for example, there was very little credit accessible to the traditional rainfed agricultural sub-sector—and poor infrastructure in rural areas so that regions such as Darfur remained isolated and under-developed (World Bank, 2007). In the 1980s, agricultural policy and public investment continued to prioritise the irrigated sector, and there were price controls on cotton, gum arabic, and oilseeds (ibid). Whereas economic growth had been just over 10% in the period 1973 to 1977, it fell to just 1.9% between 1978 and 1989 (Anon., 2011).

In the early 1990s, there was a significant

⁹ Morton (2005) describes riots in Darfur against the level of royalties imposed on *tombac* in the 1940s.

¹⁰ Responsibility for controlling "local pests" was delegated to locality level, but locality authorities do not have the resources to take action, and there are no mechanisms for coordinating the response across localities for "local" pests such as grass-hoppers, which actually have a widespread impact beyond any one locality (World Bank, 2007).

¹¹ This is also acknowledged in the recent Darfur Recovery and Reconstruction Strategy (Darfur Regional Authority, 2013).

change in agricultural policy. Under severe economic pressure and with the withdrawal of most multilateral and bilateral donor aid to Sudan, the new government introduced a major stabilization programme, which included policy liberalisation (World Bank, 2007). Most price and market controls were removed, with the aim of incentivising agricultural production; for example, crop marketing monopolies were lifted, except for cotton and gum arabic. Agricultural finance was to be more widely available through commercial banks, and the exchange rate was liberalised to increase the competitiveness of agricultural exports (Hag Elamin and El Mak, 1997). One of the casualties of the severe budget cuts that accompanied this stabilisation programme, however, was agricultural research (and extension). Already poorly funded, investment was further reduced. The budget cuts also held back infrastructure development in remote areas, thus disadvantaging Darfur. In the second half of the 1990s, there was a surge in Sudan's agricultural exports associated both with the exchange rate devaluation and with a series of years of good rainfall. But few farmers in Darfur benefited from this source of growth, except producers of sesame for export (World Bank, 2007).

Still facing formidable obstacles to achieving higher and sustainable economic growth, the government of Sudan agreed on a medium-term reform and adjustment programme with the International Monetary Fund (IMF) in the late 1990s. This introduced further agricultural reforms. One of the most significant was the elimination of agricultural taxes by 2001. Agricultural exports were exempted from tax and a low tax limit was applied to agricultural inputs. In practice, however, this reform has never been fully implemented. At the same time, a contradictory policy was being put in place: the policy of federalisation and decentralisation, which gave state governments and authorities at the locality level the power to raise their own taxes. With limited resource flows from federal government, locally applied taxes became a critical means of raising revenue to pay for the

services for which state and locality authorities were now responsible, including health and education. In a predominantly agricultural economy, this has meant that agricultural commodities, including cash crops, are heavily taxed at the locality and state levels, as documented below. As federal transfers to state level are cut further as the government deficit grows post-secession, the pressure on state governments to raise their own taxes can be expected to intensify.

During the first decade of the 2000s, as petroleum exports became increasingly important to Sudan's economy, accounting for over 95% of exports and providing 50% of government revenue,¹² the agricultural sector was relatively neglected. But as the prospect of falling oil revenues loomed in the period before South Sudan seceded, there have been various attempts to redress this. First, there was the Agricultural Revival Programme (ARP), covering the period 2008 to 2011, which aimed to transform agriculture into a modern sector: for example, achieving national self-sufficiency in wheat production by 2011 and also aiming to boost cotton production and export (Council of Ministers, 2008). Recent reports indicate that the impact of the ARP has been weak so far and that it has not achieved its objectives: Sudan still has a substantial deficit in wheat, for example. The ARP has recently entered a second phase from 2012 to 2016. The government also introduced a Three Year Programme for stabilisation of the economy between 2012 and 2014. This programme is designed to boost non-petroleum exports, including cotton, gum arabic, sesame, groundnuts, and groundnut cake, and to reduce imports. Measures to be taken include investment in export promotion in the Middle East and in countries such as Malaysia, the removal of fees and taxes associated with trade within Sudan,¹³ and improved transportation to reduce costs. The programme also includes measures to be taken to reduce imports, including the import of edible oil (see Section 3.1 below), and to promote the mining and export of gold.

¹² Source: Anon., 2011.

¹³ The commitment to reduce taxes related to trade has not held. In 2012, VAT increased from 15 to 17%, for example, and taxes on business profits in the banking sector increased from 15 to 30%.

Since 2008, government has given renewed emphasis to the provision of agricultural finance. The Agricultural Bank of Sudan increased its credit portfolio for agriculture from SDG 203 million in 2005 to SDG 572 million in 2008, and the Central Bank of Sudan established a Microfinance Unit in 2008. It also encouraged commercial banks to allocate at least 12% of their portfolio to microfinance (SIFSIA-N, 2008). But once again there is little evidence of these initiatives reaching Darfur—see below.

In recent years, some liberalisation policies appear to have been reversed. For example, the government again put restrictions on foreign currency and imposed import taxes. There are now multiple exchange rates, including a subsidised exchange rate for wheat imports and a preferential exchange rate for the export of gold. Recent marketing policies have tended to focus at the end of the market chain: for example, on export promotion. What has been missing has been investment at the beginning of the market chain, in high-quality and high-yielding agricultural production that can compete on the international market: for example, only 0.35% of agricultural GDP is allocated to research and extension compared to around 10% of agricultural GDP allocated to research in other countries.

From this brief review of national agricultural policy over the last few decades, two broad and inter-related trends can be identified: first, the primacy given to macro-economic stabilisation objectives over poverty reduction or employment generation; and second, the tendency to prioritise the irrigated and mechanised rainfed agricultural sectors over the traditional rainfed agricultural sector. As articulated in a World Bank-published document:

Darfur's rural producers have gained little from government policies because these have not addressed systematic constraints faced by the traditional farming sub-sector. (World Bank, 2007, 92)

In short, agricultural growth in crops and sectors that contribute to foreign exchange earnings has been prioritised, and this trend is still evident today. Another feature has been the changing and unstable nature of the policy environment. And there is often a gap between

policies that have been formulated and exist on paper and their effective implementation in practice. In 2008, for example, question marks were raised over the performance of 11 Commodity Export-Organisation Councils formed by the Ministry of Foreign Trade, in terms of a positive impact on exports or domestic prices (SIFSIA-N, 2008).

Recent macro-economic trends that have affected the competitiveness of Sudan's export of cash crops include the appreciation of the exchange rate in the 2000s (although at the time of writing this had fallen in recent months). There has also been a sharp rise in inflation in the last eighteen months: the Consumer Price Index (CPI) reached 48% in March 2013.¹⁴ According to the I-PRSP, "The environment for the private enterprise remains poor, with Sudan lagging behind some of its peers in the World Bank's Doing Business Surveys. In 2010, Sudan was ranked 153 out of 174 countries and in 2011 it fell slightly back to 154" (Anon., 2011, 6). The same document also concludes that "the diversification of exports, including the revival of traditional exports such as cotton, and the development of non-traditional, non-oil exports is imperative for sustained growth and employment creation" (ibid, 8).

Until recently, export licensing has been centralised and carried out by the Ministry of Commerce in Khartoum, but this may change with the decentralisation of export licensing to major commercial hubs such as Port Sudan and Nyala. If accompanied by trade agreements with Sudan's neighbouring countries, this could facilitate and formalise cross-border trade. The informal cross-border trade in cash crops from Darfur is believed to be substantial.

At the state level within Darfur, five-year plans for agriculture and livestock development have been drawn up for the 2012/2016 period. However, these are judged as providing a weak strategic direction, a poorly articulated process of implementation, and lack a transparent monitoring mechanism (DRA, 2013). Although the plans emphasise productivity and profitability, and promotion of the private sector, the recent strategy for Darfur notes that implementation has been slow due to limited resources and poor planning and management of line resources (ibid).

¹⁴ Source: Central Bureau of Statistics.

3. Groundnuts

3.1 Policy context

Although historically groundnuts were an important cash crop and a major export crop for Sudan, the groundnut economy has not been developed or sustained. As De Waal commented in 1989:

Groundnuts are the major cash crop in Darfur, and their history over this period (of the 1980s) is indicative of the sad decline of the cash cropping economy after the promise of the mid-1970s. Declining yields certainly played an important part, but problems with inputs, price instability, ineffective marketing structures, and accelerating transport costs were at least as important. (De Waal, 2005: 106)

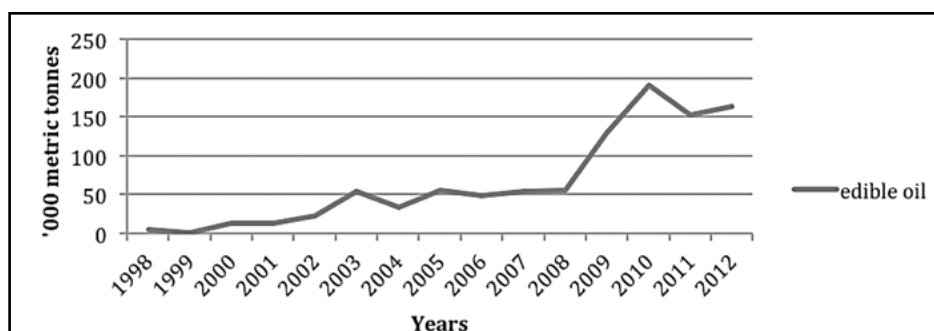
Government policy has done little to combat these negative factors since. As a crop with relatively high production costs (at least compared with cereals; see Section 3.2 below), the failure to provide credit to smallholders in the traditional rainfed sector meant that the inputs required to cultivate groundnuts were unaffordable to many farmers (*ibid.*)¹⁵

More recent government policy aims to achieve national self-sufficiency in edible oils in line with the government's macro-economic objectives of reducing imports and improving

the balance of payments. But there is little evidence so far of the practical implementation of this policy in Darfur in relation to groundnut production. Implementation of the policy is most evident in the semi-mechanised and irrigated farming sectors, for example in Gezira, where sunflower production is being promoted.¹⁶ Although still low compared with groundnut and sesame production, sunflower production has steadily increased since 2004/05.

Despite government's attempts at import substitution, figures for Sudan's import of edible oil show an increasing trend. See Figure 7. Two factors appear to be responsible: first, the appreciating exchange rate during the first decade of the 2000s, which meant that imports became more competitive and could undercut locally-produced oil;¹⁷ and second, growing demand for refined oil from Sudan's rapidly expanding urban population. Much of the imported oil appears to be palm oil from Malaysia, locally called "Olean." According to officials at the Ministry of Commerce, the government is now encouraging foreign investment in the refining of locally produced oil to meet the changing taste of urban consumers. For example, there has been Saudi investment in the Saviola plant, which is processing sunflower seed oil and repackaging refined imported oil.

Figure 7. Import of edible oils into Sudan



Source: Central Bank of Sudan Annual Reports

¹⁵ The Agricultural Bank of Sudan was set up in 1976 in order to provide affordable loans to small farmers—an objective it has failed to achieve (De Waal, 2005).

¹⁶ In the irrigated farming sector, it is possible to produce two harvests of sunflowers per annum.

¹⁷ Analysis by SIFSIA-N of time series price data during the 2000s shows a positive correlation between the price of locally produced groundnut oil in Khartoum and the international price of vegetable oil (SIFSIA-N, 2008).

At state level within Darfur, groundnut production and trade are important sources of revenue to state government, further explored below. Recent experience in South Darfur offers one of the most positive examples of how government policy at state level can support groundnut production. The Ministry of Agriculture provided improved seeds and tractors, and engaged in a pilot groundnut

project with the United Nations Development Programme (UNDP) and with the Dal Group to produce aflatoxin-free groundnuts—see Box 3¹⁸ below. In terms of international assistance, the Food and Agriculture Organization (FAO) of the UN is collaborating with Sudan's Agriculture Research Corporation (ARC) to explore how it could support seed production locally for groundnuts (and also sorghum).

Box 3.

UNDP, the Dal Group, and the Ministry of Agriculture in South Darfur combine forces in a pilot project to promote groundnut production

The Dal Group in Khartoum was struggling to buy the quality and quantity of groundnut cake it needs (around 60,000 mt p.a. of aflatoxin-free groundnut cake) for livestock fodder for the dairy farmers it purchases milk from, in the environs of Khartoum. It therefore entered into a pilot project with UNDP, a local NGO, and the Ministry of Agriculture in South Darfur to support high-quality groundnut production in Katila in Idd El Fursan in South Darfur, an area of relative security. Ministry of Agriculture staff and local farmers were provided with technical training by UNDP to raise awareness about aflatoxin and how to avoid it through harvesting practices and storage. Groundnut seed and jute sacks for storage were provided to the farmers participating in the project. A local NGO was contracted by the Dal Group to purchase groundnuts in Idd El Fursan and to transport them to Nyala. The groundnuts were to be tested in both South Darfur and in Omdurman for quality, and especially for aflatoxin. A number of learnings have emerged from the experience of this pilot project. First, the local NGO was unable to pay all the taxes and fees demanded between Katila and Nyala and compete with traders operating on the same route. This implies that traders may have found ways of avoiding some taxes and are probably operating with very low margins. Second, it was apparent that there is low awareness at field level of the risks of aflatoxin and how to avoid it, with farmers favouring cheap plastic sacks; baseline measurements of aflatoxin carried out at the beginning of the project showed very high levels of aflatoxin. However, within one growing season the assisted farmers were providing groundnuts with low aflatoxin levels, within the internationally accepted threshold. Only 12% of the groundnuts bought from farmers in Idd El Fursan were rejected for unacceptable aflatoxin levels compared with a rejection rate of 42% for groundnuts bought in Nyala market for comparison. This implies that the training in Idd El Fursan made a substantial difference and is a positive indication that it may be possible to achieve results quickly with appropriate investment in awareness-raising and training in harvesting and storage techniques with relatively simple technology. To achieve this reduction of aflatoxin on a national scale would clearly require a committed and sustained campaign of awareness and training. Third, there were high levels of impurity in the shelled groundnuts, raising issues about poor technology and quality control at the local level. The last two points highlight the fact that there is currently no market reward for quality in the groundnut sector, so low standards prevail.

Source: UNDP, Dal Group, and Ministry of Agriculture South Darfur

¹⁸ Aflatoxin is a mould that grows on the nuts if they are poorly harvested or stored and become damp. It is a toxic substance to both humans and animals. Consumption of aflatoxins by humans can lead to liver cancer.



A field of groundnuts in North Darfur, 2013

Federal government has also made available *asalam* loans for some years for groundnut production (see below).

Not only can state government policy influence groundnut production and trade, as described above the locality authorities now also have considerable autonomy and scope to set policy and especially to influence the local trading environment through their taxation policies. However, policy at the locality level often appears to be *ad hoc*, geared to raising revenue without an assessment of the wider impact. Traders interviewed for this study, in particular members of the Chamber of Commerce, lamented this consequence of decentralisation of government. It is no longer sufficient to negotiate with state government ministries about the trading and business environment; the locality authorities now have considerable influence as well.

3.2 Production

An overview of groundnut production in Darfur before the conflict

The main production areas for groundnuts in Darfur are South and East Darfur States, where groundnuts have long been the second-most important crop after millet (Morton, 2005).

There is also significant groundnut production in West Darfur State; for example, in Beida locality and in Kereinik locality, and across the border in Chad¹⁹ as well as in Wadi Salih in Central Darfur. In North Darfur State, the main area for groundnut production is the southeast corner, around El Lait. Groundnuts are grown on sandy *goz* soils. Because of its nitrogen-fixing properties as a leguminous plant, it is a good rotation crop with millet. Groundnuts are also generally more pest resistant than cereals.

Groundnuts are a much more labour-intensive crop to produce than cereals, especially in the preparation of the land and during the planting and weeding periods. In the early 1990s, there was a breakthrough in animal traction when a new donkey plough was developed by the Western Savannah Development Corporation (WSDC). It was widely adopted in South Darfur and allowed substantially bigger areas to be cultivated by individual households. The plentiful supply of agricultural labour from the displaced Dinka from South Sudan also benefited groundnut farmers in South Darfur during the 1990s²⁰ (Buchanan-Smith and Jaspars, 2006). Groundnuts require less spacing and consequently a higher seed rate than cereals, another factor contributing to their higher cost

¹⁹ Many farmers in the border areas of West Darfur have farmland in both Sudan and Chad.

²⁰ Many of the Dinka IDPs were working as sharecroppers on groundnut farms (approximately 65% of households), some were leasing agricultural land (15% of households), and around 20% were working as agricultural labourers (Buchanan-Smith and Jaspars, 2006).



Selling groundnuts in El Fasher market, North Darfur

of production. For these reasons, groundnuts are not grown widely by poorer farming households. For those households that do cultivate groundnuts, the availability of credit is critical to production. The rural credit system that supported groundnut production before the conflict was the *sheil* system, whereby the trader would make an initial loan in cash or seed to the farmer at the beginning of the agricultural season, in return for buying the forthcoming harvest at a price that was a proportion of the previous season's price. There could be further *sheil* loans during the weeding season and just before harvest (De Waal, 2005).

Groundnut production was subject to the "cobweb effect" before the conflict began, whereby farmers would respond to price signals from the previous year, switching to groundnut production when prices had been high, at which point a high level of production would force the price down. The price responsiveness of farmers in Darfur has long been evident. In the mid-1980s when cereal prices rocketed during a series of drought years, groundnut farmers switched to producing cereals instead (De Waal, 2005).

The impact of conflict on groundnut production in Darfur

With the outbreak of widespread conflict in Darfur in 2003, groundnut production plummeted. According to data from the Ministry of Agriculture in Khartoum, production fell by over 40% between 2002 and

2003, and fell further in 2006 and 2007.²¹ Large numbers of farmers had become displaced. According to key informants in Darfur, the typical pattern was groundnut production falling to about 50% of its pre-conflict level, or by even more in West Darfur State. In some areas where displacement has been highest, groundnut production has ceased altogether: for example, in Kubum and Radom in South Darfur. In other locations where cultivation is still possible, farmers have often decreased the area under groundnut cultivation by about 50%: for example, in Katila, Gereida, and Ed Daien, partly because of insecurity and partly because of the high costs of production (see below). See Box 4 for the cameo of a groundnut producer near Nyala, which shows how the area he has cultivated has fallen since 2003. In some states, groundnuts are being produced in new areas according to security and where they have access. In West Darfur, for example, farmers in the border area are now producing groundnuts on the more secure Chadian side of the border and are apparently receiving inputs from the Chadian government. For the first time, groundnuts were being produced in the Jebel Moon area in West Darfur in the last couple of years. In North Darfur in 2012, IDPs started to cultivate groundnuts in rural areas southwest but close to El Fasher town. See Figures 8, 9, 10, and 11, which show the areas where groundnuts were cultivated in 2012 compared with the pre-conflict years in North, West, South, and East

²¹ Data on crop production in Darfur during the conflict years must be treated with some caution. Lack of access to many rural areas because of insecurity has hampered crop assessments. Official government data on groundnut production from federal and state-level Ministries of Agriculture are presented in Annex 2. However, there are contradictions between data from different sources.



Figure 8. North Darfur area of groundnut production pre-conflict and 2012



Figure 9. West Darfur area of groundnut production pre-conflict and 2012

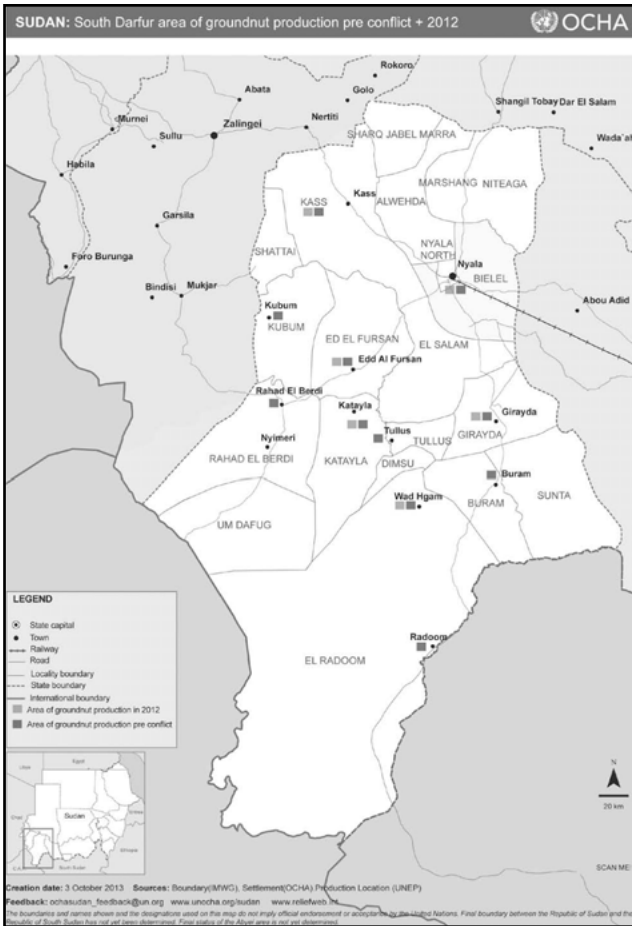


Figure 10. South Darfur area of groundnut production pre-conflict and 2012

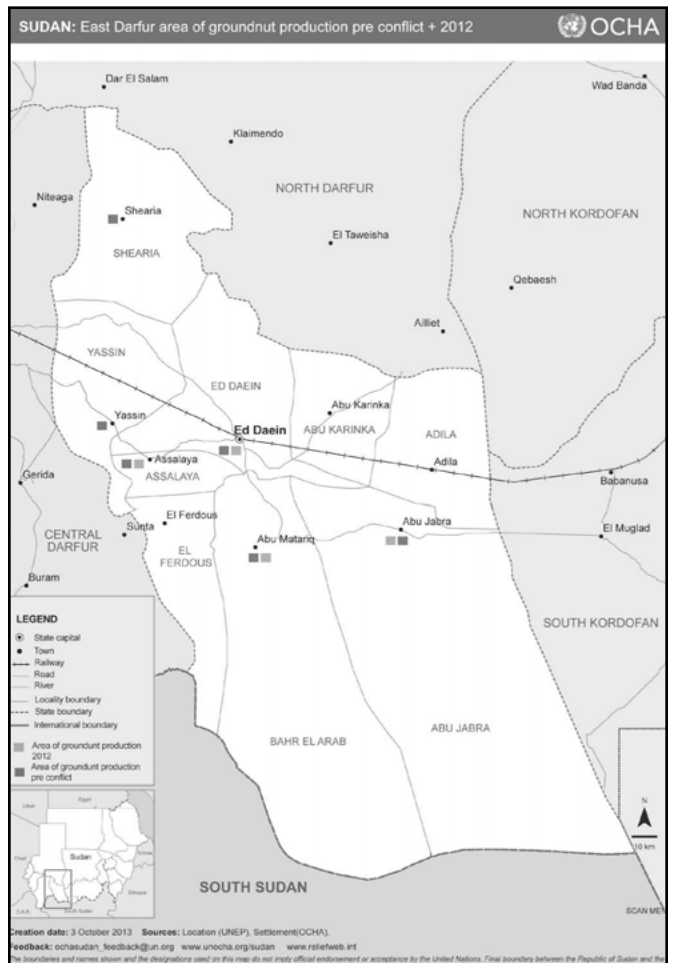


Figure 11. East Darfur area of groundnut production pre-conflict and 2012

Darfur respectively. This also shows how some areas that used to be important for groundnut production in South and East Darfur are no longer producing groundnuts. Table 2 shows how the areas of groundnut cultivation have changed in South, East, North, and West Darfur States.

Since 2008, there appears to have been some recovery of groundnut production. See Figures 2.1, 2.2, and 2.3 in Annex 2 for groundnut production in all of Darfur, and in South and West Darfur respectively. (The discrepancy in data from different sources should be noted. Data from the Ministry of Agriculture in Khartoum indicate much greater recovery than indicated by data from the state-level ministries. This raises questions about the reliability of the data,

although the overall trend of some recovery since 2008 does seem consistent.) Recovery has been stronger in some states than in others. There has probably been least recovery in West Darfur, where large numbers of farmers are displaced without access to rural areas and where the risk of cultivated farms being grazed by pastoralists before the harvest is greatest as the *talaig* (when pastoralists bring their livestock into farmers' fields to graze the crop residues) is starting earlier.²² The pattern of seasonal return by IDPs in other states has become more common in recent years, whereby the IDPs will return to their area of origin temporarily during the rainy season, or will cultivate on rented land near to the town/IDP camp—for example, around Nyala and Zalingei.

Table 2. Areas of groundnut cultivation and how they have been impacted by the conflict

State	Areas of groundnut cultivation before the conflict in 2003	Areas of groundnut cultivation during a decade of conflict (2003–2013)
South Darfur	Katila, Omtakina, Kass, Abuajora, Donkey Deresa, Jogana, Deto, El Goz Elgarbi, Elamood Elakhdar, Gereida, Labado, Kubum, Radom, Rahed El Birdi	Abuajora, Jogana, El Goz Elgarbi, Elamood Elakhdar, Gereida, Katila, Kass
East Darfur	Ed Daien area, Yassin, Adila, Sheriya, Umkherat, Mahajeria	Ed Daien area, Yassin, Adila, Sheriya, Umkherat
West Darfur	Beida locality, Kereinik locality	Border areas—on the Chad side of the border, Jebel Moon
North Darfur	El Lait, Dar El Salaam, Sani Karow	El Lait, Dar El Salaam, Sani Karow, small areas southwest of El Fasher town
Central Darfur	Mukjer, Bendissi, Garsila, Tereig, Orokom	Garsila, Tereig Orokom

Source: Key informant interviews during fieldwork, March/April 2013

²² In some localities in West Darfur—El Geneina, Beida, and Kereinik—local committees of pastoralists and farmers have been formed in order to negotiate greater protection of the farms.

Box 4.

Cameo of a groundnut farmer in Sanya Deleba, South Darfur

The experience of a groundnut farmer from Sanya Deleba, a village about 20 km south of Nyala on the road to Gereida, is presented below. This shows how the area he has cultivated each year has fallen during a decade of conflict, and how the constantly changing conflict dynamics have negatively affected the area under cultivation. It also shows fluctuating production according to rainfall.

Year	Area cultivated (<i>mukhamas</i>)	Total production (sacks)	Price (SDG/sack)
2003	100	3000	15–50
2004	20 (insecurity)	130	40–75
2005	50	1000	50–75
2006	30	40 (drought)	45–60
2009	15 (insecurity)	90	50–75
2010	10 (insecurity)	180	50–75
2011	30	50 (drought)	50–150
2012	20	110	120–95

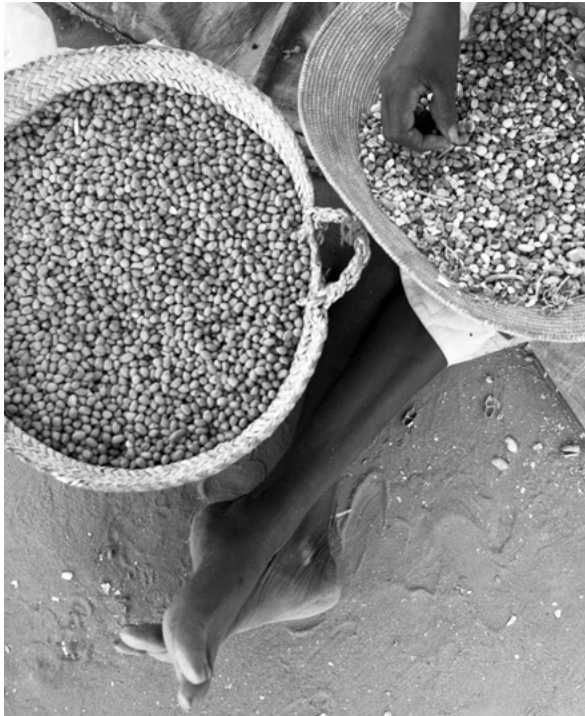
The surge in groundnut production in Darfur in 2012

There was a big surge in groundnut production in Darfur in 2012. According to data from the Ministry of Agriculture in Khartoum (see Figure 2.1 in Annex 2), total groundnut production in Darfur was higher in 2012 than in any other year since 1991, although the extent of this surge in production is not borne out by data from the respective Ministries of Agriculture in South Darfur and West Darfur. (See comments on data reliability above). There appear to be two main reasons for an increase in production in 2012: first, the high price of groundnuts and of groundnut oil in 2011/12, which provided a strong price incentive to farmers in 2012; and second, the 2012 rainy season was particularly favourable to agricultural production. A large number of IDPs based in Nyala were cultivating groundnuts in 2012, some 60–80 km from the town, many of whom had not cultivated groundnuts before the conflict. Key informants estimated that the area of groundnut cultivation

in South Darfur was higher in 2012 than in any other year since the conflict began in 2003, but was still only about 60–65% of the area cultivated before 2003. And yields had also declined compared with pre-conflict levels (casting doubt on the reliability of the data from the federal Ministry of Agriculture for 2012). See Table 3.

Labour shortages were a major constraint to production in 2012. This is partly because the people of South Sudan have now left Darfur since the secession of South Sudan, and it is partly because of the impact of opportunistic gold prospecting in North Darfur, which drew many young men away from agriculture in 2012. High labour costs meant that production costs of groundnuts soared in 2012. Estimates of the cost of production of cultivating 1 *mukhamas* in South Darfur in 2012 range from SDG 950 per *mukhamas* to SDG 1250 per *mukhamas*.²³ As the retail price of a sack of groundnuts fell to SDG 95 in Nyala in April, with an average productivity of 10 sacks per *mukhamas*, at best the

²³ Based on estimates from the Ministry of Agriculture and other key informants.



Manual shelling of groundnuts is often associated with poor quality

farmer would make a very small profit, at worst they would actually make a loss on the 2012/2013 harvest, a common concern voiced by many farmers interviewed for this study. By March 2013, the price of groundnuts in some primary markets of South Darfur was just SDG 60 to 70 per sack.

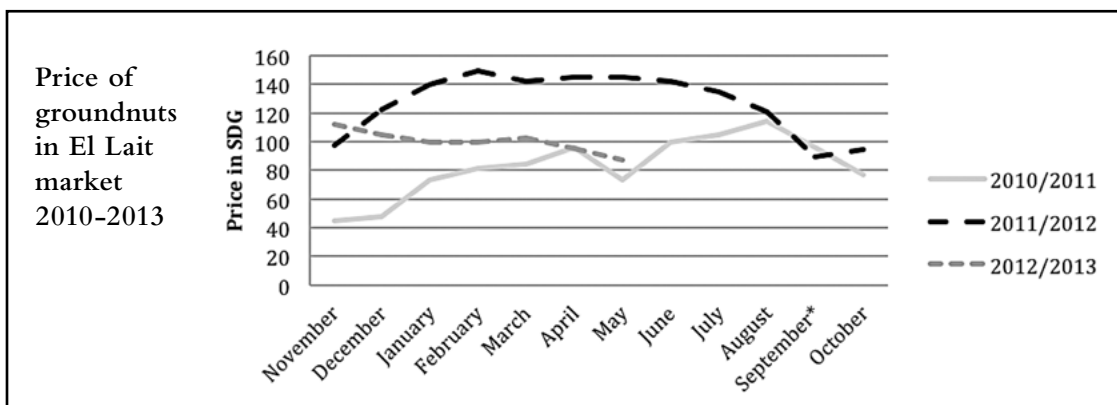
The surge in groundnut production in 2012 has caused a highly unusual price phenomenon. The price has actually fallen in the months since the harvest in November. See Figure 12 for El Lait market in North Darfur, which shows a very different price trend in 2012/13 compared with the previous two years. The reasons why the market has not been able to absorb this surge in production are explained in Section 3.3 below. The likely consequence in the following year, 2013, is that many farmers will switch out of groundnut production.

Table 3. Declining area cultivated per farmer, and productivity of groundnuts in South Darfur: 2012 compared with 2002

Year	Area cultivated with groundnuts (mukhamas) per farmer	Productivity (sacks per mukhamas)
2002/03 (pre-conflict)	10–50	10–25
2012/2013	5–25	10–15

Source: Key informants in the Farmers Union, Nyala

Figure 12. Seasonal trends in groundnut prices in El Lait, North Darfur



* Data missing for September 2013

Source: DRA MMTA project



Many women are now involved in 'petty trading' of groundnuts

Groundnuts as a conflict-resistant crop

Compared with other crops, there are some advantages to growing groundnuts in the current conflict environment in Darfur. First, it is not as vulnerable to pests as cereals, particularly important in the current context in which plant protection services provided by government are minimal. Second, it is not as vulnerable to being destroyed by livestock grazing in a context in which the usual mechanisms for farmers and pastoralists negotiating access by pastoralist herds to farmland have broken down in many areas. Although the groundnut leaves may be eaten, the nut under the soil does not get eaten. This is an important consideration in areas where pastoralists have gathered with their livestock, in many parts of West Darfur and in parts of South Darfur; for example, in areas east and south of Nyala such as Gereida and Donkey Deresa where *abala* (camel) pastoralists have gathered.

Other constraints to groundnut production in Darfur in the conflict years

Other major constraints to groundnut production in the conflict years include, first and foremost, the breakdown of the traditional *sheil* credit system. This is a casualty of the conflict as trust has broken down between different groups,

as the risks of trading have risen, and as the availability of cash has fallen. As described by Khojali and Hansen in 2010: "Not all farmers have the social assets to ensure access to farm land, and the poorest farmers may miss a season's harvest due to a lack of input financing" (59). The provision of *asalam* credits by the banks, the formal counterpart to the *sheil* system (ibid.), stopped in Darfur in 2003, when the conflict broke out, but was subsequently reintroduced in 2011. In South Darfur, for example, the Agriculture Bank of Sudan provided *asalam* loans to groundnut farmers during the 2012 production season according to a pre-agreed price to be paid for a defined quantity at the time of the harvest. Although to some extent this relieved the credit squeeze, in parts of Darfur there were probably few farmers able to access *asalam* loans.²⁴ The falling groundnut prices after the harvest in 2012/13 meant that the bank had to make an exception in South Darfur, following lobbying by the Farmers Union and the state legislature, and honour a price of around SDG 120 per sack at harvest time, higher than the prevailing market price, so that farmers did not make a loss. Second, many farmers interviewed for this study, as well as senior members of the Farmers Union and state Ministry of Agriculture

²⁴ In West Darfur, farmers could access *asalam* loans if they organised themselves into societies of at least 50 members. In 2012, cereals were prioritized for *asalam* loans.

officials, highlighted the limitations of local seed varieties which are low-yielding and have lower oil content than varieties developed by the ARC in the El Obeid agricultural research centre.

Gender and groundnut production in Darfur

Traditionally, female members of farming household are allocated their own small plot of land, and the money earned from that land can be used by the woman at her own discretion. In groundnut-producing areas of South Darfur, it was common, pre-conflict, for the woman to choose to plant groundnuts (Morton, 2005). They would also work on their husband's/family plot. During the conflict years, however, it appears that women are playing an ever more significant role in groundnut production in many parts of Darfur. The increasing role of women in South Darfur, according to members of the Farmers Union in Nyala, is evident in Table 4. One of the major reasons for women taking on a greater share of groundnut cultivation is insecurity: although they may be harassed, they are less likely than men to be attacked and killed by armed militias. The

pattern reported in Nyala was also reported in North Darfur but less so in West Darfur.

3.3 Groundnut by-products

Groundnut cake has long been used for livestock and poultry fodder but has become an increasingly valuable by-product during the conflict years. This is a consequence of the process of urbanisation that has taken place across Darfur as so much of the rural population has moved to the relative security of Darfur's main towns, which in turn has fuelled a burgeoning dairy industry in many of Darfur's towns. The security risks of livestock grazing far from the main towns further fuels this urban market for groundnut cake. Before the conflict, groundnut cake was cheap and some agro-processors would give it away for free. During the conflict, the price of groundnut cake has risen, more than 300% by 2012. See Table 5. Like the price of groundnuts, however, the price of groundnut cake has fallen in 2013 as production has surged.

Table 4. Estimated gender division of labour in groundnut production before the conflict and during the conflict in South Darfur

Agricultural activity	Pre-conflict: before 2003		During the conflict: 2003 to 2013	
	% of women's involvement	% of men's involvement	% of women's involvement	% of men's involvement
Ploughing	20	80	40	60
Planting	90	10	95	5
Weeding	70	30	80	20
Harvesting	80	20	90	10

Source: Key informants in the Farmers Union, Nyala, April 2013

Table 5. Price of groundnut by-products in Nyala, between November and May each year

By-product	2003	2007	2012	2013
Groundnut cake (SDG/sack)	20–30	30–40	95–115	75–100
Groundnut leaves (SDG/sack)	3–5	7–10	20–30	15–25
Groundnut shells (SDG/sack)	1–2	2–3	5–7	8–10

Source: Fieldwork in Nyala, April 2013

Groundnut cake is also transported from Darfur to Khartoum, but this trade has suffered from high transportation costs associated with the conflict and with rising taxation. The cost of transporting groundnut cake from El Geneina to Khartoum, for example, had increased by over 200% in 2013 compared with 2002.

A new market has also emerged since 2005/06 for groundnut leaves for fodder. Before 2003, the groundnut leaves had little or no market value. By 2012/13, they were being collected and sold. In Kass, for example, groundnut leaves had no value in 2003, but one sack of leaves was being sold for SDG 3 by early 2013. In Nyala, a sack of groundnut leaves was SDG 15 by April 2013, while in El Fasher the price was SDG 25 per sack. The latter price reflects the extreme shortage of fodder in North Darfur. Trucks from South Darfur sometimes even transport groundnut leaves to El Fasher.

A market has developed for another groundnut by-product: the shells. These are mixed with concentrate for livestock fodder, are ground for poultry feed, and are used in brick-making and also as fuel by oil millers and in soap factories.²⁵ The price for a sack of groundnut shells in Nyala has risen from SDG 1 in 2003 to SDG 8 by April 2013. See Table 5.

To some extent, the sale of these by-products helps to cover the high production costs of groundnuts, but in many locations in Darfur farmers are still likely to make a loss on groundnuts for the 2012/2013 season. The implications of this are discussed in Section 3.4 below. The greater value of these “crop residues” could also exacerbate tensions between farmers and pastoralists as farmers may no longer be so willing to allow livestock to graze their fields after harvest.

3.4 Trade

The groundnut trade in Darfur, pre-conflict

Pre-conflict, there were many large-scale groundnut traders in Darfur, especially in the main groundnut markets of Nyala, Ed Daien, Gereida, and Buram. The scale of business of

some of these large-scale traders was substantial, regularly handling 15,000 to 20,000 mt of groundnuts per agricultural season. Some were agents of groundnut export companies in Khartoum, evidence of the significance of Darfur to national production and export. The market system was based on large amounts of credit, provided by the export companies to their agents in Darfur, who passed credit onto the middlemen, who in turn provided credit through the *sheil* system (described above) to the groundnut farmers from whom they bought directly, or the middlemen made their purchases in secondary markets like Kass, Sheriya, and WadHajam. Some banks in Nyala also provided credit at this time to large-scale groundnut traders, loans ranging from SDG 25,000 to SDG 50,000 per trader, which could be repaid in instalments. During this period groundnuts were sold by auction—known as the *delala* system—whereby the price was set by free market forces, and traders competed for the quantities they would purchase. The Traders Union and the *borsa* (the taxation point) organised the auction.

In addition to the export companies based in Khartoum, the other main commercial outlet for Darfur’s groundnuts were agro-processors operating in Nyala, producing groundnut oil. This was mainly for the domestic market within Darfur but was also traded cross-border to Chad and Central African Republic. As mentioned above, the railway was key to the expansion of Darfur’s groundnut trade and was the major means of transportation for groundnuts and groundnut cake from Darfur, especially South Darfur, to Central Sudan.

Impact of conflict on the groundnut trade in Darfur

a) Falling volumes

Darfur’s groundnut trade was devastated early in the conflict years. Prices soared in urban markets such as Nyala but fell in markets close to areas of production such as Ed Daien, Gereida, and Buram as trade routes were disrupted (Buchanan-Smith and Jaspars, 2006). Traders were hit hard, especially large-scale

²⁵ The use of groundnut shells for fuel has since been banned in El Fasher, however, because of the amount of smoke they generate, and therefore the pollution they cause. Most of the agro-processing plants that are potential users of this source of energy are in the centre of the town.

traders who had contracts with large companies in Khartoum at prices that pre-dated the conflict. When prices soared in Nyala and it was difficult to reach rural producing areas, some traders could no longer fulfil these contracts and were bankrupted (Buchanan-Smith and Fadul, 2008). Some large-scale traders from Darfur, interviewed for this study, said that they had adequate stores of groundnuts when the conflict broke out to keep their business going until 2007/08, when the stores ran out. Others talked of groundnut production barely meeting domestic demand for oil within Darfur, let alone supplying Central Sudan (ibid.).

What is clear is that the overall trade in groundnuts from Darfur to Khartoum has been badly affected by the conflict. According to one large-scale trader, the number of trucks carrying groundnuts from Darfur to Omdurman has fallen from 100 per day pre-conflict to only 50 trucks per day in 2013. Data from the Nyala *borsa* for the quantity of unshelled groundnuts being traded through Nyala per year confirm this trend. See Figure 13. There was a major slump in trade in 2005, with some small recovery from 2010. In West Darfur, the trade flow has actually reversed. Pre-conflict, groundnuts were mainly transported from Darfur to Chad; now they are mainly brought from Chad into West Darfur, reflecting the extent to which production in West Darfur has fallen and the fact that some farmers are focussing their efforts to farm in more secure areas in neighbouring Chad. This cross-border trade includes groundnuts, groundnut cake, and groundnut oil. Women are heavily involved.

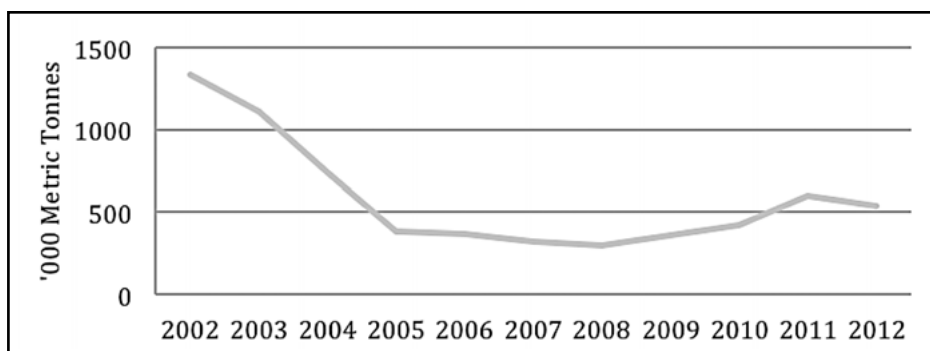
b) Shift in the centre of gravity from Nyala to El Obeid

One of the consequences of the conflict is that the centre of gravity of the groundnut trade in western Sudan has shifted from Nyala to El Obeid in North Kordofan. Although El Obeid is still dependent on groundnut production in Darfur for at least part of its supply, it is regarded as a more secure market location for export companies to have their agents. Groundnut traders in El Obeid, interviewed for this study, indicated that groundnuts from Darfur used to provide more than 50% of El Obeid's groundnut supply before the conflict. This share dropped to about 20% when the Darfur conflict erupted, although there has been some recovery of supplies from Darfur since, especially in 2012/13 when production has peaked.

c) The number of large-scale traders falls, small-scale traders increase

Not surprisingly, the number of groundnut traders in Nyala fell substantially. In 2007, it was estimated that the number of large-scale groundnut traders had fallen from 50 pre-conflict to about 10 (Buchanan-Smith and Fadul, 2008). The biggest exodus was traders who were not originally from the region. Interestingly, a number of smaller-scale traders stepped into this vacuum in the Nyala market. Some of them were previously middlemen in the groundnut trade before the conflict, and some were traders in groundnut production areas who had moved to the town for greater security and to continue their business. However, they are operating on a much smaller scale than the previous big groundnut traders in Nyala. A similar pattern was observed in El Fasher, where the number of

Figure 13. Volume of trade in groundnuts passing through the Nyala *borsa*, 2002 to 2012



Source: Ministry of Finance, South Darfur

small-scale and medium-scale groundnut traders has actually increased during the conflict years, three or four times, for two main reasons: first, the demand for groundnut oil (and therefore groundnuts) has substantially increased due to the burgeoning number of consumers in El Fasher town during the conflict years; second, small-scale livestock traders in El Fasher have switched to trading groundnuts and groundnut oil, which is perceived as being lower risk than livestock trading in the conflict context. In El Geneina, there are also many new traders in the groundnut market who were previously livestock traders from non-Arab ethnic groups, who are now living in camps and have shifted to the less risky trade in groundnuts. These new entrants to the market are more numerous than the groundnut traders who left the business when the conflict began due to bankruptcy, displacement, and insecurity, and are mostly operating on a much smaller scale. It is estimated that three-quarters of groundnut traders who were in business pre-conflict have left the trade. The same phenomenon is reported in Fora Boranga market, where the number of groundnut traders has doubled since 2002, yet the total quantity of groundnuts sold in the market has halved, implying a much smaller turnover for each trader.

d) The impact of deteriorating security in Nyala town

At the time of carrying out the fieldwork for this study in April 2013, the security situation in Nyala town had seriously deteriorated. This caused some of the remaining large-scale groundnut traders, who had held out during the conflict thus far, to leave Nyala and move to Omdurman and Khartoum. At least one had been threatened with kidnapping. Large-scale traders are having to invest ever larger sums of money to protect themselves, their families, their homes, and their stores in Nyala. Some traders reached the point where this was no longer worthwhile. Despite the very good groundnut harvest of 2012/13, this was not enough to attract large-scale merchants back into Nyala. Insecurity and criminality in Nyala have seriously damaged the business environment and the confidence of large-scale traders who have a choice about where to run their businesses. See Box 5. Some smaller-scale traders do not have this choice. The Chamber of Commerce in Nyala reported that it still had large numbers of members registered, but that many have gone out of business. Groundnut stores across South Darfur have been rented out, especially to aid agencies for food aid and other purposes.²⁶

Box 5.

Cameo of a groundnut trader in Nyala, during a decade of conflict

This large-scale groundnut merchant in Nyala purchased 5000 mt of groundnuts in 2001/02, a year of good production when there was relative security. He was an agent for a trader in Khartoum who advanced him credit to finance some of the purchases. The Nyala trader transported approximately 4,000 mt of groundnuts by rail to Port Sudan for export. He used the remaining 1,000 mt for agro-processing locally, producing groundnut oil for local consumption. Groundnut production and trade slumped when the conflict began, especially from 2006 to 2010, by which time most of the groundnuts in store had been used up. Most traders from Khartoum had withdrawn their business from Darfur. In 2007, this trader's annual purchase of groundnuts fell to between 1,000 to 1,500 mt, all used for agro-processing locally as the price of groundnut oil had soared. In 2012, despite the surge in groundnut production and therefore greater availability, this trader still only purchased 1,000 mt of groundnuts for agro-processing. Lack of capital and problems associated with agro-processing, including erratic power supply and lack of spare parts, constrained his ability to expand his agro-processing business. The trader was seriously considering leaving Nyala in April 2013 because of the serious deterioration in security in the town in the preceding months, threatening both his business and his personal safety.

²⁶ See Khojaly and Hansen, 2010, and Buchanan-Smith and Fadul, 2008.

Despite this overall negative trend in the groundnut trade, the research team met one major trading company based in Khartoum that is planning to invest in the groundnut trade in Darfur, seeing the potential and the opportunity to develop some of that potential with modern technology for agro-processing.

e) *The breakdown of trust*

The breakdown of trust during the conflict years has triggered a major change in the way that the groundnut trade is now organised in Darfur. Trade relations are now heavily dependent on personal relations, with relatives and with producers and traders of the same ethnic group. The *delala* auction system no longer functions. Groundnut traders who are still in business in 2013 report trading in much smaller quantities than pre-conflict. A groundnut trader in Kass, for example, used to sell around 22,500 sacks in one season; in 2012 he sold 9,000 sacks, a fall of 60%.

f) *Increasing taxation*

After insecurity, the second-most significant problem that groundnut traders face is taxation. As the economy has contracted, yet state and

locality authorities are increasingly dependent on raising revenue to pay for the services for which they are responsible, local taxes have escalated. In 2007, taxes on groundnuts were reported to have increased two- to four-fold compared with pre-conflict levels (Buchanan-Smith and Fadul, 2008). The picture in 2013 is very similar. See Table 6. Within Darfur, there is no evidence that federal government's policy of no taxation on agricultural commodities is being implemented.

In El Geneina in April 2013, the *borsa* was taxing a truck carrying 250 *guntars* of shelled groundnuts, valued at SDG 32,500, SDG 4,000 to 5,000 per truck. This is around 14% of the total value of the groundnuts in an environment in which agricultural produce is supposed to be exempt from taxes, yet the truck driver will have to pay many more taxes in addition to the El Geneina *borsa* en route to the final destination, including levies paid to locality authorities and informal fees paid to those manning the numerous checkpoints.

Despite the very heavy taxation of groundnuts, no trader interviewed for this study was able to cite how that revenue is being re-invested back into the sector, and this was confirmed by officials from the Ministry of

Table 6. Taxes and fees on the groundnut trade in Nyala: 2003 compared with 2012

Taxation/fee	Level in 2003	Level in 2012
Value-added	10%	17%
Business profit	5%	10%
Locality fees (per sack)	0	7
State fees (per sack)	5	10
Taxes paid (per truck) to the <i>borsa</i>	2,000	5,000
Quality control fees (per sack)	5	15
Licence per year (per trader)	100–150	200–300
<i>Zakat</i>	10%	10%
City beautification (per sack)	0	5
Student support (per truck)	0	50
Check points (per truck) from Gereida to Nyala	15–50	50–1000

Source: Traders Union in Nyala, March/April 2013

Finance in South Darfur. This is causing a great deal of resentment. Such high taxation in such a challenging trading environment is also encouraging tax-evasive behaviour by traders. This ranges from traders choosing routes out of South Darfur that will minimise taxation payments along the way—for example, traders are transporting groundnuts directly from Katila, a major area of production, to Omdurman, avoiding Nyala—to bribery, storing stocks out of sight of tax collectors, and under-counting the number of sacks per truck.

A comparison between taxation levels on groundnuts at state level in Darfur and at state level in Gedaref reveals that traders in Darfur are paying taxes that are around 11 times higher than traders in Gedaref. In Gedaref, there are small marketing fees and *zakat*, but unlike Darfur, no state-imposed taxes.

g) Rising transport costs

The combination of high taxation, especially informal fees paid at checkpoints, and insecurity has caused transportation costs to rocket. The very poor state of the railway and the fact that goods trains have been attacked on a number of occasions means that traders must now depend

principally on road travel. Yet this, too, is vulnerable to disruption because of the conflict. In April 2013, for example, the major trade route between Ed Daein and Nyala was closed for almost a month. Finally, a huge convoy of over 1,000 trucks, some of which had been waiting in Ed Daien to move for four weeks, arrived in Nyala with heavy military escorts. Table 7 shows how transport costs for groundnuts have risen between areas of production in South Darfur and Nyala, at least doubling compared with 2003, sometimes more. A similar pattern was reported in El Fasher. From El Geneina, the long distance to Omdurman and the numerous checkpoints en route act as a major disincentive to the groundnut trade.. In April 2013, for example, there were over 75 checkpoints between El Geneina and El Fasher, with fees ranging from SDG 5 per truck to SDG 250 per truck at each one. In the Kass area, farmers and traders are now bringing groundnuts by animal from areas of production nearby, which is regarded as safer than using trucks, which were the means of transportation before the conflict.

Table 8 shows how transport costs between Nyala and Khartoum have risen and how much higher they are than transport costs between El

Table 7. Transport costs for groundnuts from production areas in South Darfur to Nyala

Secondary market	2003 (SDG/sack)	2012 (SDG/sack)
Gereida area (south of Nyala)	5–10	10–18
Sheriya area (east of Nyala)	3–8	8–15
Kass area (west of Nyala)	1–2	5–7
Wad Hajam (far south from Nyala)	10–15	15–20
Katila (west of Nyala)	3	7

Source: Chamber of Commerce, Nyala

Table 8. Transport costs for groundnuts from Nyala to Khartoum, compared with transport costs from El Obeid to Khartoum

Route	2003 SDG per sack of groundnuts	2003 SDG per jerrycan of groundnut oil	2012 SDG per sack of groundnuts	2012 SDG per jerrycan of groundnut oil
Nyala to Khartoum	10–20	5–10	40–50	10–15
El Obeid to Khartoum	5–10	1–2	15–20	3–5

Source: Chamber of Commerce, Nyala

Obeid and Khartoum, where there is a paved road. This immediately favours El Obeid as a market hub for groundnuts. Not only have transportation costs risen, both within Darfur and between Darfur and Central Sudan, travel takes much longer because of the insecurity and numerous checkpoints, which ties up capital for longer periods of time. The quality of many roads within Darfur is deplorable.

h) Deteriorating quality

Because the transport costs within Darfur are now so high, most producers are shelling the groundnuts at the point of production to reduce the bulk for transportation. This means reverting back to the practice used before the railway reached Nyala, when groundnuts were shelled by farmers by hand. With the construction of the railway, traders established more efficient mechanical decortication plants in Nyala, which are now under-utilised (Morton, 2005). However, the basic decortication processes currently being used in rural areas are affecting the quality of the groundnuts. See also Box 3 above. Traders reported that the nut is more likely to be crushed than if mechanical means are used, and soil is getting into the groundnut sacks, which can damage the oil milling machinery. Generally, the quality of groundnuts being traded during the conflict years appears to have deteriorated, and there is little investment in quality control.

This is a particular issue for aflatoxin. There is very low awareness of the risks and causes of aflatoxin amongst producers and traders alike in Darfur. For example, most producers and traders are using plastic sacks for transporting and storing groundnuts, although these create a damp environment in which aflatoxin flourishes. More expensive jute sacks are the best way to avoid aflatoxin. The project involving the UNDP and Dal Group—see Box 3 above—attempted to address this by training farmers in the Katila area about how to harvest and store their groundnuts, through the South Darfur Ministry of Agriculture. But this would require a large-scale and sustained campaign to really make a difference and eliminate aflatoxin in Darfur's groundnuts. As commented on by a staff member of the Dal Group, one of the problems is that the market currently pays no premium for aflatoxin-free groundnuts in Sudan. There are also

very few testing sites in Sudan. As groundnut traders in Darfur currently operate on very slim margins, there might have to be some investment in the infrastructure needed to support aflatoxin-free production and trade: for example, making jute sacks available for free, or at a subsidised rate.

i) Lack of credit

While trading costs have escalated, most traders have been unable to access credit, especially since the informal credit mechanisms that operated before the conflict are no longer available as trust has broken down. Where banks are still giving credit, loans are rarely for more than a year, which traders claim is too short, especially if they have to start repayment after only nine months. The Nile Bank in El Fasher, for example, has only provided credit for three groundnut traders per year since 2011.

Lack of capital for trading appears to have been a major constraint to traders' ability to absorb the surge in production in 2012/13. One trader in El Geneina described how he used to buy 700 to 1,000 sacks of groundnuts per week before the conflict. Now he buys only 200 sacks per week mainly because of a lack of capital as groundnut prices have risen. With such weak exports of groundnuts, Sudan does not appear to be able to take advantage of relatively high groundnut prices on the international market—see Figure 5 in Section 2.1 above—in a year like 2012/13 when national production has peaked. This may be due to Sudan's loss of international competitiveness in the longer term. Unless these constraints are addressed, the phenomenon of falling prices in the months after the harvest in a year of bumper production, demonstrated in Figure 12 in Section 3.2 above, could be repeated, discouraging production in the following years. Since the demise of the parastatal company, the Sudan Oilseeds Company, in the early 1990s, there have been no mechanisms in Sudan for stabilising groundnut prices in the market: for example, through a strategic reserve, an issue further explored in the recommendations in Section 8.

j) The trade in groundnut oil

Despite the trade embargo with South Sudan, there are reports of a significant informal trade in groundnut oil from South Darfur to

South Sudan in 2013, especially from Nyala through Buram and El Radom areas, although it is impossible to estimate the scale of this. In April 2013, the price of a jerrycan of groundnut oil in South Sudan was reported to be SDG 500 compared with SDG 140 per jerrycan in Nyala. There is also informal cross-border trade in groundnut oil between South Darfur and Central African Republic.

Gender and trade

In South Darfur—in Nyala in particular—the groundnut trade is dominated by men. In contrast, in El Fasher in North Darfur, more than half of the small- and medium-scale groundnut traders are women, a very different pattern to the pattern pre-conflict, when men dominated the groundnut trade. The reasons for this appear to be due to the contraction in the trade in North Darfur, which means that it now resembles petty trading, which women tend to dominate.

3.5 Agro-processing

Most agro-processing of groundnuts involves milling for groundnut oil and producing groundnut cake as a by-product. Before the conflict, Nyala had become a major groundnut oil-processing centre, supplying much of Darfur as well as towns in North, Central, and East Sudan such as Dongola, Medani, Kosti, and Port Sudan. Indeed, groundnut milling was the second-most important industry in Nyala after flour milling (Morton, 2005). According to the 2003 industrial survey, South Darfur ranked second after Khartoum State in terms of the number of manufacturing establishments. Although most of these establishments were of a very small average size, based on post-harvest agro-processing, many were groundnut mills in Nyala (World Bank, 2007).

The conflict, however, has taken its toll. There used to be 22 large-scale groundnut-milling plants in Nyala, processing 1,500 to 2,000 mt of groundnuts per year, when the conflict began in 2003. Now there are just nine functioning plants, and some are only operating at 50% capacity: whereas pre-conflict they used to work for eight to ten months in the year, many are now operating for only two to four months in the year. A similar pattern emerges as

for groundnut traders described above, whereby many of the agro-processors who are not from Darfur have left during the conflict years. Others have shifted to businesses seen to be more profitable such as transportation of relief goods. There are many reasons for the decline in large-scale groundnut processing, including:

- (1) the decline in groundnut production
- (2) unreliable and erratic supply of electricity to operate the machinery
- (3) the high cost of spare parts for imported machinery, especially when the Sudanese currency fell on foreign exchange markets
- (4) the high cost of transportation of groundnut oil from Darfur to other markets
- (5) high levels of taxation (see below)
- (6) limited availability of credit from the commercial banks, with a short pay-back period
- (7) limited availability of skilled labour to operate the machinery as much of Darfur's skilled labour has left during the conflict years.

As large-scale groundnut processing has declined in Nyala, the number of small-scale agro-processors has increased. The capacity of these mills is around 5 mt of groundnuts per day. In the current context, they have a number of advantages over the large-scale mills. First, they do not require electricity but can instead run their machinery on gasoline; second, they require only one or two people to operate; and third, spare parts are relatively low cost. The price of a small-scale groundnut processing machine of this scale is about SDG 20,000, and the groundnut shelling machine costs about SDG 10,000. Groundnut milling on a small scale to meet local consumption needs is therefore a rare economic opportunity in Darfur's crowded towns for those with a small amount of capital to invest, including the displaced who are looking for business interests. In different parts of Darfur, the study team heard about livestock traders, for example, who had chosen to switch to groundnut processing as a less risky business venture.

There has been a proliferation of small-scale oil mills across Darfur during the last decade. In

El Fasher, for example, which used to be supplied from Nyala and had three of its own milling plants before the conflict, two of which are still functioning, there has been a significant increase in the number of small-scale oil milling plants to seven by 2013, in order to meet the demands of a much-inflated urban population. Some agro-processors who were operating on a small scale in rural towns in North Darfur, like Wada'a, have moved their business to El Fasher during the conflict years because of greater security and the market opportunity that rapid urbanisation brings. In El Geneina before the conflict, there were three oil processing plants: one large-scale plant with a capacity of 25 mt per day and two small-scale plants with a capacity of 2 mt per day. Today, the large-scale plant is operating at less than half capacity (see Box 6), and there are around 50 small-scale plants of 1 to 2 mt capacity, but few of them are functioning because of inadequate supply of groundnuts and lack of capital to operate the plants. Zalingei used to get most of its groundnut oil from Nyala and had only two small-scale groundnut mills before the conflict. Now Zalingei has 27 small-scale groundnut mills, most of which are operated by IDPs. This pattern is repeated in other, smaller towns. In Kass, for example, the number of small-scale groundnut processing plants has increased from 7 in 2003 to 25 by 2012.

In short, groundnut processing has become much more localised, using more basic machinery to meet local demand in Darfur's towns during the last ten years. Whereas a significant part of the industry used to trade large volumes of groundnut oil outside Darfur and cross-border, this has really declined during the last decade. The few larger mills that are still functioning, in Nyala, El Fasher, and El Geneina, are all operating at much-reduced capacity. The quality of both oil and groundnut cake is generally poorer when small, traditional oil mills are used. Research has shown that industrially produced oil is more stable during storage and therefore has a longer shelf-life than traditionally produced oil using small-scale mills (El Tom and Yagoub, 2007). Traders interviewed for the study also said that groundnut cake from the small mills is often contaminated: for example, with silica sand.

Another change, directly related to the impact

of the conflict, is the shift in business model for some of the small-scale oil mills, in El Fasher and in El Geneina, for example. The agro-processor used to buy the groundnuts, process them, and then sell the groundnut oil. As groundnut prices have soared and traders have no access to credit in a much riskier environment, they are no longer able to buy the groundnuts themselves. Instead, they offer a milling service to other traders operating on a small-scale, milling their oil for a fee, to be sold in the local market.²⁷

During much of the last decade, the World Food Programme (WFP) has been providing edible oil as part of the food aid ration. The research team heard mixed reports about whether this had negatively impacted the market for locally produced groundnut oil. Some large-scale traders felt it had depressed the price for locally produced oil, while others felt that overall demand for oil from the increasingly urbanised population had offset any negative impact and that the food aid ration had met a huge need amongst the poorest, especially IDPs. Since WFP food aid rations have been cut in recent years, there appears to be less food aid oil sold in the market. As demonstrated in Figure 14, groundnut oil prices increased considerably when food aid oil was cut back, and peaked in 2012. During this period, food vouchers (including edible oil) were introduced in some parts of Darfur, in El Fasher, Seraf Omra, and Kebkabiya, for example. According to a WFP market assessment of the voucher scheme, this triggered a three-fold increase in the volume of groundnut oil sold in El Fasher, and a 100% increase in Seraf Omra and Kebkabiya, thus stimulating local markets. The latter two markets were both supplied with groundnut oil from Nyala as well as some locally milled oil (WFP and North Darfur State Ministry of Agriculture, 2012). The longer-term impact of reduced rations and of the voucher scheme requires further investigation.

Locally produced groundnut oil must also compete with imported refined oil. In Nyala, imported Olean oil sells for about one-third of the price of locally produced groundnut oil.

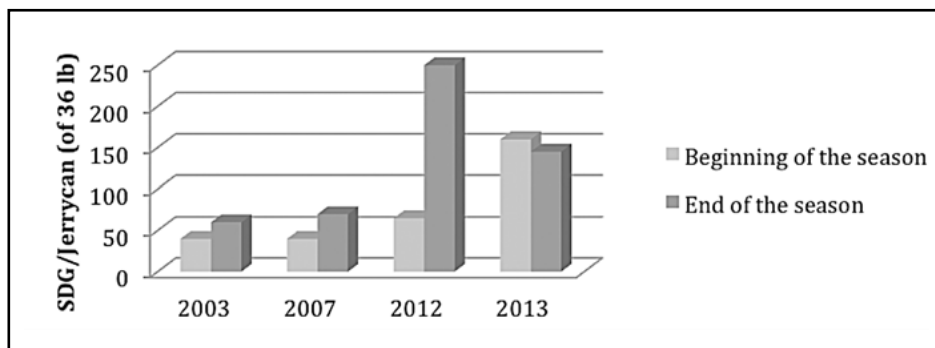
A much-increased taxation burden is seen as a major obstacle by groundnut agro-processors as well as by groundnut traders, which is squeezing their profits. Taxes on the sale of a jerrycan in

²⁷ In 2009, it cost SDG 150 to mill 1mt of groundnuts in El Fasher. By 2013, the fee had more than doubled to SDG 350 per mt.

Nyala have increased almost 40% during the last decade. Transport and taxation costs (excluding the cost of gasoline) for transporting groundnut

cake from El Geneina to Khartoum have increased almost four times over the last decade. See Table 9.

Figure 14. Groundnut oil prices in Nyala



Source: Agro-processors, Nyala

Box 6.

Cameo of an agro-processor in El Geneina

One of El Geneina's longest-established agro-processing plants started business in 1975. It had a processing capacity of 25 mt of groundnuts per day and was operating most of the year. The agro-processing business provided credit to groundnut farmers to encourage their production and would also access credit from the Bank of Khartoum in El Geneina. With the outbreak of conflict in 2003, the plant scaled down substantially, initially processing less than half of its capacity, 10 mt per day. It then scaled down further to processing only 2 mt of groundnuts per day, almost going out of business in the period 2005 to 2007, when insecurity was particularly acute in El Geneina. There are two main reasons for this contraction in the business: first, the fall in supply of groundnut production; and second, competition from many smaller-scale agro-processing plants as IDPs and other struggle to find business opportunities in the current conflict context. This plant used to supply many areas in West Darfur and also export oil to Chad. Now its market is mainly the growing population of El Geneina, including IDPs in the camps around Geneina. The agro-processing business no longer seeks credit from the Bank of Khartoum because of the high interest rates charged and the risk of defaulting.

Table 9. Transportation and taxation costs for transporting groundnut cake by truck (27 mt) from El Geneina to Khartoum

Item	Year		
	2002 (SDG)	2007 (SDG)	2013 (SDG)
Truck rental	3,500	5,000	11,000
Zakat (federal level)	875	1,250	3,125
Manifesto tax (federal level)	150	250	1,600
Quality control (federal level)	0	0	150
Locality fees	0	313	750
Checkpoint fees	0	300	500
Convoy fees	0	0	250
Total	4,525	7,113	17,375

Source: Chamber of Commerce, El Geneina, April 2013

4. Sesame

4.1 Sesame production in Darfur

West Darfur is the main area for sesame production in Darfur. Sesame is mostly grown in the southern part of the state, around Fora Boranga, Um Dukhn, Beida, and Habila, and also in Kereinik and Kulbus localities. In South Darfur, sesame is mostly grown north and east of Nyala in areas such as Mosko, Mershing, Sheriya, and Korengei as well as in the south of the state, in the Radom area. It is grown in East Darfur State, especially north of Ed Daien, but very little is grown in North Darfur, mostly in the Wada'a and Dar Es Salaam areas. Overall, sesame is not a major crop in Darfur in terms of its contribution to livelihoods nor in terms of the quantity traded. It is mostly grown for local consumption. As cooking oil, groundnut oil is much preferred to sesame oil in western Sudan.

As with groundnuts, sesame production fell in the early years of the conflict. Key informants estimate that it fell to about 20% of pre-conflict levels in West Darfur and to about 50% of pre-conflict levels in South Darfur, although the official data from the respective Ministries of

Agriculture indicate less disruption to production. See Figures 2.4 and 2.5 in Annex 2. (Once again this raises questions about the reliability of the official data, especially during the early years of the conflict when access to rural areas by government officials was particularly constrained). Data from the Ministry of Agriculture in Geneina show that there may have been some recovery of sesame production, especially since 2009—see Figure 2.4 in Annex 2. The main reason for the fall in sesame production is conflict-induced displacement. Sesame is also a particularly conflict-sensitive crop. Not only is it more labour-intensive than groundnut production, especially at harvest time, but it must be harvested at exactly the right moment of maturity—usually within a week—or the entire harvest may be lost. To be able to harvest with such precise timing is not compatible with an insecure environment, when farmers' access to fields may be periodically unsafe. In Serba, for example, in West Darfur, farmers lost their entire sesame harvest due to insecurity in 2008 because they could not access their fields at the right time. Sesame takes longer



Sesame produced in Darfur is mostly consumed locally

than groundnuts to mature, so is more vulnerable to being grazed by pastoralist livestock, and is not associated with any by-products—hence farmers’ preference for cultivating groundnuts in the current context in Darfur.

Like groundnut production, as a labour-intensive crop sesame production was traditionally dependent on credit obtained through the *sheil* system. This has more or less collapsed during the conflict years. Other chronic issues which have depressed sesame production in Darfur include low yields of local varieties and pest infestation, exacerbated during the conflict years when the Plant Protection Department of the Ministry of Agriculture has been poorly resourced and has had limited access to rural areas.

Women play a major role in the production of sesame. Key informants interviewed for this study estimated that women have been and still are responsible for 60% of sesame production in Darfur. Often sesame is grown on a piece of land that has been allocated to the woman in the household for her own cultivation, for which she can keep the proceeds from any sales.

Although sesame production and export is being promoted by federal government in Sudan, it is receiving little policy or programming attention in Darfur. The only intervention of which the research team is aware is the provision of certified sesame seed to farmers in South Darfur by the Ministry of Agriculture in the last three years. Improved seeds have been distributed that are higher yielding, have improved oil content, and are earlier maturing than local sesame varieties. Data from the Ministry of Agriculture in Nyala indicate that sesame yields have increased between 2009 and 2012, which may indicate a positive impact from this intervention, although more monitoring is required to be definitive.

4.2 Trade in sesame in Darfur

As so much sesame traded in Darfur is for local consumption, petty traders are an important part of the market chain. Most petty

traders are women who also sell to larger-scale traders. Most of the sesame harvest that is traded beyond Darfur is either channeled through Nyala, from the southern part of West Darfur and from production areas in South Darfur, for example, or through El Geneina market, for example, production from the Beida area.

DRA’s ongoing market monitoring revealed that very little sesame has been available in the market in the last eighteen months, even in West Darfur, the major area of production. The Trade and Market Bulletin for West Darfur for September to November 2012 reported the availability of sesame only in Geneina, Habila, Kirinding (in just one month of the quarter), and Foro Boranga markets.²⁸ The 2008 “Adaptation and Devastation” study on trade in Darfur reported that the flow of trade between El Geneina market and Chad had actually reversed. Whereas Geneina used to export a number of agricultural commodities, including sesame, to Chad, during the conflict years this flow had fallen or ceased, and Chad appeared to have become a net exporter of many commodities (Buchanan-Smith and Fadul, 2008). As sesame production has fallen in West Darfur, it appears to have increased on the Chadian side of the border, where there is greater security and farmers are more likely to get compensation if their crop is affected by grazing livestock.

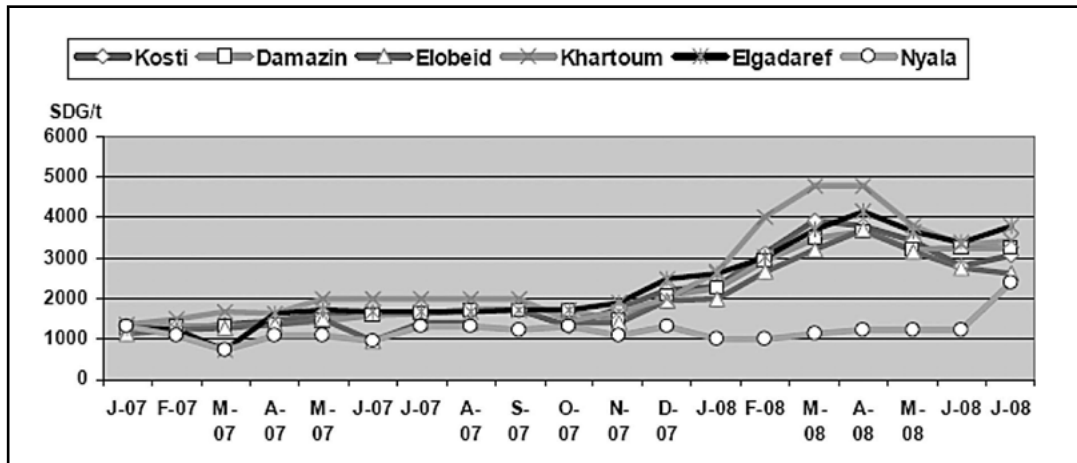
The price of sesame in Darfur has risen substantially during the conflict years. In 2003 it was SDG 40 per *guntar* in Nyala; by 2013 it was SDG 300 to 315. In Kass, the price of sesame was SDG 30 per *guntar* at the beginning of the season in 2003. By 2013 it was SDG 283 per *guntar* at the beginning of the season. There may be a number of contributing factors beyond the rate of inflation: first and foremost is the drop in production. Second, during this period the export price of sesame has risen substantially. Between 2007 and 2008, for example, the international price rose by 94%,²⁹ and the average domestic price of sesame within Sudan increased by 87%. As observed by SIFSIA-N, this indicates a high degree of transmission of the global price of sesame to the domestic market, unsurprisingly as more than half of Sudan’s

²⁸ See <http://sites.tufts.edu/feinstein/files/2013/03/WEST-Darfur-Sept-to-Nov-2012.pdf>.

²⁹ As reported by SIFSIA-N (2008), referring to the international price freight-on-board (FOB) in Lagos, Nigeria.

sesame production is exported. However, SIFSIA-N's analysis also shows how poorly integrated Darfur's markets for sesame have become with major markets in Central Sudan, at least during 2008. See Figure 15, which shows how the price of sesame in Nyala fell way below the price of sesame in Central Sudan for at least an eight-month period from the end of 2007 into 2008.

Figure 15. Monthly wholesale price of sesame in selected markets in Sudan, including Nyala



Source: SIFSIA-N, 2008, based on data from the Planning and Agricultural Economics Administration, Ministry of Agriculture and Forestry, Khartoum

5. Gum Arabic

5.1 Sudan's place in the international market and rising domestic demand

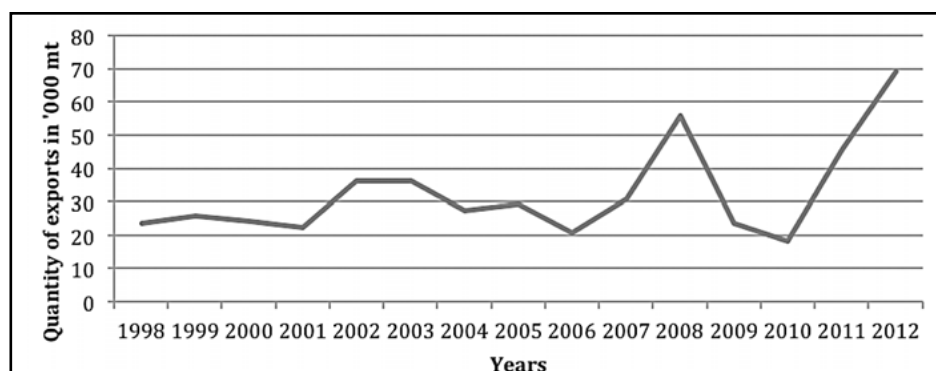
Sudan has long been the world's leading producer of gum arabic, a commodity mainly produced in Africa.³⁰ According to the Sterling International Group (2012), Sudan accounted for just over 50% of Africa's production of gum arabic in 2010, followed by Nigeria with 35% and Chad with 10%. Gum arabic produced in Sudan is of a particularly high quality. Sudan's share of the international export market, however, has fallen considerably over the last couple of decades. Until the early 1990s, Sudan dominated the international market, accounting for 80% of supplies. By 1997, Sudan's share had fallen to around 40%; in 2012 it was about 45% (ibid.) As Sudan's share has fallen, Nigeria's has risen.

The international market for gum arabic has fluctuated widely. World exports of gum were over 60,000 mt in the mid-1960s to early 1970s, but fell to around 30,000 mt in the 1980s to mid-1990s. They subsequently rose to around 50,000 mt by 2000, and have continued to increase, albeit erratically, to peak in 2007 and 2009 at over 100,000 mt (Sterling International Group, 2012). With a wide range of uses, for example, as an emulsifier and stabilizer, the growing demand for gum arabic is principally from the soft drinks industry, the confectionery industry, and for health

and dietetic products (Couteaudier, 2007). As a natural product, gum arabic qualifies for the "no artificial additives" claim and is also a high source of fibre (Sterling International Group, 2012). The importance of gum arabic, especially to the soft drinks industry, is demonstrated by the lobbying of Congress that took place in the United States (US) by the Coca Cola Company and others, to ensure that gum arabic was exempt from the US trade embargo imposed on Sudan³¹ (ICG, 2006). However, the major threats to gum arabic production—including drought and political instability in gum-producing areas, which have caused severe shortages in some years, for example, during the Sahelian droughts of the early 1970s and mid-1980s—have encouraged many processors and end-users to search for substitutes. Although so far unsuccessful, the search for substitutes is a potential threat to international demand for gum arabic in the future (Sterling International Group, 2012). The main importing countries for gum arabic are the US and various countries within the EU, led by France, which is also a significant re-exporter.³² India, South Korea, and China are emerging markets for gum arabic.

Although Sudan's share of the international market in gum arabic has diminished, in absolute terms the quantity of gum arabic Sudan has exported has increased in recent years as production has risen. See Figure 16 and Section 5.2 below.

Figure 16. Gum arabic exports from Sudan



Source: Bank of Sudan Annual Reports

³⁰ Only 4% is produced elsewhere in the world (Sterling International Group, 2012).

³¹ According to the Gum Arabic Board, 50% of Sudan's exports of gum arabic is used by Coca-Cola and Pepsi.

³² According to the Sterling International Group (2012), the US accounted for 30% of the world's trade of gum arabic between 2008 and 2011, and Europe accounted for 20%.

Domestic consumption of gum arabic has also increased considerably in recent years. According to the Gum Arabic Board, domestic consumption was almost 10,000 mt p.a. by 2012 compared with only 500 mt in 2008. This is mainly due to the expanding food industry in Sudan, especially the soft drinks and confectionery industries.

5.2 National production and the policy context

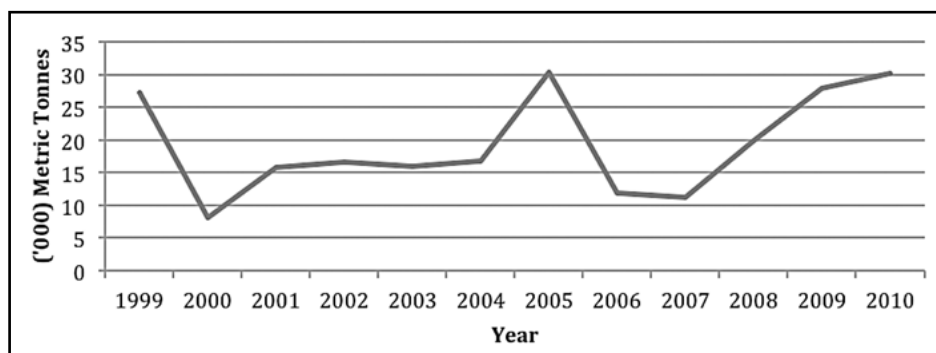
Official data on gum arabic production in Sudan shows fluctuating levels year to year but an overall decline until 2007/08 when production starts to rise. See Figure 17 and Section 5.3 below. As observed by the Sterling International Group (2012), there are many problems with official data on annual gum arabic

production in Sudan, which are mostly based on market records of gum arabic sold officially, including the following:

- (1) often production data cannot be captured for the season in which the gum arabic is collected
- (2) significant amounts of gum arabic are stored, especially recently, as a store of value against inflation, so it may be sold in the year after it was collected
- (3) there is a significant informal trade in gum arabic, especially cross-border smuggling from Darfur, which does not appear in the official statistics.

See Box 7 for a description of gum arabic production in Sudan.

Figure 17. Estimated gum arabic production in Sudan: 1999 to 2010



Source: Samya et al., 2010

Box 7.

A brief description of gum arabic production in Sudan

Gum arabic is tapped from two acacia species—*Acacia senegal*, locally known as *hashab*, and *Acacia seyal*, locally known as *talh*. Gum arabic from the former, *hashab*, is of higher quality and is most likely to be produced from trees grown on farmers' fields. However, as these fields are generally unfenced, the trees tend to be regarded as a public good and are grazed by livestock, which reduces their yield. *Talh* is more likely to grow wild, along the Nile as well as in Darfur, and to be tapped in the wild. Trees of five to seven years old of both species are usually ready to be tapped. Annual tree yields vary but are usually 250 to 500 grams (according to the Gum Arabic Board). The season for tapping gum arabic is January to May/June in Darfur. Farmers in the gum arabic belt of Sudan used to employ a rotational system of 3 to 10 years of gum arabic and cereals and other cash crops whereby the nitrogen-fixing and soil-retaining properties of the acacia trees helped to restore the fertility of the soil.³³ As explained below, this rotational system has broken down.

³³ See Abdalla Mohamed, 2004.

The major factor impacting Sudan's gum arabic sector has been national government policy and in particular the domestic marketing arrangements for gum arabic. In 1969, the Gum Arabic Company (GAC) was set up and granted an exclusive concession to export raw gum from Sudan. This was supposed to ensure that Sudan exercised its market power in international markets, to protect producers with a floor price and thus to guarantee production, as well as to protect the environment. In reality, the impact has been very different (Buchanan-Smith and Fadul, 2008). The floor price set by the GAC was usually between 10 and 30% of the FOB price in Port Sudan, thus offering little or no incentive to farmers to produce gum arabic. Extension support provided by the GAC—intended to ensure a reliable supply of high quality—was also extremely weak (Anon., 2011; World Bank, 2007). The combination of poor management of gum arabic marketing³⁴ and lack of investment in production has taken its toll on Sudan's gum arabic belt. Farmers chose to shift from acacia trees to crop cultivation, especially as agricultural land expanded. Trees are associated with increased damage of cereal crops by birds, including the *quelea* bird, and this has been a reason for farmers to cut down the *hashab*, especially when gum arabic prices were so low. *Hashab* is also a favoured tree for building, for firewood, and for charcoal-making.³⁵ Drought, too, has taken its toll on the gum arabic belt.

Low prices offered by the GAC encouraged cross-border smuggling of gum arabic, especially from Darfur to Chad.³⁶ By 1986, Chad was listed as a major gum-exporting country, although at that time Chad's farmers had no gum-producing acacias (Jamal and Huntsinger, 1993).

Eventually, in 2009, the Government of Sudan liberalised the gum arabic trade. Although it had committed to abolishing the export monopoly of the GAC for some years, the GAC's exclusive concession was not officially cancelled until April 2009. At this point, gum production was supposed to be exempt from tax, as with

other agricultural products (Anon., 2011), although the practice is very different—see Section 5.4 below. Since 2009, there has been a proliferation of companies trading in gum arabic. In 2012, there were around 60 registered exporters of gum arabic from Sudan, although many of them were importers of manufactured and luxury goods, including clothing, who exported gum arabic in order to obtain foreign exchange. Thus, exporting gum arabic was a means to an end, to maintain their principal business, which was not the gum arabic trade. Active exporters of gum arabic for whom this is their principal business number between 20 and 30.

The Gum Arabic Board was set up in 2009, one of 18 commodity boards set up under the ARP. Modelled on other examples of commodity boards, for example, the Coffee Board in Ethiopia and the Wheat Board in Canada, its objectives are to promote the production of gum arabic and to support producers and manufacturers, as well as to monitor the quality of gum arabic and improve its specifications.³⁷ An affiliate of the presidency, it reports directly to the Vice-President of Sudan, which gives it both power and status. It is generally regarded as one of the more effective of Sudan's commodity boards.

Liberalisation of the gum arabic trade had an immediate impact on producer prices in Sudan. In El Obeid, the centre of the gum arabic trade in western Sudan, the price rose from SDG 50 per *guntar* in 2008 to SDG 250 per *guntar* in 2010 and SDG 650 per *guntar* by 2013.³⁸ Production also rose, as demonstrated in Figure 17.

The World Bank has long sought to boost the gum arabic sector in Sudan and was a major advocate of the liberalisation of the gum arabic market to end the GAC's monopoly. The Multi-Donor Trust Fund (MDTF) managed by the World Bank is co-funding work to boost gum arabic production in 11 localities throughout North and South Kordofan, White and Blue Nile, and Sennar States with the International Fund for Agricultural Development (IFAD). At

³⁴ At the time of writing, the GAC was being investigated for corruption and was close to bankruptcy.

³⁵ See, for example, Ayoub, 1998.

³⁶ The Gum Arabic Board estimates that around 15,000 mt of gum arabic are smuggled out of Sudan every year, although these figures are impossible to confirm.

³⁷ See <http://www.gumboard.gov.sd/>.

³⁸ Price data provided by the Gum Arabic Board.

the time of writing, there is a proposal under the MDTF to support gum arabic in South Darfur, although it is not yet implemented.

5.3 The production of gum arabic in Darfur and the impact of the conflict

At least 30% of gum arabic traded in Sudan is produced in Darfur.³⁹ South and East Darfur are particularly important production areas for

talh, from the *Acacia seyal* tree. According to the Forestry National Corporation (FNC) in South Darfur, the two states account for 60% of Sudan's *talh*, mainly from the Buram and Ed Daien areas, and much of it is collected by *baggara* (cattle-herding) pastoralists. The two states account for 16% of Sudan's *hashab*. The latter is mainly produced in Mahajariya, Labado, Ed Daien, Sheariya, Khazanjadeed, Katila, and Kas. See Figures 18 and 19, which show how the areas of



Figure 19. South Darfur area of gum arabic production pre-conflict and 2012



³⁹ According to the Gum Arabic Board.

gum arabic production in Central and South Darfur have changed during the conflict years. In West Darfur, Jebel Moon, Kereinik, and Kulbus localities are important parts of the gum arabic belt for *hashab*. In North Darfur, gum arabic is produced in the southeastern part of the state, in El Lait, and traded in Kordofan or Khartoum. It is also produced in Kelaimendo locality and traded in South Darfur

In some areas, the *hashab* tree is closely linked to land tenure and land rights in the *hakura* system whereby *hashab* trees clearly denote the land rights of individuals, families, or tribes. But this is context-specific, and *hashab* trees are also regarded as a public good. Indeed, this can be a source of conflict as herders allow their livestock to graze the trees in direct competition with farmers who regard the trees as theirs, to be tapped for gum arabic.⁴⁰ Competition between herders and farmers to use the wild *Acacia seyal* can be even more acute (Pantuliano, 2007).

Darfur has been badly affected by the long-term decline in Sudan's gum arabic sector described above. For at least a couple of decades before the conflict began in 2003, many acacia trees were cut down, and there was little investment in regeneration as trees aged. As the farm gate price offered by the GAC for gum arabic was so low, farmers switched to growing cereals and cash crops and felled the acacia trees to reduce infestation by *quelea* birds (UNEP, 2007).

During the last decade of conflict in Darfur, the production of *talh* has been particularly badly affected. The remote areas where plentiful supplies of *talh* can be found have become highly insecure as well as being inhospitable because of limited water availability. According to the FNC in Nyala, there has been some recovery in *talh* production in South and East Darfur in the last three years, but this may decline once again due to the impact of the current insecurity in South and East Darfur. *Hashab* requires ongoing management for maximum productivity, so production of this type of gum arabic has also been badly affected by the conflict. North and east of Nyala, for example, where there have been high levels of displacement of the rural

population, production of gum arabic has stopped completely in locations like Muhajariya and Labado. Key informants in Kass say that production of gum arabic in the area has fallen from 10 to 15 *guntars* per month in 2003 to just 5 *guntars* per month in 2013. *Hashab* is still being collected in Jebel Moon, Kulbus, and Kereinik since the conflict began, but on a much-reduced scale because of displacement from the area.

Tapping gum arabic has usually been men's work in many parts of Darfur, and they are particularly at risk of being killed if they venture into insecure rural areas. This partly explains the fall in gum arabic production during the conflict years. In West Darfur, however, women appear to have been the main tappers of gum arabic. The trees are also vulnerable to damage by locusts, and plant protection services in Darfur have more or less collapsed during the last ten years. The burgeoning urban population in Darfur has fuelled a construction boom, which has provided a short-term incentive to cut down acacia trees (especially *Acacia senegal*) for building poles and for charcoal production (UNEP, 2008).

Most international efforts to support the gum arabic sector in Sudan have so far failed to reach Darfur, deterred by ongoing conflict and insecurity. World Vision appears to have been one of the few international agencies investing in gum arabic recently in South Darfur, in farmer-managed natural regeneration, in Idd El Fursan and Rahed El Birdi. In West Darfur, WFP and Concern have supported the production and planting of seedlings.

5.4 Trade in gum arabic from Darfur and the impact of the conflict

The GAC withdrew from parts of Darfur early in the conflict; for example, it suspended operations in North Darfur and closed its El Fashir branch (Buchanan-Smith and Fadul, 2008). Some large-scale gum arabic traders left Nyala, some as recently as 2013, as security deteriorated. The collapse of the gum arabic market in Darfur was apparent in 2007 when the price per *guntar* had fallen to less than a quarter of its pre-conflict level (ibid). Since market

⁴⁰ This competition over acacia trees has encouraged some farmers to fence the areas around the trees to prevent livestock grazing them, causing tensions to escalate between the two livelihood groups (Saeed, 2009).

liberalisation in 2009, however, a number of companies are reported to have returned to Darfur. By early 2013, eight gum arabic companies had a presence in Nyala through their agents. At the same time, the number of gum arabic traders and agents in Kass had fallen, from ten traders and five agents in 2003 to seven traders and two agents by 2013. This implies that some traders may have chosen to relocate their businesses from rural towns to Darfur's state capitals. One major exporting company interviewed in Khartoum reported that it bought *hashab* from El Fasher and Nyala and *talh* from Ed Daien and Buram.

Box 8 illustrates how the gum arabic trade in one of South Darfur's major markets has contracted during the conflict years.

The market chain for gum arabic during the conflict years appears to be from farmers to secondary markets in rural areas such as Idd El Fursan or to state capitals like Nyala; from there it is transported by truck to Central Sudan. Many trucks that bring food aid and other manufactured goods to Darfur return to Central Sudan half-empty. Thus, transport costs from Darfur to Central Sudan have become cheaper

than transport costs from Khartoum to Darfur's state capitals during the conflict years. This phenomenon applies to all cash crops transported out of Darfur, but is particularly beneficial to gum arabic, which is mostly transported in the dry season. The main trade routes from Darfur to Central Sudan do not appear to have changed during the conflict. They include:

- From Rahed El Birdi and Idd El Fursan to Nyala and then by truck and/or train to Khartoum
- From Buram through Gereida to Nyala, or direct from Buram to Khartoum.

Despite government policy that gum arabic should be exempt from taxation, in reality taxes have increased substantially during the conflict years. See Table 10. Whereas most taxes used to be paid by the GAC, now all taxes must be paid by individual traders. Yet traders reported that they received no government services in return.

Lack of credit was also identified by traders as a major constraint and one of the negative consequences of the demise of the GAC, which used to provide them with credit. Unusually, the price of gum arabic in Nyala had fallen during

Box 8.

Case study of a gum arabic trader in Khazanjadeed

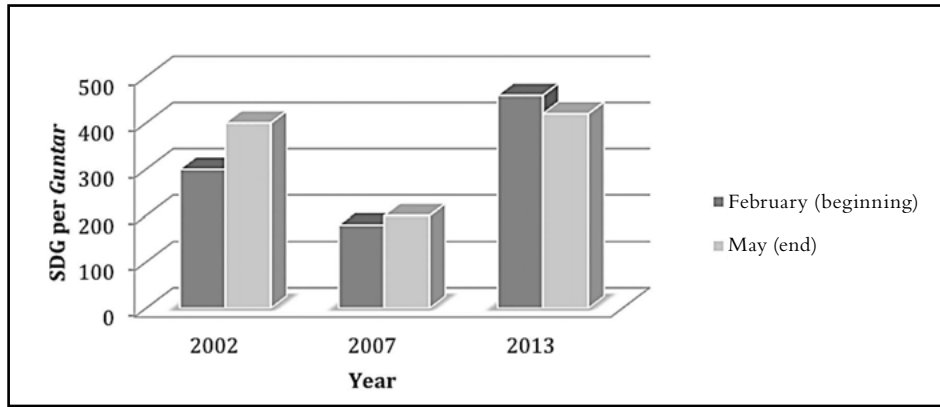
Khazanjadeed is one of South Darfur's pre-eminent markets for gum arabic. Before the Darfur conflict began, the trader travelled from Nyala to Khazanjadeed for the market days each Sunday and Wednesday to buy gum arabic (*hashab*). During the season, around 400 *guntar* of gum arabic (*hashab*) was brought to Khazanjadeed each market day from a wide range of locations in South and (what is now) East Darfur. The gum arabic fetched a price of SDG 350 to 400 per *guntar*. In 2013, only 80 to 100 *guntar* were brought to Khazanjadeed each market day from just four locations in South Darfur. The price had fallen to SDG 250 to 300 per *guntar*.

Table 10. Taxes on the gum arabic trade in Nyala

Fees/taxes and licences	2002	2013	Percentage increase
Trader licence p.a.	SDG 55	SDG 97	76%
<i>Zakat</i>	SDG 10 to 20/ <i>guntar</i>	SDG 10 to 20/ <i>guntar</i>	0
FNC taxation	SDG 7/ <i>guntar</i>	SDG 7/ <i>guntar</i>	0
State services	0	SDG 4–5/ <i>guntar</i>	400 to 500%
Taxation on business profit	0	SDG 2–3/ <i>guntar</i>	200 to 300%
State stamp	0	SDG 4–5/ <i>guntar</i>	400 to 500%

Source: Trader interviews in Nyala, April 2013

Figure 20. The trend in gum arabic prices during the season, Nyala



Source: Gum arabic traders in Nyala, April 2013

Box 9.

The cross-border trade in gum arabic from Jebel Moon to Chad

Twelve gum arabic traders have continued their business in Jebel Moon locality during the conflict years, collecting their supplies at the household level. Ten out of the twelve trade in Berak market across the border in Chad, where gum arabic fetched a price of around SDG 500 per *guntar* in the 2012/13 season compared with SDG 350 to 400 per *guntar* in El Geneina. There are two market days in Berak, and the amount of gum arabic brought to the market on each of these days is estimated to be around 170 to 200 *guntars*.

the season in 2013 in contrast to normal seasonal trends. See Figure 20. Traders partially attributed this fall to lack of credit and therefore lack of liquidity as well as to deteriorating security.

The Gum Arabic Board commented on traders' practice of using plastic sacks to store and transport gum arabic. Moisture trapped in the sacks causes the pieces of gum to stick together and to pick up the flavour of whatever commodity was previously stored in the sack, like onions. As with groundnuts, the use of jute sacks would be preferable although more costly.

As the conflict in Darfur has introduced additional constraints to trading gum arabic with Central Sudan, there appears to have been a rise in informal cross-border trading, especially from Darfur to Chad but also to Central African Republic, sometimes involving the military. Box 9 demonstrates how the informal cross-border trade is a much more attractive proposition than the domestic market for traders from the Jebel Moon area in West Darfur. The cross-border trade in gum arabic requires further investigation.

The Government of Sudan is currently exploring how this informal trade/smuggling can be regularised; for example, through a free market trade agreement with Chad.

5.5 Processing of gum arabic

There is currently very little processing of gum arabic in Sudan, and most of Sudan's exports are in the form of raw gum. Some exporters have the necessary machinery to produce dry-processed and kibbled gum, but there is only one plant—a joint European/Sudanese venture—that produces spray-dried powder, which is most in demand (Sterling Group International, 2012).

Processing of gum arabic has long been dominated by European and North American processors, although this is where value could really be added within Sudan. According to the Sterling Group International (*ibid.*), the technology required for gum arabic processing is affordable and within reach of local expertise in

Sudan, although the high costs of energy and potable water could act as constraints. According to key informants interviewed for this study, international investment in gum arabic processing within Sudan is discouraged by the high taxes imposed by government on trade and businesses.⁴¹ Research carried out by the Sterling International Group also showed that prices paid for gum arabic from Sudan are systematically lower than prices paid for gum arabic from Nigeria and Chad, despite the higher quality of the former at the point of production, leading them to conclude that Sudan needs a well-planned strategy that focuses on increasing exports to key emerging markets and on adding value to secure premium prices (ibid.).

⁴¹ A French company apparently decided to invest in gum arabic processing in Pakistan rather than Sudan because of high taxes in the latter.

6. Tombac

6.1 Tombac production in Darfur

The heart of Darfur's *tombac* (chewing tobacco) production is North Darfur, in the alluvial soils along Wadi El Ku. The *tombac* production area stretches from Korma in the north through Tabit, Tawila, and Tarna to Shengil Tobai. There has long been a thriving *tombac* economy in this part of North Darfur.

High levels of displacement from these areas early in the conflict meant that *tombac* production slumped. In 2007, it was estimated that only about 10% of *tombac* farmers were still living *in situ*, in and around their farms (Buchanan-Smith and Fadul, 2008). By 2006/07 there appeared to have been a partial recovery of *tombac* production, as farmers displaced to camps around El Fasher returned seasonally to their farms to cultivate. But key informants estimate that over the last decade, production levels have never been higher than 40 to 50% of their pre-conflict level.

In many ways *tombac* is a conflict-resistant crop as it does not require daily cultivation. Instead, it can be cultivated in chunks of time, so the farmer can choose when to go to the *tombac*

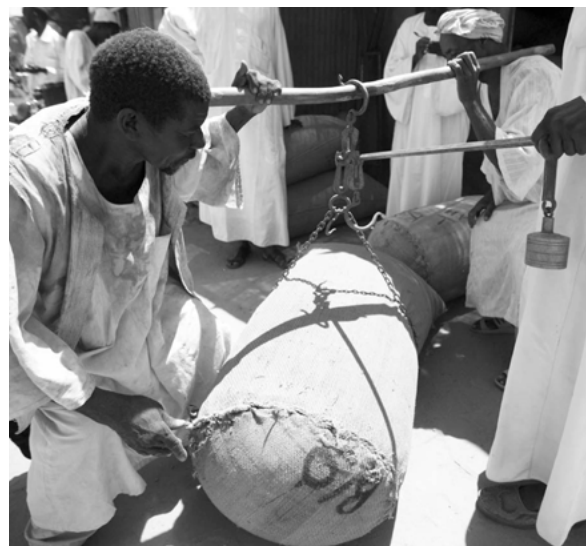
farm during periods of greater security and to leave for the camps during periods of insecurity. Unpalatable to livestock, unguarded *tombac* fields have the advantage of not being vulnerable to being grazed (Buchanan-Smith and Jaspars, 2006). However, *tombac* is a labour-intensive crop to produce. Pre-conflict, production of *tombac* was highly dependent on the provision of credit from traders to farmers through the *sheil* system. This provided much-needed cash to farmers so that they could hire labour. As mentioned above, the *sheil* system has collapsed during the conflict years. As a result, most households that are still producing *tombac* are doing so on a much smaller scale than pre-conflict.

In 2013, *tombac* production appears to have slumped once again. Heavy rainfall and flooding in the 2012 rainy season destroyed the bunds and water channels used for water harvesting for *tombac* production.⁴² And for the first time ever, the plant has suffered infestation by the red spider mite, further depressing production. This pest may represent a new threat to the *tombac* economy in the future.⁴³

Women have traditionally been the main



Many livelihoods in North Darfur are dependent on the trade in chewing tobacco



Weighing dried tombac in El Fasher

⁴² See DRA, "Trade and Market Bulletin for North Darfur," vol. 2, no.4, and vol. 3, no.1.

⁴³ The red spider mite also affects some vegetable crops including okra, tomatoes, and eggplant.

source of agricultural labour on North Darfur's *tombac* farms. The conflict years have seen the reduced involvement of women as many have been displaced from the *tombac*-growing areas to IDP camps around El Fasher, far from the *tombac* farms, so they are unable to travel to the farms to work.

6.2 Darfur's *tombac* trade

El Fasher is the centre of Darfur's *tombac* trade, supplied by the *tombac*-producing areas along Wadi El Ku but also from further afield, for example, from Saraf Omra in the west and Umm Shalaya. There are two main categories of traders involved in the *tombac* trade:

- (1) small-scale traders trading between the main areas of production and El Fasher
- (2) large-scale traders trading between El Fasher and the rest of Sudan including Khartoum, Kassala, Gedaref, and Blue Nile State. South Sudan has long been a major market for *tombac* produced in Darfur.

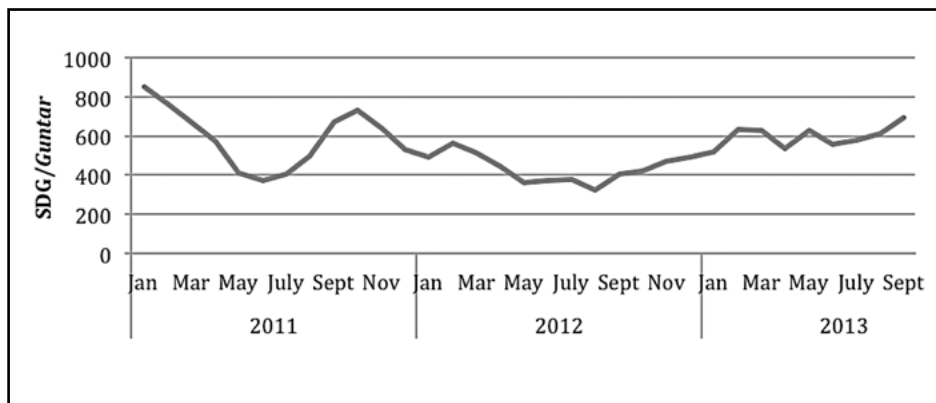
Despite falling *tombac* production in the early years of the conflict, there was a delayed impact on trade because many traders in El Fasher had large amounts of *tombac* in store, and this was augmented by traders from elsewhere in North Darfur moving their *tombac* stock to the relative security of El Fasher market. Thus, the *tombac* price remained relatively stable until 2007, when it doubled to SDG 450 to 600 per *guntar* compared with SDG 250 to 300 per *guntar*

pre-conflict in 2002. By 2008, the price had increased again, to SDG 800 to 1000 per *guntar*.

In 2012, however, some of Darfur's traditional markets for *tombac* had been badly affected by their own conflicts, namely in Southern Kordofan and Blue Nile States. At the same time, the secession of South Sudan and the trade embargo between Sudan and South Sudan negatively affected this particular trade flow. The price of *tombac* in El Fasher fell to around SDG 300 per *guntar* by August 2012. It has since increased in 2013 to around SDG 700 per *guntar*. Despite the trade embargo, trade in *tombac* to South Sudan has continued, but whereas it used to be transported by air from El Fasher to Juba, it is now smuggled overland on different routes including the route from Renk to Upper Nile, and from Bahr El Ghazal to Wau. A recent threat to Darfur's *tombac* trade is the ban on the sale of *tombac* in Khartoum State by the Khartoum State Legislative Council. If effectively implemented, this could close a major market for Darfur's *tombac*. Generally, government policy has attempted to discourage *tombac* production for health and other reasons. This includes banning banks from giving credit to *tombac* traders. So far, this policy is being pursued without a strategy for exploring and developing alternative livelihoods.

As travel around Darfur became increasingly insecure during the last decade, *tombac* was no longer brought into El Fasher market from more distant production areas. And large-scale traders no longer travelled to production areas to make their purchases; instead they have become reliant

Figure 21. Monthly *tombac* prices, El Fasher market, North Darfur, 2011–2013



Source: DRA MMTA project

on smaller traders bringing *tombac* to El Fasher. These smaller traders must now carry the risk of transportation on insecure routes. As with other cash crops, transport costs for *tombac* have increased substantially during the conflict years, doubling or tripling. See Table 11.

Somewhat surprisingly, and unlike the fate of other cash crops described in this report, the *tombac* trade has not been subject to the same crippling increase in taxes. In real terms, taking account of inflation, many taxes have actually decreased. See Table 12, although the cost of a licence to trade *tombac* has increased by around 300%. This seems to be partly to do with how *tombac* traders are organised, into the *Tombac* Traders Union, and their surprising ability to lobby against high taxation and levies, at least within the greater region of Darfur. It may also be due to the significance of *tombac* as a source of revenue to North Darfur State, accounting for 30 to 35% of state revenue, and a concern that if higher taxes are imposed *tombac* traders may shift their business to South Darfur.

There have also been quite substantial changes in the profile of traders engaged in the *tombac* trade. By 2007, around 50% of small-scale traders were believed to have left the business. Some had gone bankrupt, particularly those whose stores were burnt early in the conflict, in Tawila for example, and at least 25% of large-scale traders had left the business (Buchanan-Smith and Fadul, 2008). By 2013, it appears that many new traders have entered the *tombac* trade, but almost all are operating on a very small scale, often at the primary market level. Farmers in more secure parts of North Darfur have started trading *tombac*, traders of other commodities have switched to *tombac*, and some new university graduates searching for a business opportunity have entered the trade, again on a very small scale. At the other end of the spectrum, there are many fewer large-scale *tombac* traders, as some left for more profitable ventures including trading in groundnuts, and as others left Darfur completely, some even moving to South Sudan.

Table 11. Transport costs for *tombac*

Route	2002	2007	2012
Primary markets to El Fasher	SDG 5–7 per <i>guntar</i>	SDG 10–15 per <i>guntar</i>	SDG 15–20 per <i>guntar</i>
El Fasher to Omdurman	SDG 6–7 per <i>guntar</i>	SDG 9–10 per <i>guntar</i>	SDG 14 per <i>guntar</i>

Source: Traders and transporters, El Fasher, April 2013

Table 12. Taxes imposed on the *tombac* trade in El Fasher

Taxation item	2002	2007	2012
Locality taxation (per <i>guntar</i>)	SDG 15	SDG 15	SDG 14
Taxation (by the borsa) (per <i>guntar</i>)	SDG 12	SDG 12	SDG 12
<i>Zakat</i>	SDG 4	SDG 4	SDG 4
Trader licence p.a.	SDG 50	SDG 50	SDG 152

Source: *Tombac* traders, El Fasher, April 2013

7. Oranges

7.1 Orange production in Darfur

Oranges in Darfur are grown in the Jebel Marra area, in the east of Jebel Marra in locations such as Dirbat, Sony, Jawa, and Dobo, in the south in locations such as Kolkola, Fuju, and Rowappa, and in the west and northwest in locations such as Nyertete, Widiow, Golol, Golo and Tour. Oranges were introduced to Darfur, and to Jebel Marra in particular, in the 1940s by the then-Ministry of Agriculture, having first been brought to Sudan at the beginning of the twentieth century. The Jebel Marra Rural Development Project (JMRDP) subsequently introduced new orange varieties.

The impact of a decade of conflict on orange production is unclear. Despite reports of trees being cut down by militias in some parts of Jebel Marra (Buchanan-Smith and Fadul, 2008), and the impact of displacement, the trade in oranges appears to have increased during the conflict years, both trade within Darfur and to Central Sudan—see Section 7.2 below. The research

team was unable to access the Jebel Marra area or to interview orange producers, so was constrained in exploring this phenomenon. Local key informants report that it is unlikely that production has increased in the current context and suggest that a larger proportion of the orange trade may be reaching the market if local consumption has fallen due to displacement. Further investigation is needed to ascertain trends in orange production during the last decade.

Lack of organisation of the orange trade and the fact that orange production has been given little attention by government means there is a dearth of official statistics on production. The main data collected appear to be market-related as oranges are transported within, and out of, Darfur. However, these market data are rarely collated at state level and are therefore extremely difficult to obtain.

A particular feature of one of the orange varieties widely produced in the Jebel Marra area is that it can be left on the tree for two years



Trade agreements have enabled the orange trade to continue across conflict lines

without the quality being affected, locally referred to as *abu sanatain*. This is an advantage in a conflict environment in which access to market is unpredictable.

7.2 Trade in oranges

There are three main areas in Sudan producing oranges that are traded and consumed across the country: Northern State, Kassala in the east, and the Jebel Marra area in Darfur. Northern State supplies the market between August and February, while Jebel Marra supplies the market between February and December. In recent years, oranges have started to be imported from Egypt, mostly between March and August, and even more recently from South Africa. Across most of Sudan, oranges from Jebel Marra are preferred, especially the *sukari* (sweet) variety, for which a premium can be charged. Oranges from Northern State come second and then oranges imported from Egypt. However, the oranges from South Africa appear to be of increasingly high quality, now competing with the high-quality Jebel Marra produce.

Since the Darfur conflict began in 2003, most of the orange-producing areas in Jebel Marra are in rebel-held territory, controlled by the Sudan Liberation Army (SLA), while the main markets in Darfur are in the state capitals and other towns in government-controlled areas. Trading across this front-line in the conflict has severely impacted the orange trade. Early in the conflict, in 2004/05, some markets in the Jebel Marra area closed completely, as did major trading routes, for example, from Jebel Marra to El Fasher, effectively halting the orange trade to North Darfur (Buchanan-Smith and Fadul, 2008). Since then, however, a number of agreements have been made between the SLA (Abdul Wahid faction—SLA-AW) and Arab tribes aligned with government, often with the specific objective of ensuring that livelihood strategies could resume, including trade. (See UNEP, 2013). Although these local-level agreements may not hold for long, they have contributed to the orange trade resuming.

Nevertheless, some primary markets in the Jebel Marra area have remained closed, including Dirbat, Jebel Marra's most famous market for oranges. Closed since 2005, Dirbat is now a military garrison town for the Sudan

Revolutionary Front (SRF). In its place, some new small markets have opened up instead, especially in the SLA-controlled eastern side of Jebel Marra, including Soni, Feina, and Rabcona, from whence trucks carrying oranges now travel directly to Omdurman.

Somewhat surprisingly in view of the challenges of trading oranges across the front-line, the quantity of oranges being brought to Darfur's main urban centres appears to have risen. Demand has certainly increased as the process of urbanisation has accelerated in Darfur, fuelled by displacement. Interestingly, supply appears to have increased to meet this demand. There is also some export of oranges to Chad.

Over the last decade, prices have risen by some 300 to 400%. According to an orange trader in El Fasher, in 2002 the price of a carton of oranges (usually containing 10 dozen oranges) was SDG 30 in the Jebel Marra markets; by 2013 it has risen to SDG 100 to 120. A similar rise in price is registered in Nyala market. In February, the beginning of the Jebel Marra orange season, a dozen oranges in Nyala market used to cost SDG 2 to 3; by 2013 this had risen to SDG 6 to 8 per dozen.

There are a number of reasons for this hike in price. First and foremost it is due to rising transport costs associated with the conflict and to taxation. Table 13 shows how transport costs have risen, more than doubling compared with costs in 2003. Table 14 shows the very heavy taxation burden imposed on the orange trade in Nyala in 2012; in 2003 no such taxes existed, and the tax burden was minimal. Taxes are also imposed at locality level as loaded trucks pass through different localities. On the route from Jebel Marra to El Fasher, for example, locality taxes were SDG 350 to 400 per truck (usually carrying 1,200 cartons) in 2003; by 2013 locality taxes on the same route had more than doubled to SDG 750–900 SDG per truck. There are also four check points between Jebel Marra and El Fasher controlled by rebel groups, which were charging fees of SDG 500 to 900 per truck, often en route to Omdurman.

Another major obstacle to the orange trade, and a direct consequence of the conflict, is the time it now takes to transport oranges through Darfur because of insecurity, the numerous checkpoints that have to be passed, and the use of escorted convoys on some routes. This means

Table 13. Transport costs for oranges in 2003 and 2013

Route and unit	Transport costs in 2003	Transport costs in 2013
Dirbat to Nyala (SDG per sack of oranges, i.e., 20 to 25 dozen)	SDG 30	SDG 80
Golo to Nyala (SDG per sack of oranges, i.e., 20 to 25 dozen)	SDG 50	SDG 120
El Fasher to Omdurman (SDG per box)	SDG 10	SDG 25

Source: Traders interviewed in Nyala and El Fasher, April 2013

Table 14. Taxes and fees imposed on the orange trade, Nyala

Official taxes and fees	Amount in 2012 (SDG)
Agricultural tax (<i>zorou</i>)	SDG 25/sack
<i>Zakat</i>	10% of the value
City beautification	SDG 14/sack
Health tax	SDG 52/year
Health card	SDG 14/year
Medical check	SDG 22/year
Waste	SDG 15/year
Other taxes	SDG 100–150/year
Value-added tax	SDG 9/sack
Trader's licence	SDG 52/year

Source: Traders interviewed in Nyala, April 2013

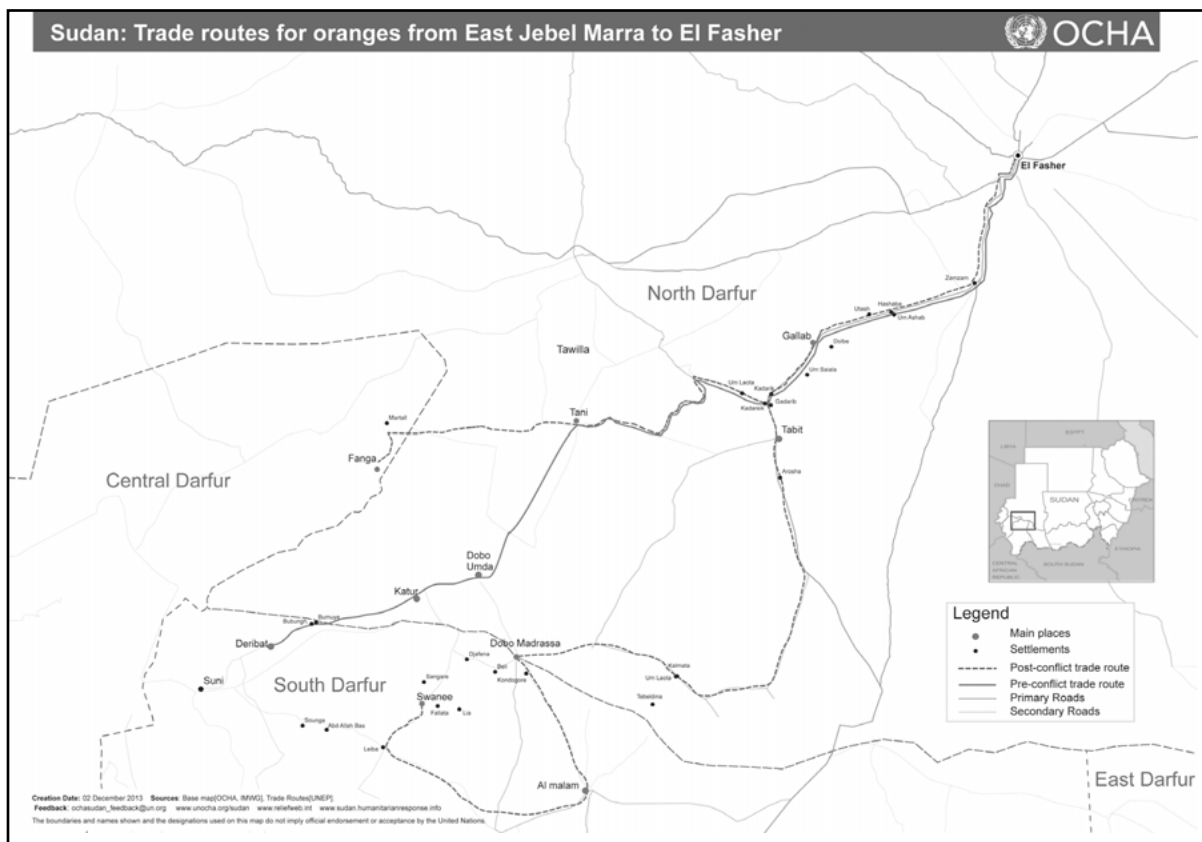
that losses of this perishable fruit have increased, exacerbated by the lack of cold storage for oranges anywhere in Darfur. It now regularly takes a week to ten days for oranges from Jebel Marra to reach Khartoum. The use of plastic sacks for transporting oranges from the farm to the primary market may further contribute to the fruit rotting in transit, although they are usually transferred to cartons for transportation by truck from the primary markets.

Trade routes between Jebel Marra and Darfur's main towns have had to change because of the conflict. Farmers usually bring the oranges by donkey to primary markets in the Jebel Marra area; they are then transported by small vehicles to El Fasher, on constantly changing routes according to the particular dynamics of the conflict. The route between Jebel Marra and Nyala has also changed. Oranges used to be transported from Dirbat, Jawa, and Soney to



Poor packaging contributes to high losses during transportation

Figure 22. Trade routes for oranges from East Jebel Marra to El Fasher: pre-conflict and 2013



Dobo, then Mershing, Menawashi, and Nyala, but the road was closed by the military in Dobo. Farmers from the Dirbat, Jawa, and Soney area now take their oranges by donkey and camel to Feina, which is in SLA-held territory, to meet trucks coming from Mershing. This new trading route became possible because of a local-level agreement between the SLA-AW and Arab tribes in the area. See Figure 22.

For the above reasons—high transportation costs, high taxation, unpredictable and insecure trade routes, and the amount of time it now

takes to transport oranges from Jebel Marra—the Jebel Marra produce has lost its competitiveness in the orange market in Central Sudan, becoming substantially more expensive than oranges from Northern State and Egypt. See Table 15. Orange traders interviewed in Khartoum maintained that Jebel Marra is still an important source of supply of oranges to Khartoum: for example, traders interviewed in Khartoum were receiving 15 trucks of oranges weekly from Jebel Marra, each truck carrying 32 mt, or 1,200 cartons. But the extent to which

Table 15. The price of oranges from different sources in Khartoum Central Market

Source of oranges	Price per dozen (SDG)		
	2002	2012	2013
Jebel Marra	5–6	12–15	25
Northern State	3–4	8	12
Egypt	4	8	12
South Africa	NA	10	25

Source: Trader recall, Khartoum Central Market

Jebel Marra oranges are being priced out of the market—now more than twice as expensive per dozen than oranges from Northern State and Egypt—requires further investigation, especially in the context of an overall increase in the cost of living, which may deter consumers from purchasing more expensive “luxury” products. The improved quality of oranges from South Africa is also seen as a market threat to oranges from Jebel Marra.

There have been some major changes in the organisation of the Jebel Marra orange trade during the conflict years, illustrated in Box 10. Many orange traders who used to operate in the Jebel Marra area appear to have moved to the more secure towns of Darfur, where they are now running their businesses, thus swelling the number of orange traders in Darfur’s state capitals. Another major change is the almost total domination of the orange trade by Fur traders. The breakdown of trust between traders is a major casualty of the Darfur conflict, not only in the orange trade. It means that most traders prefer to trade with those with whom they have family and social connections.

Traditionally, orange traders have never been formally organised, and this continues to be the case at national level and in most of Darfur’s states. However, in South Darfur, the orange traders have now become part of a new Union of Vegetable and Fruit Traders, which has enabled some of them to access credit. In 2012, six traders in Nyala accessed credit of SDG 10,000 each from the Agricultural Bank. Faced with the challenges of trading in the current conflict environment, there is also evidence that many traders are operating as part of a tight informal network; for example, regularly sharing price and other market information by mobile phone.

Box 10.

Changes in the organisation of the orange trade in Darfur during the conflict years

In Nyala before the conflict, there was a small number of large-scale orange traders in the town, not more than seven, mostly from Kordofan State. There were around 20 middlemen, who brought the oranges from Jebel Marra to Nyala. The large-scale traders distributed some of the oranges to petty traders, who were mostly women, to sell in different locations around the town, while the rest of the oranges were transported to other towns in Darfur, such as Ed Daien, or to El Obeid and Khartoum. During the conflict years, the number of large-scale orange traders in Nyala has increased substantially to almost 50, most of whom are from the Jebel Marra area. The traders from Kordofan have left Nyala, partly because of insecurity but also because of the breakdown in trust between traders of different ethnic groups. The number of petty traders in Nyala has increased to almost 100; again many of them displaced from the Jebel Marra area. They are using their social networks to facilitate trade. Similar changes have taken place in the El Geneina and El Fasher markets. In El Geneina, there used to be one female wholesaler bringing an average of half to one truck of oranges from Jebel Marra per week. Now there are two female wholesalers and thirty male wholesalers bringing an average of two trucks of oranges to El Geneina per week. The number of orange traders in El Fasher market has similarly increased. At the same time, the number of orange traders operating in the Jebel Marra area has fallen.⁴⁴

⁴⁴ According to one key informant, the number of orange traders operating in the Jebel Marra area used to be over 100 but has more than halved during the conflict years, especially as key markets such as Dirbat have closed.

8. Conclusions and recommendations

8.1 Conclusions

Darfur is a potentially rich agricultural area that has long been an important source of supply of many of Sudan's major cash crops. For some of those cash crops, it is renowned for the high quality of its production, groundnuts in particular, which have a high oil content. A historical review of cash crop production in Darfur reveals the varying fortunes of different cash crops at different times in the last fifty years. This can usually be explained by changing policy at national level and its impact on production and trade, as in the case of groundnuts and gum arabic. It may also be explained by changing conditions in the international market, the reason for the surge in value of Sudan's sesame exports. There is also an inter-relationship between the relative profitability of different cash crops. During the 1970s, for example, when the groundnut trade was booming but the farm gate price for gum arabic had slumped, farmers in Darfur switched to producing groundnuts, and many *hashab* trees were cut down.

Many of the constraints to cash crop production and trade are not unique to Darfur; they are common constraints across most of Sudan's major cash crops. And many of these constraints pre-date the outbreak of widespread conflict in Darfur in 2003. They include:

- **The neglect of agricultural policy during Sudan's oil-rich years:** Where policies exist on paper, they are often not implemented in practice. Where there has been support to the agricultural sector, it has mostly targeted the irrigated and semi-mechanised sub-sectors, not the traditional rainfed sub-sector. These policy choices appear to have become more entrenched as Sudan's economic crisis has deepened with the loss of oil revenues. Meeting macro-economic targets through the promotion of high-value export crops and intensive food production in large-scale agricultural schemes in Central Sudan has taken precedence over initiatives that target small-scale farmers in the rainfed sector who comprise the majority of the population, especially in the Greater Darfur region. Evidence of the neglect of the rainfed sector is the minimal level of investment in agricultural research and extension, especially for rainfed crops, over many years. One of the consequences is the long-term decline in productivity of many cash crops.
- **Taxation policies:** Despite federal policy to exempt agricultural produce from taxation, the policy of federalisation has given state and locality authorities the power to raise their own taxes. In a predominantly agricultural economy, agricultural produce is an important source of taxation revenue. In practice, the federal policy exemption means little at local level, and the cash crop trade in Darfur is struggling under a heavy taxation burden that is likely to worsen as the pressure on states to raise their own revenues intensifies. A comparison between taxation levels for groundnuts and sesame in Darfur's states and in Gedaref State revealed the much higher taxation levels in Darfur.
- **The declining competitiveness of Sudan's exports in international markets:** During the oil-rich years, the Sudanese pound was strong and therefore its exports relatively expensive on the international market. At the time of writing, the exchange rate has depreciated. Although this should be a boost to Sudan's export of cash crops, exchange rate regulations mean that exporters are forced to receive their revenue through the banking system at an official exchange rate below the black market rate. And imported inputs have

become prohibitively expensive. In addition, as international trade regimes have become globalised and more demanding in terms of standards and regulations, Sudan has struggled to meet those standards and regulations without adequate investment and is competing with countries with more sophisticated trading regimes. This is affecting both groundnut and sesame exports.

There is an additional constraint that is particularly acute in the case of Darfur:

- **Poor transport and infrastructure:** This means that the transportation of cash crops from Darfur, Sudan's westernmost state, is particularly expensive, which has acted as a barrier to market integration between Darfur and the rest of Sudan and inhibits the competitiveness of Darfur's cash crops.

With the outbreak of conflict in Darfur in 2003, there are now many more constraints to the trade in cash crops. Overall, the cash crop trade has been badly affected. The most significant constraints are the following:

1. **The devastating impact on cash crop production:** Large numbers of rural producers became displaced early in the conflict, and those who remained *in situ* were no longer able to cultivate on the same scale as before, often only able to access farmland close to their homes, and therefore are now cultivating much smaller areas.
2. **The costs of trading have escalated: This is due to:**
 - a. Insecurity on Darfur's main trading routes, which has caused transport costs to double, sometimes increasing by 400%. In a number of areas and for a number of cash crops—for example, oranges—it is no longer feasible to transport produce by vehicle from areas of production to market. Instead, donkeys have to be used, which means transporting small quantities at a time. High levels

of informal fees are now charged at numerous checkpoints on most of Darfur's trading routes, raising costs and slowing the movement of trucks. Deteriorating transport infrastructure during a decade of conflict, both roads and the railway, is further pushing up transportation costs and prolonging journey times, a particular problem for perishable commodities such as oranges.

- b. Escalating taxation on the trade in cash crops as the authorities at state and locality level are dependent on raising revenue from a contracting economy at a time when federal resource flows to state level have substantially decreased, encouraging informal trade and smuggling. Yet the revenue from taxes is not being reinvested in cash crop production nor in market infrastructure.

The combined effect of a) and b) above is major inefficiencies in the cash crop trade within Darfur and beyond. Rising prices and rising transport costs mean that traders now need more capital to do business. Yet few have access to credit. Lack of access to formal credit is a chronic and long-running constraint. Despite federal government's microfinance initiatives, few traders in Darfur appear to have benefited, and many are discouraged by the risk of defaulting. Informal credit mechanisms such as the *sheil* system that used to at least partially fill this gap, benefiting both farmers and traders, have mostly collapsed during the conflict years as trust (essential to informal credit mechanisms) has broken down between groups and as the risks of trading have risen.

3. **The decline in large-scale agro-processing:** This is another casualty of the conflict, especially agro-processing of groundnuts. Large-scale commercial enterprises, mostly based in Nyala, used to produce groundnut oil, which was traded cross-border as well as supplying Central Sudan. This has all but collapsed. Unreliable power supply, deteriorating infrastructure, and the decline in groundnut production are

contributory factors. Larger-scale commercial enterprises have now been replaced by a proliferation of small-scale groundnut mills, which use inferior machinery and are geared to meeting local demand, especially of Darfur's burgeoning urban population.

Darfur's cash crop trade has also suffered from the wider conflict in Sudan, for example the *tombac* cash crop economy. The deterioration in relations between the governments of Sudan and South Sudan resulted in a trade embargo that halted the *tombac* trade from North Darfur to South Sudan, a major market for Darfur's *tombac*. Conflict in South Kordofan and Blue Nile States, also markets for Darfur's *tombac*, has depressed trade.

There are a number of ways in which both the production and trade in different cash crops in Darfur have adapted to the conflict. In terms of agricultural production, there are some advantages to cultivating groundnuts over cereals in the current context. Groundnuts, as a root crop, are less vulnerable than cereals to being grazed by livestock. In an environment in which traditional mechanisms for pastoralists to negotiate access for their livestock to farmers' fields have broken down, this is an important consideration. Groundnuts are also able to sustain longer dry periods during the rainy season than cereals, which may make it a more resistant crop to climate change.

Evidence of adaptation in trading and agro-processing practices includes the shelling of groundnuts in rural areas during the conflict years to reduce transport costs. Another adaptation is the proliferation of small-scale groundnut mills, replacing the larger-scale ones that are no longer economic in the current context. While these may appear to be appropriate adaptations to the conflict environment, they also have negative consequences, as the quality of groundnuts and of oil has suffered from inferior processing methods. In many ways, this is a backwards step in Darfur's development, as the region has lost an important industry—large-scale agro-processing of groundnuts that had the potential to develop further and was an opportunity for “value-to-be-added” within Darfur before a more processed product was exported or transported

to Central Sudan. On the other hand, this adaptation means there are many new entrants into the agro-processing sector, and this could be an opportunity to be built upon if these new entrants are provided with training and there is greater attention paid to quality control.

Other adaptations that have enabled trade to continue in an extremely challenging and insecure environment include the forging of agreements in the Jebel Marra area between otherwise warring factions to maintain the orange trade across conflict lines and thus to sustain livelihoods in the Jebel Marra area.

Some new market opportunities have emerged during the conflict years. Most significant is the new market that has developed for groundnut leaves and groundnut cake for livestock fodder. Pre-conflict, groundnut foliage had little or no market value, and groundnut cake was sold very cheaply or given away for free by agro-processors. The price of both of these groundnut by-products has increased substantially, three- to five-fold since 2003. Groundnut shells have also developed a market value and are used in poultry feed, in brick-making, and as a source of fuel. These new market opportunities are all a consequence of Darfur's changing settlement pattern as it has become more urbanised during the conflict years, in turn triggering the development of a significant dairy industry around Darfur's main towns and hence demand for livestock fodder. The risks of livestock grazing far from the towns have fuelled demand for groundnut by-products as livestock fodder.

The role of women in cash crop production and trade appears to have increased significantly during the conflict years. Not only are they playing a bigger role in agricultural production, in particular in groundnut production where it is deemed that women are less at risk in accessing the fields than men, they have also become important actors in the local trade of cash crops such as groundnuts and oranges in many of Darfur's main towns. The large-scale trade in cash crops is still dominated by men, but as this large-scale trade over long distances has suffered most during a decade of conflict with disrupted trade routes and expensive transportation, petty trading to meet the demands of the growing urban population seems to have flourished. This

petty trade is dominated by women. This shift in gender roles in some aspects of cash crop production and in trade implies that women may be playing a more significant role in the household economy, a trend that deserves further investigation for its implications.

The overall picture is of a contracting cash crop economy in Darfur during the last ten years and, in the case of groundnuts and gum arabic, a long-term decline in the cash crop trade that pre-dates the outbreak of conflict in 2003. Yet there is large untapped potential for cash crop production and trade in Darfur, a potential that has long been recognised but has never yet been realised. Security and stability in Darfur are essential to the recovery of cash crop production and trade so that this potential can be fulfilled. But this alone will not be enough. A conducive policy environment for both production and trade is essential. Evidence of the difference that this can make can be found in the gum arabic sector. Liberalisation of the gum arabic trade and the establishment of the Gum Arabic Board over the last four years demonstrate how it is possible to boost both production and exports when more favourable agricultural policies are in place and are sustained. The experience of groundnut production in Darfur in 2012, when many farmers, including IDPs, switched to groundnut production in response to rapidly rising groundnut prices demonstrates how rapid recovery could be in the right conditions and with the right support; farmers are clearly price sensitive. However, inadequate trade infrastructure and weak export opportunities meant that the market has not been able to absorb this surge in production, and the price has slumped, discouraging farmers from groundnut cultivation in 2013. So far, efforts to revive the groundnut sector—although evident on paper—are not evident on the ground, although revitalising this sector could have a major impact on Darfur’s economy and on the livelihoods of many.

8.2 Recommendations

First and foremost, there needs to be much greater focus on the traditional rainfed agriculture sector in agricultural policy, followed through to implementation, for cash crop production to recover and to develop its

potential. Boosting rainfed agricultural production should happen hand-in-hand with policies to develop the trade in cash crops, both domestically and internationally.

The following recommendations are categorised into: (i) overall recommendations at the federal policy level; (ii) recommendations specifically for Darfur; and (iii) recommendations for the individual cash crops covered by this study, some targeted at federal level and some at the Darfur level. These recommendations support the economic recovery pillar of the new Darfur Development Strategy (DDS), linked to the Doha Document for Peace in Darfur (DDPD), in terms of improved value chains, improved production and productivity, improved agricultural policies, and improved access to financial services.

Overall recommendations for federal policy

1. Lack of access to credit emerges as a major constraint for both cash crop production (e.g., the production of groundnuts and *tombac*), and for trade. There is an urgent need to find ways of making credit available and accessible at affordable rates, particularly in the current context in Darfur, through pilot projects, for example. Some banks have made available *asalam* loans in the last couple of years. Farmers’ access to these loans and their impact should be carefully monitored and studied so that the positive learnings from this experience can be built upon and the availability of loans extended.
2. As recommended in “On the Hoof,” taxation policies should be reviewed and revised in the current fiscal context through a process of dialogue between federal government, state, and locality authorities to:
 - a. reduce the taxation burden on cash crops in order to improve competitiveness and to reduce the incentive to smuggle. There may be learning here from the less heavily-taxed (at the local level) *tombac* sector.
 - b. ensure that revenues are reinvested

in market infrastructure.

3. Efforts are already being made to formalise cross-border trade from Sudan. These should be stepped up to facilitate cross-border trade in cash crops from Darfur; for example, through trade agreements with Chad and with Central African Republic.
4. The current policy of multiple exchange rates effectively discriminates against some commodities in favour of others (for example, the more favourable exchange rate for gold than for agricultural commodities), distorting the economy and labour market. Ways of unifying the exchange rate should be explored.

Recommendations specifically for Darfur

5. Improved road and transport infrastructure within Darfur (linking production areas and markets) and between Darfur and the rest of Sudan would greatly benefit the cash crop trade (as well as other forms of trade). Not only would this reduce transport costs and therefore increase the competitiveness of produce from Darfur, it would also speed up transportation and therefore reduce losses of perishable commodities. This should include rehabilitation of the railway between Central Sudan and Nyala. In the long term, extension of the railway beyond Nyala to El Geneina and El Fasher could greatly benefit the cash crop trade.

Groundnuts and sesame

6. In order to develop the trade in groundnuts, there needs to be much greater attention paid to developing the production end of the value chain through greater investment in agricultural research and extension in Sudan and in Darfur in particular. This should include:
 - a. the development of location-specific research and technology packages,

- b. with a particular focus on *goz* soils and greater use of water harvesting
 - b. exploration into the greater use of animal traction for planting groundnuts in the rainfed sector
 - c. the provision of appropriate and higher-yielding seed in Darfur, supported by farmer training and learning from recent experience in distributing higher-yielding groundnut seed in South Darfur.
7. Agricultural policy at federal level should be reinvigorated to support groundnut production, trade, and export. This should include:
 - a. exploring the feasibility of establishing a strategic reserve for groundnuts at national level with two specific objectives: (i) for price stabilization, particularly at producer level to avoid the cobweb effect; and (ii) to iron out fluctuations in supply to the international market (a natural consequence of rainfed production where rainfall levels are highly variable) to improve Sudan's export competitiveness
 - b. a nationwide campaign on reducing aflatoxin in groundnuts through awareness-raising, training, and the provision of jute sacks for appropriate storage, and establishing aflatoxin-testing centres at state level
 - c. market differentiation according to quality criteria, exploring how a premium could be paid for high-quality aflatoxin-free groundnuts, especially for export
 - d. learning from the positive experience of reinvigorating the gum arabic trade, to inform federal policy and practice to reinvigorate the groundnut trade.
 8. Agro-processing of groundnuts and sesame within Darfur should be supported. In the short-term this should include:
 - a. market studies to explore the potential in different parts of Darfur for international aid agencies to buy

- groundnut and sesame oil locally as part of the relief ration, to determine the conditions in which this would work and when it would not, and how quality could be improved
- b. training and support to the “new” agro-processors of groundnuts who have entered the business during the conflict years, particularly to encourage improved quality.

In the longer term, agro-processing can be supported through the following measures:

- c. investment in training in agro-processing, focused on major urban centres such as Nyala, Geneina, and Ed Daien
- d. improved power supply in Darfur’s main towns to support larger-scale commercial groundnut and sesame mills
- e. the availability of credit so that small-scale groundnut mills can be improved and expanded.

Gum arabic

Maintaining liberalisation of the gum arabic trade and the promotion of exports through the Gum Arabic Board are both essential to the continued growth of this sector. Specifically within Darfur:

9. There should be rehabilitation of the gum arabic belt and gum arabic trade within Darfur, learning from projects and programmes with this objective that have been implemented in Kordofan and elsewhere. This may also include improving water availability in remote areas where gum arabic (*talh*) can be collected.

Tombac

Concerns about the health implications of chewing tobacco have resulted in some government restrictions on the *tombac* trade in Central Sudan. Yet the *tombac* economy is critical for the livelihoods of thousands of people in specific parts of Darfur, especially in North Darfur.

10. If federal government policy is to discourage the trade in *tombac*, then first alternative crops and livelihoods must be explored and supported in *tombac*-producing parts of Darfur to ensure it is replaced by another vibrant cash crop economy.

Oranges

11. Improved packaging for oranges should be explored to avoid the use of plastic sacks and thus to reduce losses, especially in the current conflict conditions where transportation is slow.
12. A feasibility study for processing oranges close to areas of production should be carried out, in order to “add value” within Darfur and to reduce losses associated with the transport of fresh oranges.
13. When there is greater peace and stability in the Jebel Marra area, improved road infrastructure, especially feeder roads from areas of production to primary markets, but also major roads to secondary markets, is one of the most important areas of investment to support the orange trade both within Darfur and in Central Sudan. This will reduce transport costs and speed up transportation to reduce losses. It will thus also boost the competitiveness of oranges from Darfur in Central Sudan. The use of cold storage transportation will also reduce losses.

ACRONYMS

ARC	Agriculture Research Corporation
ARP	Agricultural Revival Programme
CBOS	Central Bank of Sudan
CPI	Consumer Price Index
DDS	Darfur Development Strategy
DDPD	Doha Document for Peace in Darfur
DRA	Darfur Development and Reconstruction Agency
FAO	Food and Agriculture Organization of the UN
FIC	Feinstein International Center, Tufts University
FNC	Forestry National Corporation
FOB	freight-on-board
GAC	Gum Arabic Company
ICG	International Crisis Group
I-PRSP	Interim–Poverty Reduction Strategy Paper
JMRDP	Jebel Marra Rural Development Project
MDTF	Multi-Donor Trust Fund
MMTA	market monitoring and trade analysis project (run by DRA)
mt	metric tonnes
p.a.	per annum
SDG	Sudanese pound
SIEP	Sudan Integrated Environment Programme (implemented by UNEP)
SIFSIA-N	Sudan Institutional Capacity Programme: Food Security Information for Action–North Sudan
SLA	Sudan Liberation Army
SRF	Sudan Revolutionary Front
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
WFP	World Food Programme
US	United States of America

GLOSSARY

<i>asalam loans</i>	forward sales financing for agriculture, provided at the beginning of the agricultural season to fund production costs
1 <i>guntar</i>	approximately 45 kg
<i>hakura</i>	traditional tribal system for allocating and managing land. Hakura is also the term used for the tribal land itself.
1 <i>mukhamas</i>	0.505 hectares
<i>talaig</i>	the period when livestock graze crop residues on farmers' fields after harvest
<i>zakat</i>	giving of alms or charitable gifts

REFERENCES

- Abdalla, Mohamed Y. 2004. "Land Tenure, Land Use and Conflicts in Darfur." Paper presented at the Environmental Degradation as a Cause of Conflict in Darfur Conference, 15–16 December, 2004.
- Anon. 2011. "Sudan Interim Poverty Reduction Strategy Paper." Draft 4.
- Ayoub, A. T. 1998. "Extent, Severity and Causative Factors of Land Degradation in the Sudan." *Journal of Arid Environments* 38: 397–409.
- Behnke, R. 2012. "The Economics of Pastoral Livestock Production and Its Contribution to the Wider Economy of Sudan." Working Paper. Feinstein International Center, Tufts University, Medford, MA and UNEP. June.
- Buchanan-Smith, M., and A. A. Fadul. 2008. "Adaptation and Devastation: The Impact of Conflict on Trade and Markets in Darfur. Findings of a Scoping Study." Feinstein International Center, Tufts University, Medford, MA.
- Buchanan Smith, M., and S. Jaspars. 2006. "Conflict, Camps and Coercion: The Continuing Livelihoods Crisis in Darfur. Final Report." A report to WFP Sudan. June.
- CBOS. "Foreign Trade Statistical Digest." <http://www.cbos.gov.sd/en/node/478>.
- Council of Ministers. 2008. "The Executive Programme for the Agricultural Revival Programme." April.
- Couteaudier, T.Y. 2007. "Export Marketing of Sudanese Gum Arabic." Multi-Donor Trust Fund-National, MDTF-N-3. World Bank, Khartoum.
- Darfur Regional Authority. 2013. "Developing Darfur: A Recovery and Reconstruction Strategy." Prepared with support from UNDP. April.
- De Waal, A. 2005. *Famine that Kills: Darfur, Sudan*. Revised Edition. Oxford University Press: New York.
- El Dukheri, I., H. Dammous, and A. M. Khojali. 2004. "Rationale for a Possible Market Support Program in Darfur, Sudan. A Brief Look at Markets and Food Security." CARE, Khartoum.
- El Tom, O. A., and A. E. A. Yagoub. 2007. "Physicochemical Properties of Processed Peanut (*Arachis hypogaea* L.) Oil in Relation to Sudanese Standards: A Case Study in Nyala; South Darfur State; Sudan." *Journal of Food Technology* 5(1): 71–76.
- Hag Elamin, N. A., and E. M. El Mak. 1997. "Adjustment Programmes and Agricultural Incentives in Sudan: A Comparative Study." Research Paper No. 63. The African Economic Research Consortium.
- Hoffmann, U. 2011. "Assuring Food Security in Developing Countries under the Challenges of Climate Change: Key Trade and Development Issues of a Fundamental Transformation of Agriculture." United Nations Conference on Trade and Development, 2011.
- ICG. 2006. "Getting the UN into Darfur. Policy Briefing." Nairobi/Brussels.
- Jamal, A., and L. Huntsinger. 1993. "Deterioration of a Sustainable Agro-Silvo-Pastoral System in the Sudan: The Gum Gardens of Kordofan." *Agroforestry Systems* 23: 23–38.

- Khojali, A., and L. M. P. Hansen. 2010. "Microfinance Assessment Consultancy to Darfur, Sudan. February to March 2010. Final Report." Commissioned by the Feinstein International Center, Tufts University, IOM, and UNDP Sudan. June.
- Metz, H., ed. 1991. "A Country Study: Sudan." Library of Congress, Federal Research Division, Washington
- Morton, J. 2005. "A Darfur Compendium. A Review of Geographical, Historical and Economic Background to Development in the Region." First published 1985 (re-issued 2005). HTSPE, Hemel Hempstead, UK.
- Pantuliano, S. 2007. "The Question of Land: Sudan's Peace Nemesis." *HPG Working Paper*. ODI, London. December.
- Saeed, A. 2009. "Study to Assess Factors Contributing to Conflict Among Pastoralists, Agro-Pastoralists and Sedentary Farmers." *Nomadic Peoples* 13(1): 173–176.
- Samya, G., Napeel Insherah, and Egami. 2010. "The Effect of Pricing and Non-pricing Policies in Production and Marketing of Gum Arabic." Prepared for the Department of Planning, Ministry of Agriculture, Khartoum.
- Shumba, C. 2010. "The Darfur Value Chain Analyses: Sheep, Cattle, Groundnuts and Oranges." UNDP's Pro-Poor Value Chains Integration Programs in Sudan. UNDP, Khartoum.
- SIFSIA-N. 2008. "Determinants of Current Food Price Hikes and their Implications in the Northern States of Sudan." National Consultancy Report, SIFSIA-N/FAO, Khartoum.
- Sterling International Group. 2012. "World Demand Structures and Market Opportunities for the Sudanese Gum Arabic." Submitted to "Revitalizing the Sudan Gum Arabic Production and Marketing Project," Final Report, October.
- UNEP. 2007. "Sudan, Post-Conflict Environmental Assessment." United Nations Environment Programme, Nairobi.
- UNEP. 2008. "Destitution, Distortion and Deforestation: The Impact of Conflict on the Timber and Woodfuel Trade in Darfur." UNEP Sudan Programme, Khartoum.
- UNEP. 2012. "On the Hoof. Livestock Trade in Darfur." Feinstein International Center, Tufts University and UNEP, Sudan. Authored by Buchanan-Smith, M., and A.A. Fadul, with A.R. Tahir, and Y. Aklilu. Feinstein International Center, Tufts University and UNEP, Sudan. September. <http://sites.tufts.edu/feinstein/2012/on-the-hoof-livestock-trade-in-darfur>.
- UNEP. 2013. "A Review of Local Level Agreements in Darfur. How Far Do They Address Natural Resource Management?"
- WFP and North Darfur State Ministry of Agriculture. 2012. "Rapid Market Assessment North Darfur. 1–15 March 2012. Draft Report."
- World Bank. 2007. "Darfur. Dimensions of Challenge for Development. A Background Volume." 29 June.

Annex 1. Research team carrying out the study

Margie Buchanan-Smith is a Visiting Fellow with the Feinstein International Center at Tufts University. She is an independent policy researcher with more than 25 years' experience in the humanitarian sector. She first worked in Darfur in 1987 as Agricultural Economics Adviser to the Agricultural Planning Unit of the Darfur Regional Government. During this time, she carried out a study of the grain market in Darfur and initiated a drought early warning system for North Darfur. Her consultancy and research work has particularly focused on Sudan and the Horn of Africa. She is currently an adviser to the Market Monitoring and Trade Analysis project run by the Darfur Development and Reconstruction Agency. She is Senior Research Associate with the Humanitarian Policy Group at the Overseas Development Institute in London.

Dr. Abduljabar Abdalla Fadul was Assistant Professor at El Fashir University in North Darfur State. He is now a freelance consultant and Executive Manager for the Darfur Development Services and Information consultancy company, based in El Fasher. He has many years' experience with and extensive knowledge of natural resources, livelihoods, and conflict in Darfur and has contributed to many research projects and studies in Darfur since the 1980s. He is currently an adviser to the Market Monitoring and Trade Analysis project run by the Darfur Development and Reconstruction Agency. He worked as a government Veterinary Officer in Darfur and as a Provincial Veterinary Inspector between 1975 and 1981. He holds an M.A. in Rural Development and Food Security from the University of East Anglia in the UK.

Dr. Abdul Rahman Mohammed Tahir is Associate Professor of Range Management at Nyala Agricultural Research Centre within the Ministry of Agriculture in South Darfur. He is also the focal point for the climate change project in South Darfur and was one of the team members for the Darfur Joint Assessment Mission in 2012. With many years of experience of range and pasture management, he has worked for the Agricultural Research Corporation for 16 years and for the Western Savannah Development Corporation for 14 years, and has been a part-time lecturer at the Universities of Nyala, El Fasher, and Zalingei. He completed his Ph.D. in Agriculture at the University of Khartoum in 2003, and holds an M.Sc. in Agriculture from Cranfield Institute of Technology in the UK.

Dr. Musa Adam Ismail is currently Dean of the Faculty of Agriculture at the University of Zalingei. Between 2001 and 2005, he was Director of the Centre for Peace and Development Studies at the University of Zalingei. He has a wide range of experience in the agricultural field, having worked for the Ministry of Agriculture in Iraq between 1986 and 1988, for the Ministry of Agriculture in South Darfur State between 1995 and 1996, and for Save the Children UK between 1991 and 1995. He has been a member of research teams for a wide range of studies in Darfur on topics ranging from coping strategies and wild food to socio-economic and targeting studies and studies on pastoralism and pastoralist livelihood analysis.

Dr. Nadia Ibrahim Ahmed is currently Director-General of the Ministry of Agriculture and Natural Resources in West Darfur State. She started work in the Natural Resources Department as an Agricultural Inspector and subsequently became Director of the Department for Agricultural Planning and Information within the Ministry of Agriculture. She has many years of experience with and knowledge of natural resource management, livelihoods, and food security. She holds a Ph.D. in agricultural extension and rural development from the University of Khartoum.

Mohamed Ismail Gido Adam is currently Senior Project Officer for DRA's Market Monitoring and Trade Analysis Project. He has held this post since 2010. Previously he worked as Monitoring and Evaluation Officer for Save the Children Sweden and before that as their project officer in the Child Friendly Community Initiative. He has worked in the field of development and humanitarian assistance since 2005. He holds B.Sc. in Business Administration from Al-Neelain University, Khartoum and is currently studying for an M.Sc. in Peace, Development, and Human Rights at the Peace and Development Centre, El Fasher University in North Darfur.

Zakaria Yagoub Kaja is currently Project Officer with DRA's Market Monitoring and Trade Analysis Project in West Darfur State. He was previously the West Darfur government's representative on UNDP's crisis and recovery mapping and analysis project (CRMA) in 2011. Before that, he was Inspector of Public Expenditure and Inspector of Planning and Development with the Ministry of Finance in West Darfur. He also worked with Save the Children USA in 2005 carrying out an emergency assessment. He obtained his B.Sc. in Statistics from Juba University in Sudan.

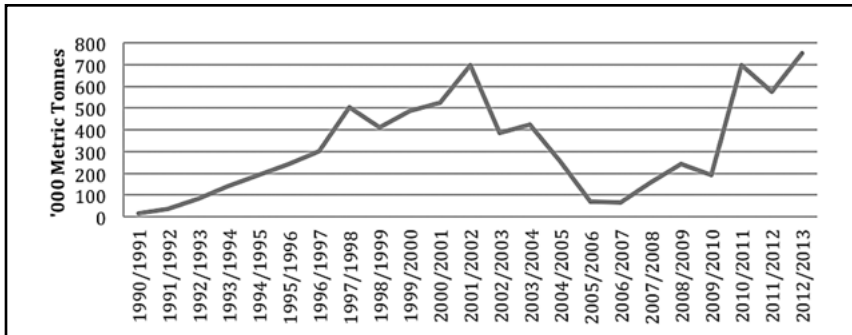
Dr. Ali Musa Abakar Eissa is an Associate Professor in Agricultural Economics. Currently he is the Deputy Dean of the Faculty of Natural Resources and Environmental Studies at the University of Kordofan. He is also the resource person for the Regional Universities Forum for Agriculture Capacity Building in East, Central, and South Africa (RUFORUM), and a member of the East and Central Africa Regional Agricultural Forum for Training–African Network for Agro-Forestry, Agriculture and Natural Resources Education (ERAF-ANAFE). His areas of specialization and research include poverty, food security, gender, climate change and value chain analysis.

Dr. Mohamed A. Abouna Mohamed is an Associate Professor in soil and water science. He worked as a field manager in the Sudanese Sugar Company covering different sugar cane production activities between 1973 and 2000. Since 2000, until the present day, he has been a Senior Researcher at Guneid Cane Research Center. Dr. Abouna obtained a Ph.D. in 2007 from Gezira University in Sudan.

Abdul Hameid Hemma Mohamoud Jumma is currently Head of the Planning and Monitoring Department of the Ministry of Agriculture in South Darfur State, a position he has held since 2010. During this time he has been Coordinator of WFP's "Connecting Farmers to Markets" project. He was previously managing the Agricultural Revival Programme in South Darfur and was an Inspector for Planning, Monitoring and Evaluation in South Darfur's Ministry of Agriculture. Between 2006 and 2007 he was the Coordinator for market data collection for Oxfam in Nyala, and has also contributed to market data collection for FAO. He previously worked for the Ministry of Finance in West Darfur State.

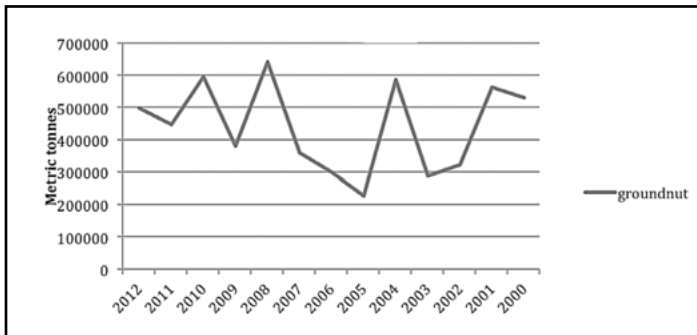
Annex 2. Data on groundnut and sesame production

Figure 2.1. Groundnut production in Darfur



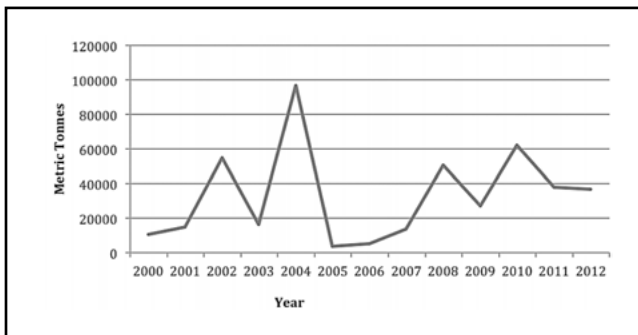
Source: Ministry of Agriculture and Forestry, Khartoum

Figure 2.2. Groundnut production in South Darfur State



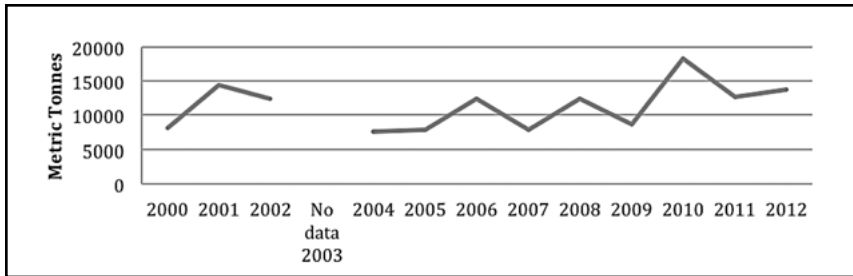
Source: Ministry of Agriculture, Nyala

Figure 2.3. Groundnut production in West Darfur State



Source: Ministry of Agriculture, El Geneina

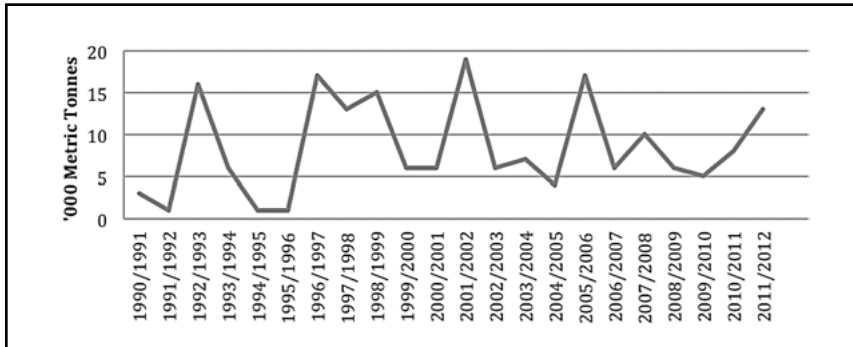
Figure 2.4. Sesame production in West Darfur



NB: Data for 2003 have been omitted due to concerns over accuracy.

Source: Ministry of Agriculture, El Geneina

Figure 2.5. Sesame production in Darfur



Source: Ministry of Agriculture and Forestry, Khartoum

Further technical information may be obtained from the UNEP Post-Conflict and Disaster Management Branch website at: <http://www.unep.org/disastersandconflicts/> or by email: postconflict@unep.org



<http://unep.org/Sudan>



Feinstein International Center
Tufts University
114 Curtis Street
Somerville, MA 02144, USA
tel: +1 617.627.3423
fax: +1 617.627.3428
<http://sites.tufts.edu/feinstein/>



www.unep.org

United Nations Environment Programme
P.O. Box 30552 Nairobi, Kenya
Tel: +254 (0)20 762 1234
Fax: +254 (0)20 762 3927
Email: unepub@unep.org

