



MAFAP
SPAANA

Monitoring African Food and Agricultural Policies
Suivi des politiques agricoles et alimentaires en Afrique

**ANALYSIS OF INCENTIVES AND DISINCENTIVES
FOR GROUNDNUTS IN MALAWI**

OCTOBER 2012

This technical note is a product of the Monitoring African Food and Agricultural Policies project (MAFAP). It is a technical document intended primarily for internal use as background for the eventual MAFAP Country Report. This technical note may be updated as new data becomes available.

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For more information: www.fao.org/mafap

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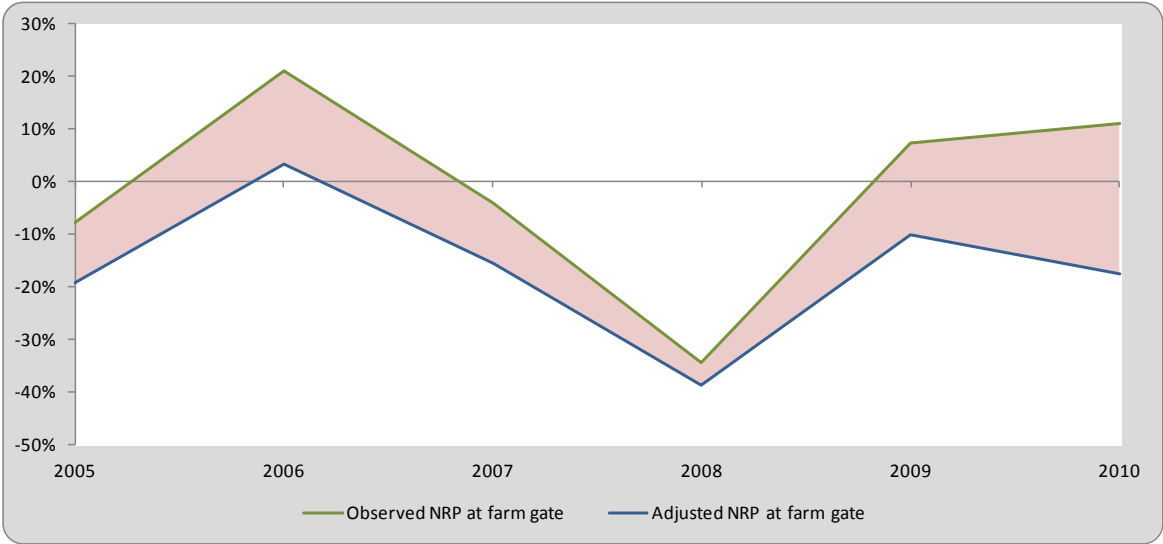
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SUMMARY OF THE NOTE

Product: Groundnuts
 Period analyzed: 2005 – 2010
 Trade status: Export in all years

- One of Malawi’s traditional export crops, but production and trade collapsed in the 1980s.
- Total production has been growing since then from 18,000 tons in 1990 to 280,000 tons in 2010. Around 93% of all groundnut production in Malawi is realized by small farmers.
- Around 40% of total production is marketed. The export channel represents 10% of total production, and is dominated by the National Smallholder Farmers’ Association (NASFAM). NASFAM is the main buyer, processor and exporter of groundnuts. Key export markets are Tanzania, South Africa and Kenya.
- Groundnuts are prioritized in the Government of Malawi’s export strategy and groundnut seed is subsidized through the Farm Input Subsidy Programme (FISP).



The observed Nominal Rate of Protection (NRP, green line) indicates that groundnut farmers have received both disincentives (2005, 2007 and 2008) and incentives (2006, 2009 and 2010) under the prevailing cost structure in the value chain. The adjusted NRP (blue line) captures the effects of market inefficiencies on farmers. The area in red shows the cost that these inefficiencies represent for producers.

- Incentives were lowest during the world food crisis in 2008, when international prices rose sharply while domestic prices remained stable. Incentives in 2009 and 2010 could be attributed to better integration of the value chain and fair trade premiums paid to producers.
- Differences between observed and adjusted NRPs are mainly the result of 1) high transport costs to export markets and 2) exchange rate policy.
- Measures to support groundnut production in Malawi could include supply side measures (improved seeds, disease reduction) and infrastructure development. In addition, the recent measure to float the local currency against the US Dollar is likely to benefit groundnut producers.

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1. PURPOSE OF THE NOTE

This technical note aims to describe the market incentives and disincentives for groundnuts in Malawi. The note is a technical document and serves as input for the MAFAP Country Report.

For this purpose, yearly averages of farm-gate and wholesale prices are compared with reference prices calculated on the basis of the price of the commodity in the international market. The price gaps between the reference prices and the prices along the value chain indicate to which extent incentives (positive gaps) or disincentives (negative gaps) are present at farm-gate and wholesale level. In relative terms, the price gaps are expressed as Nominal Rates of Protection. These key indicators are used by MAFAP to highlight the effects of policy and market development gaps on prices.

The note starts with a brief review of the production, consumption, trade and policies affecting the commodity and then provides a detailed description of how the key components of the price analysis have been obtained. The MAFAP indicators are then calculated with these data and interpreted in the light of existing policies and market characteristics. The analysis that has been carried out is commodity and country specific and covers the period 2005-2010. The indicators have been calculated using available data from different sources for this period and are described in Chapter 3.

The outcomes of this analysis can be used by those stakeholders involved in policy-making for the food and agricultural sector. They can also serve as input for evidence-based policy dialogue at country or regional level.

This technical note is not to be interpreted as an analysis of the value chain or detailed description of production, consumption or trade patterns. All information related to these areas is presented merely to provide background on the commodity under review, help understand major trends and facilitate the interpretation of the indicators.

All information is preliminary and still subject to review and validation.

2. COMMODITY CONTEXT

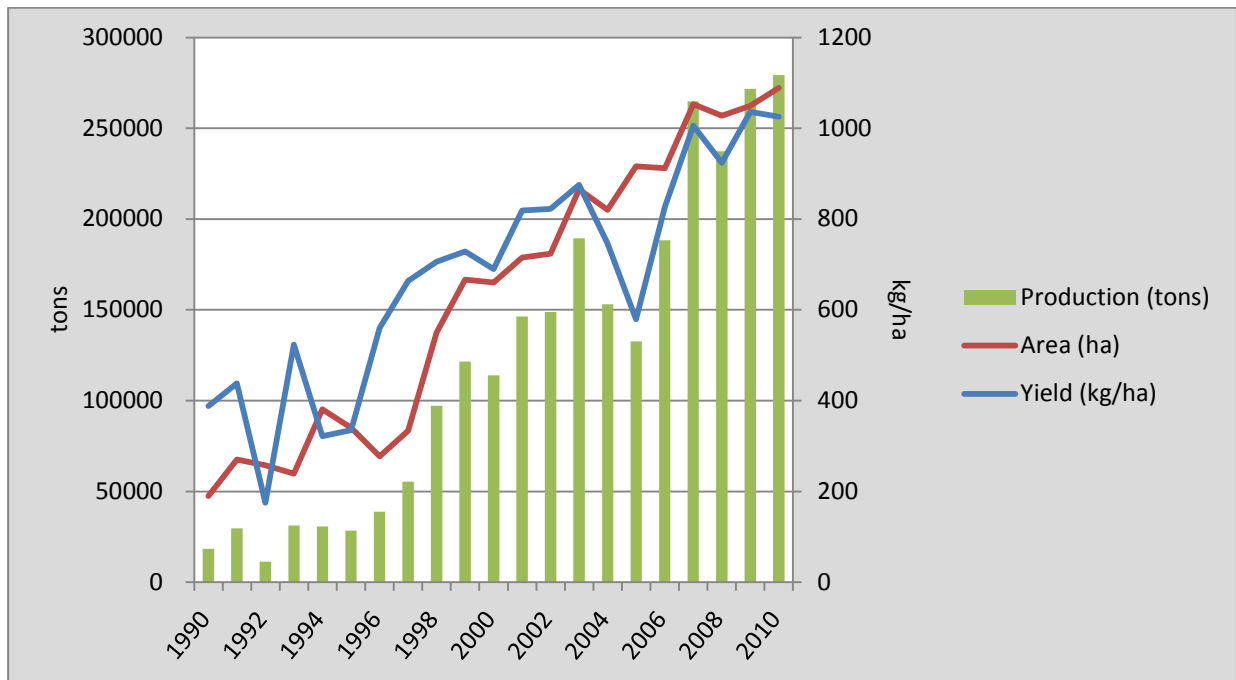
Groundnuts are an important crop in the Malawian agricultural sector. Until the mid-1990s it was considered one of the country's key export crops and an important earner of foreign exchange. Currently it is still the most important legume produced in Malawi both in terms of production area and volume, and it is largely produced by small farmers. It is considered to be valuable for improving food security by adding nutrient value to the predominantly maize-based Malawian diet. At the same time, groundnuts also have significant economic importance as approximately 40 percent of total production is marketed. As a result, groundnuts are both a source of food and income for smallholder households in Malawi.

PRODUCTION

As shown in Figure 1, production of groundnuts has increased significantly in the period 1990-2010. The total production in 2010 was approximately ten times higher than in the early 1990s and has surpassed 250 thousand tonnes since 2007. In the same period, total area under cultivation also grew from just under 50 000 ha in 1990 to 270 000 ha in 2010. However, the increases are not only attributable to expansion of the total area of production. Figure 1 also shows that yields also rose from 400 kg per hectare in 1990 to 1 026 kg of groundnuts with shell per hectare in 2010. In 2005, Malawi's production represented 2 percent of total groundnut production in Africa. Approximately 27 percent of the total land dedicated to the production of legumes is used for groundnuts. In contrast, the area planted to groundnuts was only 14 percent of the total area planted to maize (Simtowe, 2009).

In 2005, groundnut production registered a strong decrease as a result of the drought that Malawi faced in that year, and which resulted in the largest food crisis in Malawi of the last decade. After that year, groundnut production recovered and reached record-high levels of over 250 000 tonnes in 2009 and 2010.

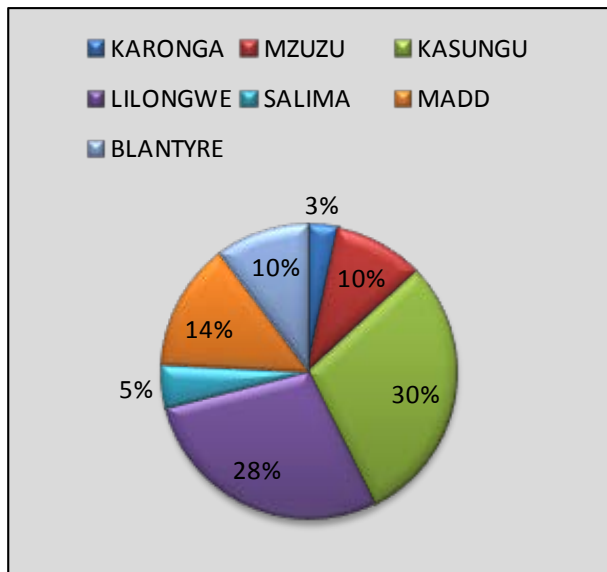
Figure 1: Total production volume, area and average yield of groundnuts in Malawi, 1990-2010



Source: Ministry of Agriculture and Food Security, FAOSTAT

Malawi is sub divided into eight agro-ecological zones, which form the Agricultural Development Divisions (ADDs). Groundnuts are grown in most of the ADDs but production is concentrated in the central part of the country. As shown in Figure 3, the central plains of Lilongwe and Kasungu together accounted for more than half of total production. Groundnuts are mainly produced by small farmers through rain-fed production systems. Of the total production, it is estimated that 93 percent is realized by small farmers. Estates represent only 7 percent of total production and are mainly concentrated in the Kasungu region. Due to rapid population growth, average landholding of smallholder farmers is decreasing and is currently 1.2 ha (CYE Consult, 2009). The average area dedicated to groundnut production is 0.4 ha per groundnut farmer (Sangole, 2010).

Figure 3: Groundnut production by region, 2010



Source: Ministry of Agriculture and Food Security, CYE Consult, own calculations

Figure 2: Groundnut production areas in Malawi



The traditional variety produced in Malawi is the “Chalimbana”, a Virginia-type larger groundnut variety with relatively high levels of protein. However, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) introduced in 1990 an improved Chalimbana-type variety, called CG7.

This variety is characterized by higher drought tolerance and a yield potential around 60 percent higher than the Chalimbana. It is also a suitable variety for crop rotation with maize, which is common in Malawi.

Both seeds are marketed by the National Smallholder Farmers' Association of Malawi, the country's most important farmers' association and a key player in the groundnut sector. The association comprises around 15 000 farmers that produce groundnuts.

Box 1: National Smallholder Farmers' Association

The National Smallholder Farmers' Association (NASFAM) was established in 1997 and is the largest independent, member-owned smallholder organization of Malawi. Its total membership comprises around 100 000 farmers, of which 15 percent produce groundnuts.

The association is split into a Development and Commercial branch. The development branch provides community development and capacity building services, while NASFAM Commercial carries out the marketing of inputs to farmers and outputs from farmers.

NASFAM has been a strong promoter of crop diversification, including groundnut production, away from the high dependency of Malawian smallholders on maize and tobacco. The association is a key buyer of groundnuts for export. All the groundnuts it procures are hand-shelled at the farm. It also has invested in a cleaning plant and oil extractor, which are located in Kanengo, just north of Lilongwe, close to the main production centers for groundnuts.

NASFAM's activities are financed by a percentage of the government levy on tobacco, user fees and external donor support.

Sources: NASFAM website, Sangole (2010), Nakagawa (2009)

CONSUMPTION/UTILIZATION

According to FAOSTAT Food Balance Sheets, the annual consumption of groundnuts (shelled equivalent) per head in Malawi in 2007 amounted to 4.7 kg. This corresponds to a daily intake of 66 calories, or 3 percent of the total daily caloric intake. As such, groundnuts represent on average 5 percent of total daily protein supply per capita and 16 percent of fat.

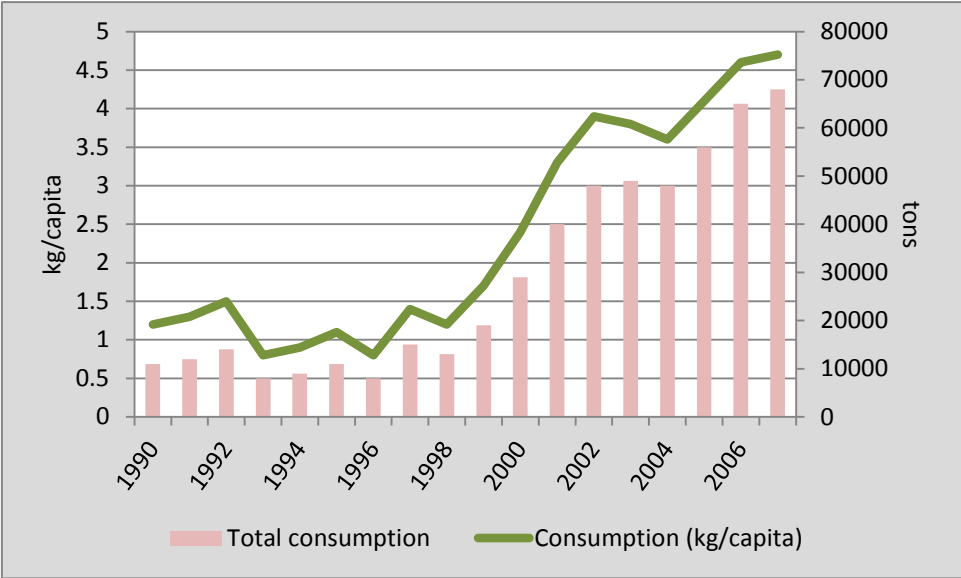
Groundnuts are considered an important ingredient of the Malawian diet because of their high nutritional value. Nutritional anemia is a major problem in Malawi affecting 80 percent of pre-school aged children, over 46 percent of women and 17 percent of men (National School Health and Nutrition Baseline Survey, 2006). This is not only due to insufficient dietary intake but also to limited dietary diversity as food consumption patterns are almost exclusively maize-based.

Therefore, groundnuts are specifically mentioned in the country’s Agricultural Sector Wide Approach (ASWAp) as one of the crops of (other ones being beans, cassava, fruits and vegetables) which production and consumption will be promoted in order to achieve improved nutrition at the household level.

As shown in Figure 4, total groundnut consumption increased steadily over the period 1990-2007. Domestic human consumption levels of shelled groundnuts rose from just 11 000 to 68 000 tonnes and represents 37 percent of total production. Per capita groundnut consumption in the same has also shown a considerable upward trend and reached 4.7 kg per capita in 2007. Of total production, an additional 35 percent is used for processing to groundnut cake, oil and peanut butter, while around 10 percent is exported. The remainder is used for seed or consists of waste.

Because of its role in domestic consumption, groundnuts are considered an important crop both for export and for food security in Malawi.

Figure 4: Malawi groundnut consumption, 1990-2007



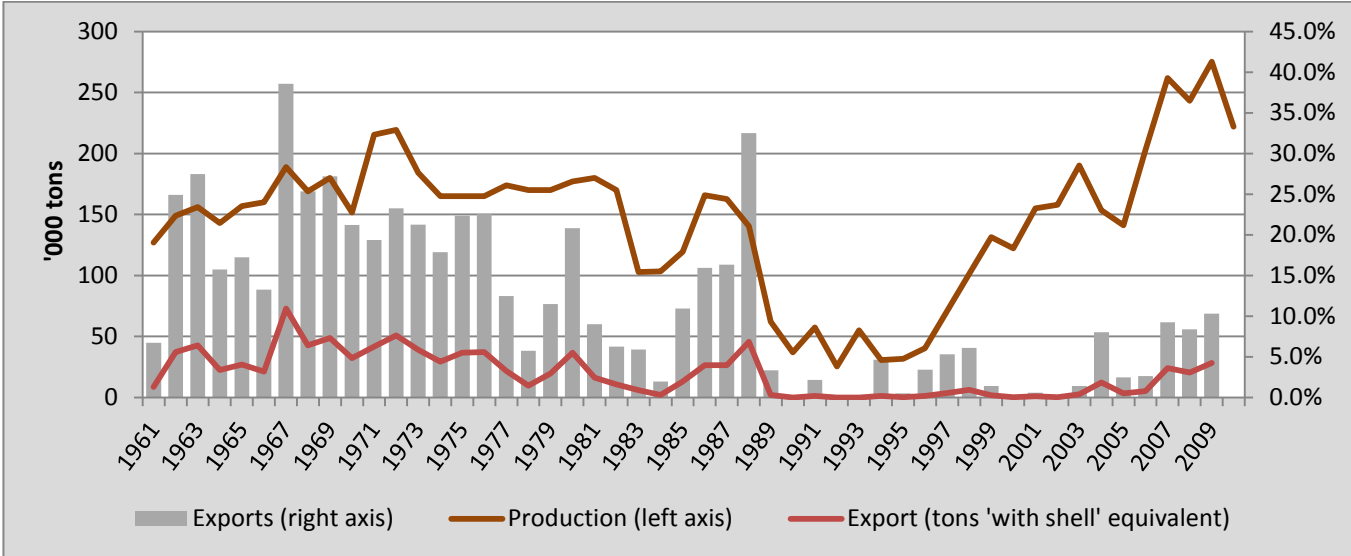
Source: FAOSTAT Food Balance Sheets

MARKETING AND TRADE

From independence until the late 1980s, groundnuts were among the major export crops in Malawi. Under the Special Crops Act, some main export commodities, in particular tobacco, were restricted to estates and smallholder farmers could not obtain licenses to access the production or marketing of these crops. Groundnuts however could be produced by smallholders. Their production was marketed through the state-owned Agricultural Development and Marketing Corporation (ADMARC), which was the sole trader of groundnuts until 1987.

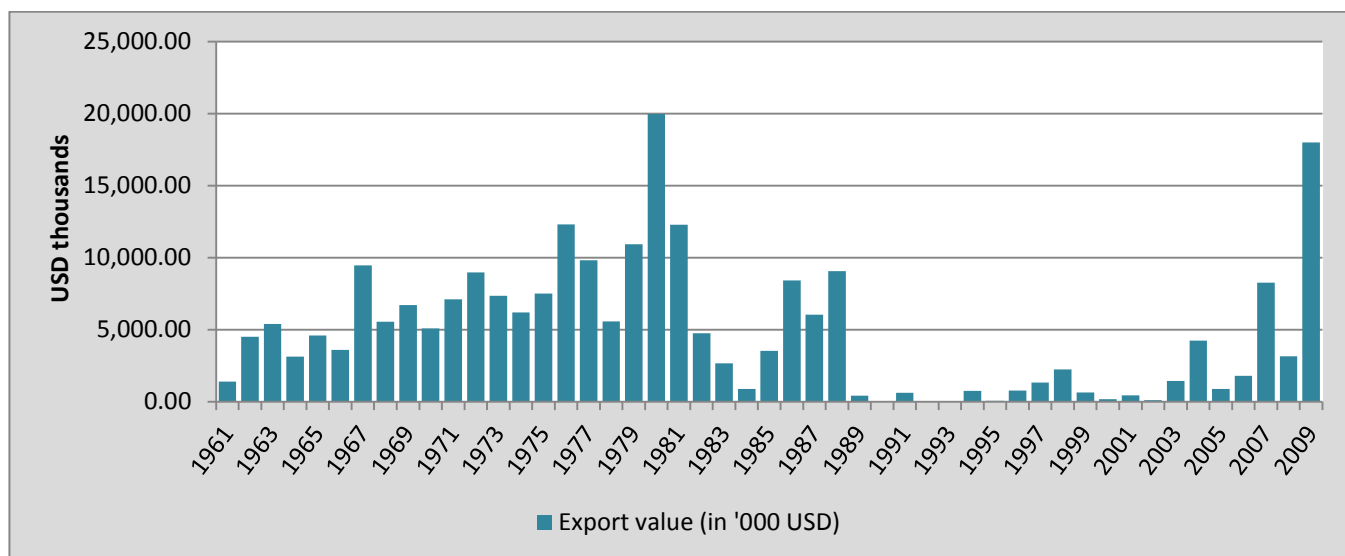
As shown in Figure 5, total production reached levels over 200 000 tonnes and over 20 percent of total production were exported in most years of the 1970s. Towards the end of the 1980s however, total groundnut production and exports decreased significantly as small farmers obtained access to tobacco production and gradually shifted to burley tobacco as their main cash crop. In addition, the role of ADMARC as buyer was not taken over effectively by the private sector after its monopoly was abolished under Malawi's reform programmes for the agricultural sector. Finally, high levels of aflatoxin contamination reduced production and export capacity and Malawi lost its confidence among overseas buyers (Sangole, 2010). In the 1990s, groundnut exports came to a standstill and according to FAOSTAT data, in 1992 and 1993 no groundnuts were exported at all. From the mid-1990s, production started to increase again. However, exports as a percentage of total production remained marginal until 2007, when 9.3 percent of total production was exported. In that same year, production levels reached record highs and for the first time were above the levels observed in 1972-1973.

Figure 5: Historical groundnut production, exports and exports as % of production in Malawi, 1961-2010



Source: FAOSTAT

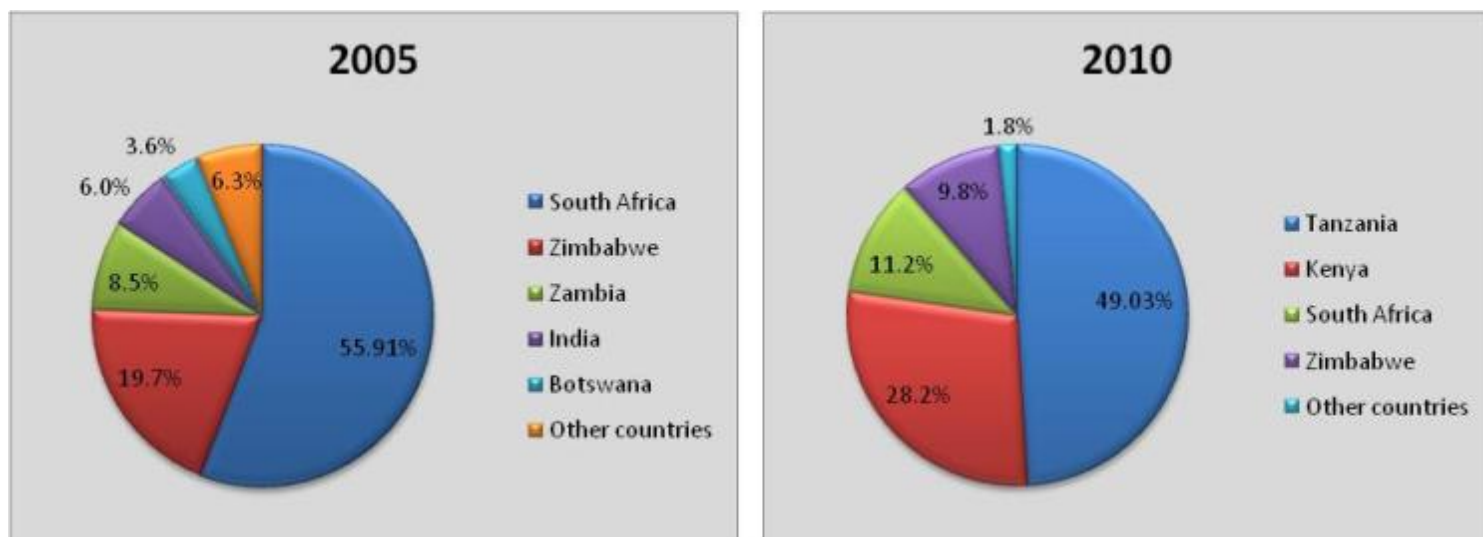
Figure 6: Total export value of groundnuts, 1961-2010 in USD thousands



Source: FAOSTAT

Though in the 1970s and 1980s Malawian groundnuts were mainly exported to Europe, currently the main destinations are regional markets, including South Africa, Zimbabwe, Tanzania and Kenya. As demonstrated in Figures 7 and 8, shares of export destinations vary between years. In 2005, the main destinations were South Africa (55.91 percent) and Zimbabwe (19.7 percent). In 2010, exports to Tanzania (49.03 percent) and Kenya (28.2 percent) represented the highest total value.

Figure 7: Top groundnut export destinations in 2005 and 2010, in % of total export value



Source: COMTRADE

DESCRIPTION OF VALUE CHAIN AND PROCESSING

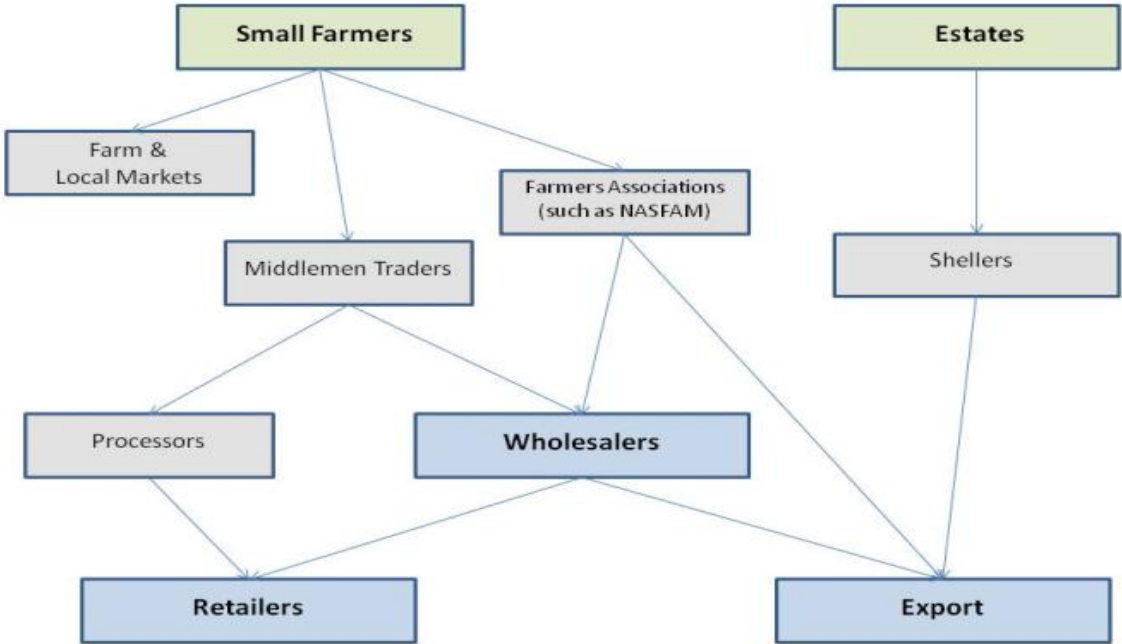
The growing season of groundnuts starts in November/December when planting is done. The harvesting season of groundnuts takes place from mid April to the end of May. Due to the shelling of

the nuts, the protracted period of marketing continues generally until September. Of all produced groundnuts, in 2006 approximately 60 per cent is consumed directly by farmer households or sold by farmers in local markets. Of the remaining amount channeled to the processing, wholesale and retail markets, approximately 15-20 percent is exported as shelled groundnuts (CYE Consult, 2009).

From the farm the marketed groundnuts (with shell) are sold to small traders or channeled through the National Smallholders Farmers’ Association (NASFAM), which has its own processing facilities. An overview of the full groundnut value chain is provided in Figure 8. While NASFAM is supplied directly by its member farmers, processors usually procure their raw material through the middlemen traders who buy directly from farmers. In the period under review, NASFAM processing was limited and consisted mainly of sorting, grading and packing. In 2011, NASFAM and the British fair-trade organization Twin have established the joint venture Afri-Nut Ltd, a groundnut processing plant for export of nuts to the United Kingdom and production of groundnut paste.

Processing by other companies, including Rab Processors, Transglobe, Mullie Borthers and Equator Nuts, consists of roasting and the manufacturing of flour and peanut butter. In the period 2007-2010 processors abandoned groundnut oil production due to strong competition from consumable oil imports from neighboring countries. However, in 2010, NASFAM installed an oil extraction plant in Lilongwe which will reinvigorate groundnut oil production in Malawi.

Figure 8: Groundnuts value chain overview



Source: CYE Consult (2009) and own elaboration

While estates sell their groundnuts to processors that mechanically remove the shells of the groundnuts, traditionally smallholders hand-shell their nuts and supply NASFAM and traders with shelled nuts. During the shelling process, approximately 30 per cent of total weight is lost as groundnut shells are removed. As a result, the price smallholder farmers receive is per kilo of shelled groundnuts. It is estimated that of the total shelled nuts, 60 per cent were meeting the export quality standards, while the remaining 40 per cent were processed to secondary products such as flour,

groundnut cake or peanut butter. Processed nuts are stored in the facilities of processors or NASFAM before being transported to South Africa for consumption, further processing or export to the European Union. In 2007, NASFAM started the export of fair trade nuts produced in the Mchinji Region of Western Central Malawi to the United Kingdom.

One of the main challenges for the groundnut value chain in Malawi is the management and control of aflatoxin in groundnuts. Aflatoxins are small molecules that are toxic to both humans and animals. Though they appear in several agricultural products, they are most common in groundnuts. Contamination can occur any-time from pre-harvest to storage and can severely threaten the groundnut export potential of Malawi. Increased efforts are undertaken to strengthen the capacity for aflatoxin testing, which generally takes place before shelling of the nuts. For this purpose, NASFAM has established a testing facility in 2007 and testing kits have been developed in collaboration with ICRISAT and UNIDO. In 2012, NASFAM indicated that aflatoxin contamination is still one of the main challenges for increasing exports of nuts to the European Union. As production from a large number of small farmers is consolidated by NASFAM, and contamination may occur also at later stages of the value chain, it is currently impossible to trace the contamination back to the farm of origin. As a result, whole parties of groundnut produce can be rejected.

POLICY DECISIONS AND MEASURES

Liberalization of groundnut marketing

Groundnuts were among the traditional smallholder produced cash crops in Malawi until the 1980s. During that period, groundnut production and marketing were a vertically integrated parastatal system. Government policies were in effect to control prices of inputs (both seed and fertilizer) and outputs, and to subsidize credit. In the 1980s the popular “Chalimbana” variety became increasingly susceptible to diseases. Insufficient attention was given to seed quality and overseas buyers lost their confidence in the quality of Malawian groundnuts. Groundnut exports ceased and the total production area reduced by approximately two-thirds. At the same time, in 1987 the parastatal monopoly of the Agricultural Development and Marketing Corporation (ADMARC) on groundnut marketing and input supply was removed as a result of the Agricultural Sector Adjustment Programme of the Government of Malawi. A new high-yielding groundnut variety was introduced by ICRISAT in the 1990s, but due to limited seed availability it took until the end of the 90s before farmers increasingly restarted the production of groundnuts (Jones, 2009). This development was reinforced by the development of processing and marketing capacity of NASFAM, and the inclusion of legume vouchers for subsidized groundnut seed in the Farm Input Subsidy Programme from 2009 onwards.

Groundnut production and the AsWAP

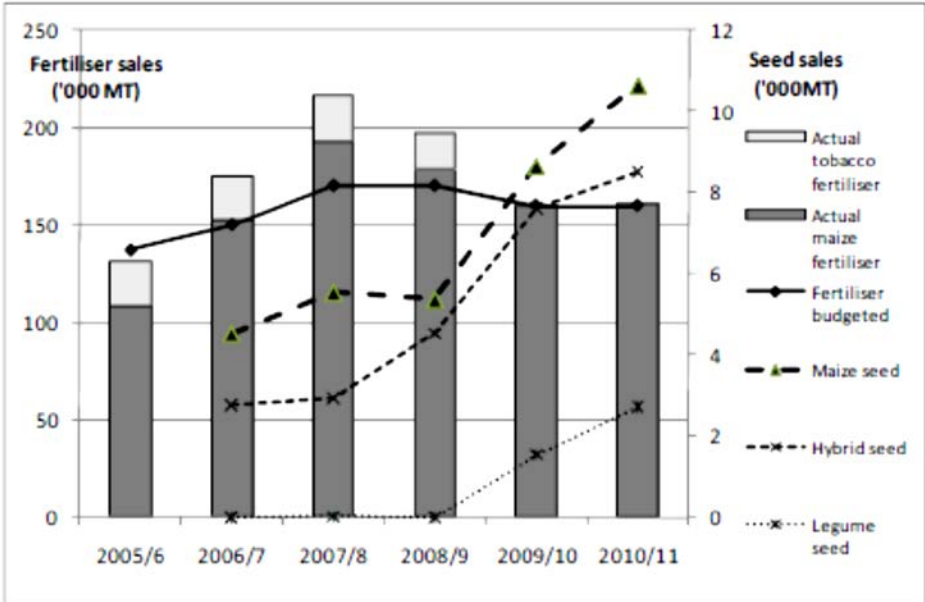
In 2010, the Government of Malawi presented its Agriculture Sector Wide Approach (ASWAp). The AsWAP is a priority investment programme for the agricultural sector aimed at increasing agricultural productivity, diversifying food production to improve nutrition at household level, and increasing agricultural incomes of the rural people. The formulation of the ASWAp was strongly advocated by the donor community and the implementation of this national strategy for agricultural development and food security is supported by a variety of donors, including through a multi-donor support

programme coordinated by the World Bank and the African Development Bank’s Agriculture Infrastructure Support Project. The ASWAp identifies the growth of groundnut production as an important element of its diversification objective to increase farming revenues and nutrition, and states that it will increase the total value groundnut exports through the promotion of contract farming, farmers associations and cooperatives, the promotion of distribution and utilization of improved seed, fertilizer and chemicals, and export promotion (market research studies, buyer/trader meetings etc.). In contrast to tobacco, tea, cotton and sugar, the ASWAp does not mention a specific export volume target.

Farm Input Subsidy Programme (FISP)

Input subsidies have been an important feature of Malawi’s agricultural sector for decades, until they were largely abolished in the 1990s. Following the Malawi food crisis of 2005 however, a large-scale input subsidy programme was re-introduced during the 2005/6 crop season to tackle some of the key constraints to increased production faced by Malawian small farmers, including low yields and high costs of inputs. Though the FISP focuses mainly on subsidized seed and fertilizer for maize, since 2009 the program also provides a flexible legume seed voucher that can be used for subsidized procurement of groundnut, pigeon pea, soybean or bean seed. As mentioned by Chinsinga (2011), the inclusion of legumes in the FISP was strongly advocated by the donors of the programme in order to incentivize legume agriculture, boost farmers’ incomes, improve nutrition and preserve soil health. As shown in Figure 9, total legume seed sales through the voucher system have reached 2 000 tonnes in 2010. No data could be found on the share of total subsidized legume seeds represented by groundnuts.

Figure 9: Total subsidized fertilizer and seed sales in Malawi by year



Source: Dorward and Chirwa (2011)

DATA REQUIREMENTS, DESCRIPTION AND CALCULATION OF INDICATORS

To calculate the indicators needed to estimate incentives or disincentives to production (NRP, NRA) as well as the Market Development Gaps (MDGs), several types of data are needed. They were collected and are presented and explained hereafter.

TRADE STATUS OF THE PRODUCTS

Though also domestically consumed, groundnuts are a net export commodity for all years of the period under review. For that reason, the calculation of MAFAP indicators focuses on the export value chain dominated by NASFAM (see also paragraph 2d above). During the period under review, groundnut exports represented on average 8 percent of total production. Therefore the trade status of groundnuts is export.

BENCHMARK PRICES

Observed

The basis for calculating a reference parity price to determine whether Malawian groundnut farmers receive market incentives or disincentives is to establish a benchmark border price. Since Malawi is considered an exporter of groundnuts, the FOB price is taken. Since groundnut FOB price data available from the National Statistics Office, UN COMTRADE and FAOSTAT international databases showed high variation both between years and database sources, the FOB price of groundnuts in South Africa, the main exporter of groundnuts in southern Africa, was taken instead. South Africa is also one of the main destinations of Malawian groundnuts (mainly for re-export). As a result, the FOB price per tonne of shelled groundnuts in the Port of Durban is used as the benchmark price in the analysis.

Table 1: Benchmark Price

Benchmark Price	2005	2006	2007	2008	2009	2010
FOB Durban - Shelled Groundnuts USD/ton	831.3	822.05	1080.25	1390.19	1265.94	1240.2

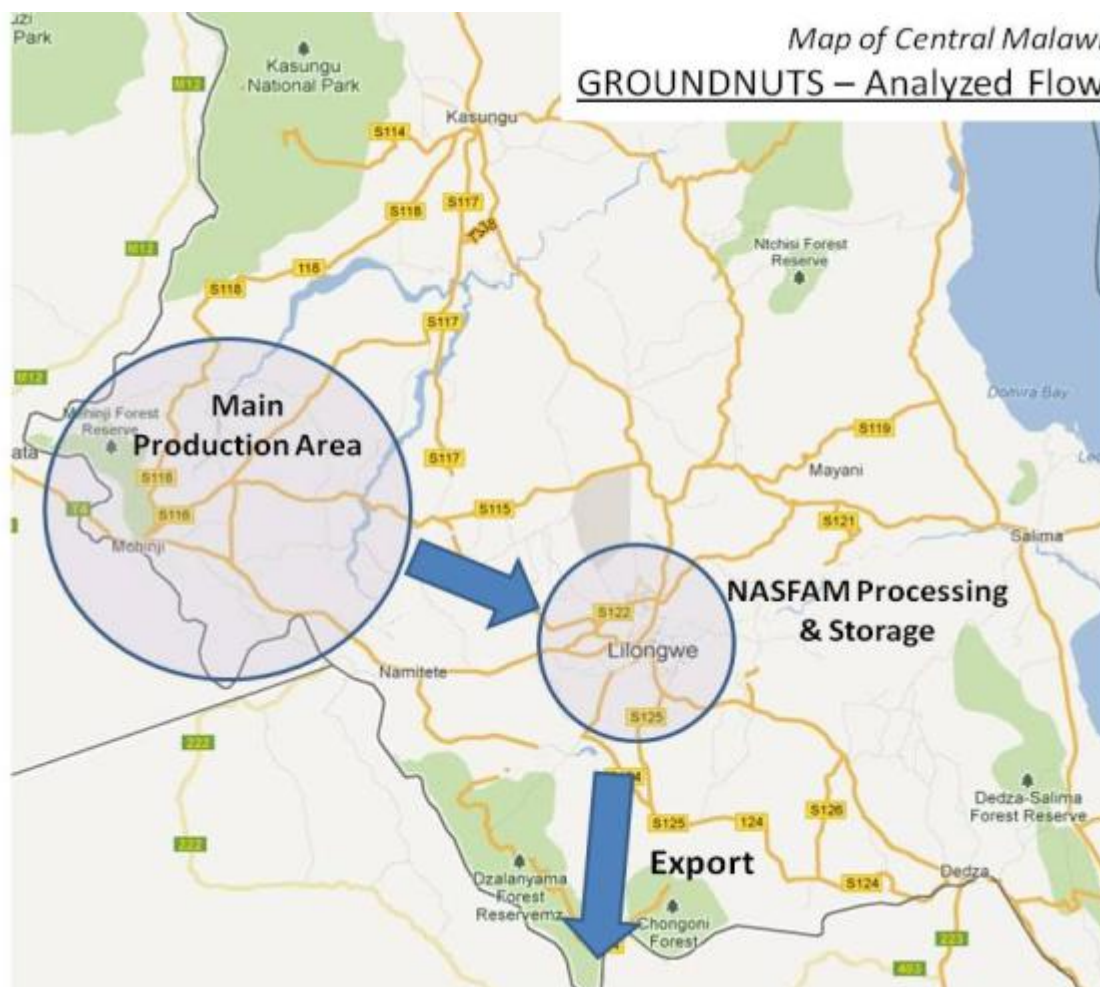
Adjusted

No adjustments to the benchmark price have been made.

DOMESTIC PRICES

The product flow analyzed by MAFAP consists of the main chain of groundnut production and marketing for export. A graphical representation of this flow is presented in Figure 10.

Figure 10: Overview of analyzed product flow of groundnuts



The Mchinji area constitutes the main production area for groundnuts by NASFAM members. Producers are regionally associated in the Mchinji Area Smallholder Farmers Association (MASFA), which belongs to NASFAM. Groundnuts are shelled by hand on the farm and are therefore procured by NASFAM in shelled form. The farm gate prices are annual average producer prices as reported by NASFAM.

Table 2: Domestic Price at Farm Gate

	2005	2006	2007	2008	2009	2010
Annual average farm gate price, As reported by NASFAM	MWK/ton 45,592	63,926	81,175	77,990	108,699	109855

For groundnuts in Malawi, no data on prices at the wholesale level is available. In addition, it should be noted that the analyzed flow represents a vertically integrated marketing chain in which NASFAM members produce directly for the export market. This means that no regular wholesale market level exists in the marketing chain for which incentives and disincentives are calculated.

This is in contrast with the domestic market, which is mainly supplied through small traders and wholesalers as shown in paragraph 2.d above. For these reasons, no wholesale prices have been used in the analysis and incentives/disincentives are only calculated for the farm gate level.

EXCHANGE RATES

Observed

The exchange rate between the Malawi Kwacha and the US dollar has been taken from the IMF database on exchange rates. The average of the exchange rate for each year has been calculated from the monthly data reported in that database.

Adjusted

As indicated by the MAFAP national team, media sources and IMF reports, the Malawi Kwacha has been significantly overvalued since 2007. This is reflected in a dynamic parallel market for foreign exchange. For that reason, an adjusted exchange rate has been applied from 2007 to express the difference between the nominal exchange rate and the exchange rate in the parallel market. The values used are annual averages of parallel market exchange rates of Malawi Kwacha to the US dollar, as calculated by the Reserve Bank of Malawi.

The IMF has confirmed that the overvaluation of the Malawi Kwacha gradually increased to 10.8 percent on average in 2010. In 2011, the African Development Bank indicated in a report that the Malawi kwacha remained overvalued by between 10 and 20 percent in early 2011. Despite a 10 percent devaluation in August 2011, parallel market rates have more recently increased to MWK 230 in December 2011 against an official rate of MWK 165 to the US dollar. In May 2012, the Government of Malawi decided to change its exchange rate policy and allowed its currency to freely float against the US dollar. This resulted in a devaluation of approximately 50 percent and rates of around MWK 250 to the dollar.

Table 3: Nominal and Parallel Exchange Rate, MWK to USD

	2005	2006	2007	2008	2009	2010
Official Nominal Exchange Rate	118.42	136.01	139.96	140.52	141.17	150.49
Parallel Market Exchange Rate	118.42	136.01	140.94	138.24	147.15	166.83

Source: IMF, Reserve Bank of Malawi

ACCESS COSTS

Observed

Access costs analyzed include both the costs of bringing the goods from the farm gate to the processing facilities of NASFAM in Lilongwe, processing costs, margins and transport and port charges to the port of exit (Durban, South Africa).

From the farm-gate to processing, access costs as reported by NASFAM include transport from the farm gate to the processing area in Lilongwe, processing and storage costs, and the profit margin taken by NASFAM for commercialization of the nuts. NASFAM charges its producers no user fees for commercialization services. Furthermore, the export chain of groundnuts in Malawi is not subject to any duties or government levies.

Between the export warehouse of NASFAM and the port, costs consist of transport costs and port charges for the route Lilongwe – Durban (HydroPlan, 2006). Apart from transport costs and port charges, no other costs were identified.

Table 4: Observed Access Costs from Farm Gate to Border

		2005	2006	2007	2008	2009	2010
Transport Costs from Farm to Processing Area	MWK/ton	1,624	1,851	1,998	2,172	2,355	2,530
Processing and Storage Costs	MWK/ton	19,539	22,442	23,093	25,997	26,116	30,850
NASFAM Commercial Profit Margin, average 10%	MWK/ton	7,842	8,560	12,207	16,357	14,409	14,699
Transport Costs and Port Charges Lilongwe - Durban	MWK/ton	20,023	26,212	29,117	31,781	34,616	39,634
Total	MWK/ton	49,028	59,065	66,415	76,307	77,496	87,712

Adjusted

As a landlocked country, Malawian exporters generally suffer from high transportation costs to access the international market. The country uses four different ports for its imports and exports: Durban (South Africa), Beira, Nacala (Mozambique) and Dar es Salaam (Tanzania). Though the port of Nacala (1 000 km) is significantly closer to Lilongwe than Durban (2 300 kilometers), many goods are exported through Durban because of the road conditions and port efficiency. Several projects are currently underway to upgrade the road corridor to Nacala and improve its existing rail connections with Malawi. On the basis of Jaffee (2003) and Arvis et al (2010), it is estimated that the use of the Nacala Corridor could reduce transport costs by 35 per cent. Therefore, an adjustment of 35 percent is made to the transport costs between the warehouses in Lilongwe and the Port of Durban.

Table 5: Adjusted Access Costs from Farm Gate to Border

		2005	2006	2007	2008	2009	2010
Transport Costs from Farm to Processing Area	MWK/ton	1,624	1,851	1,998	2,172	2,355	2,530
Processing and Storage Costs	MWK/ton	19,539	22,442	23,093	25,997	26,116	30,850
NASFAM Commercial Profit Margin, average 10%	MWK/ton	7,842	8,560	12,207	16,357	14,409	14,699
Transport Costs and Port Charges Lilongwe - Durban	MWK/ton	13,015	17,038	18,926	20,658	22,500	25,762
Total	MWK/ton	42,020	49,891	56,224	65,184	65,381	73,841

Since no duties, levies or taxes, nor excessive costs and margins have been identified in the access costs from farm gate to processing, no adjustments have been made to the access costs for that segment of the value chain.

EXTERNALITIES

No externalities have been taken into account in the analysis.

BUDGET AND OTHER TRANSFERS

No budget and other transfers have been taken into account in the analysis. The Farm Input Subsidy Programme, Malawi's extensive programme of subsidized fertilizer and seed vouchers, mainly targets maize and tobacco production.

However, as described in Paragraph 2.e, in 2009 and 2010 vouchers for subsidized legume seeds, including groundnuts, were distributed. In addition, it is not unlikely that subsidized maize fertilizer has also been used for groundnut production. However, without additional research it is not possible to attribute a specific proportion of the FISP programme costs to groundnut production.

As a consequence, values for budget and other transfers can only be included in the analysis once an analysis of public expenditure has been conducted.

QUALITY AND QUANTITY ADJUSTMENTS

In our analysis no quantity or quality adjustments are applied. In the value chain under review, groundnuts are hand-shelled at the farm before being transported to NASFAM storage centers. Therefore the farm gate price and access costs all refer to shelled nuts. As a result, no quantity adjustment is required. In general, weight losses as a result of shelling amount to 30 percent of total weight (CYE Consult, 2009).

DATA OVERVIEW

Following the discussions above here is a summary of the main sources and methodological decisions taken for the analysis of price incentives and disincentives for groundnuts in Malawi.

Table 6: Sources of data used in the calculations of indicators

Concept		Description	
		Observed	Adjusted
Benchmark price		FOB price at Durban, South Africa Source: Global Trade Atlas	N.A.
Domestic price at point of competition		Integrated export value chain. No wholesale prices available. Domestic price at point of competition taken as Benchmark Price minus Access Costs from Export Warehouse to Port.	N.A.
Domestic price at farm gate		N.A.	N.A.
Exchange rate		Annual average of exchange rate as reported by IMF	Average annual parallel market rate as estimated by the Reserve Bank of Malawi
Access cost from farm-gate to border		Transport costs from farm gate to export warehouse, processing cost, profit margins and transport costs and port charges from Lilongwe to Durban obtained from the National Association of Smallholder Farmers (NASFAM).	Reduction of transport costs, based on World Bank Studies (Arvis et al, 2010; Jaffee, 2003)
QT adjustment	Bor-Wh	N.A.	N.A.
	Wh-FG	N.A.	N.A.
QL adjustment	Bor-Wh	N.A.	N.A.
	Wh-FG	N.A.	N.A.

Table 7: Data and values used in the calculations of indicators

Years	Unit	Symbol	2005	2006	2007	2008	2009	2010
			export	export	export	export	export	export
Trade Status								
Benchmark Price								
	Observed	USD/TON	831.30	822.05	1,080.25	1,390.19	1,265.94	1,240.20
	Adjusted	USD/TON						
Exchange rate								
	Observed	LC/USD	118.42	136.01	139.96	140.52	141.17	150.49
	Adjusted	LC/USD	118.42	136.01	140.94	138.24	147.15	166.83
Access costs border - point of competition								
	Observed	LC/TON	20,023.08	26,211.74	29,116.61	31,781.29	34,615.91	39,636.19
	Adjusted	LC/TON	13,015.00	17,037.63	18,925.79	20,657.84	22,500.34	25,762.38
			78,419.25	85,598.19	122,072.25	163,571.95	144,092.97	146,997.36
Domestic price at point of competition								
		LC/TON						
Access costs point of competition - farm gate								
	Observed	LC/TON	29,005.07	32,852.87	37,298.18	44,525.97	42,880.19	48,078.41
	Adjusted	LC/TON	N/A	N/A	N/A	N/A	N/A	N/A
			45,591.60	63,926.36	81,175.23	77,990.09	108,698.55	109,855.26
Farm gate price								
		LC/TON						

CALCULATION OF INDICATORS

The indicators and the calculation methodology used is described in Box 2. A detailed description of the calculations and data requirements is available on the MAFAP website or by clicking [here](#).

Box 2: MAFAP POLICY INDICATORS

MAFAP analysis uses four measures of market price incentives or disincentives. *First*, are the two observed nominal rates of protection one each at the wholesale and farm level. These compare observed prices to reference prices free from domestic policy interventions.

Reference prices are calculated from a benchmark price such as an import or export price expressed in local currency and brought to the wholesale and farm levels with adjustments for quality, shrinkage and loss, and market access costs.

The **Nominal Rates of Protection - observed (NRPo)** is the price gap between the domestic market price and the reference price divided by the reference price at both the farm and wholesale levels:

$$NRPo_{fg} = (P_{fg} - RPo_{fg})/RPo_{fg}; \quad NRPo_{wh} = (P_{wh} - RPo_{wh})/RPo_{wh};$$

The $NRPo_{fg}$ captures all trade and domestic policies, as well as other factors which impact on the incentive or disincentive for the farmer. The $NRPo_{wh}$ helps identify where incentives and disincentives may be distributed in the commodity market chain.

Second are the **Nominal Rates of Protection - adjusted (NRPa)** in which the reference prices are adjusted to eliminate distortions found in developing country market supply chains. The equations to estimate the adjusted rates of protection, however, follow the same general pattern:

$$NRPa_{fg} = (P_{fg} - RPa_{fg})/RPa_{fg}; \quad NRPa_{wh} = (P_{wh} - RPa_{wh})/RPa_{wh};$$

MAFAP analyzes market development gaps caused by market power, exchange rate misalignments, and excessive domestic market costs which added to the $NRPo$ generate the $NRPa$ indicators. Comparison of the different rates of protection identifies where market development gaps can be found and reduced.

Price gaps and Nominal Rates of Protection are calculated for the farm gate level only. The Nominal Rate of Assistance (NRA) includes budgetary and other transfers. In the analysis of incentives and disincentives for groundnut production in Malawi, no transfers were taken into account. For that reason, the NRA has not been calculated.

Table 8: MAFAP price gaps for groundnuts in Malawi 2005-2010 (MWK per tonne)

	2005	2006	2007	2008	2009	2010
Trade status for the year	x	x	x	x	x	x
Observed price gap at wholesale	-	-	-	-	-	-
Adjusted price gap at wholesale	-	-	-	-	-	-
Observed price gap at farm gate	(3,822.66)	11,181.31	(3,598.46)	(41,056.18)	7,485.86	10,934.11
Adjusted price gap at farm gate	(10,830.87)	2,009.85	(14,851.24)	(49,005.96)	(12,203.99)	(23,206.52)

Source: Own calculations using data as described above.

Table 9: MAFAP nominal rates of protection (NRP) for groundnuts in Malawi 2005-2010 (%)

	2005	2006	2007	2008	2009	2010
Trade status for the year	x	x	x	x	x	x
Observed NRP at wholesale	-	-	-	-	-	-
Adjusted NRP at wholesale	-	-	-	-	-	-
Observed NRP at farm gate	-7.7%	21.2%	-4.2%	-34.5%	7.4%	11.1%
Adjusted NRP at farm gate	-19.2%	3.2%	-15.5%	-38.6%	-10.1%	-17.4%

Source: Own calculations using data as described above.

Table 10: MAFAP Market Development Gaps for groundnuts in Malawi 2005-2010 (MWK per tonne)

	2005	2006	2007	2008	2009	2010
Trade status for the year	x	x	x	x	x	x
International markets gap (IRG)	-	-	-	-	-	-
Exchange policy gap (ERPG)	(0.21)	2.91	(1,061.58)	3,173.38	(7,574.19)	(20,269.02)
Access costs gap to point of competition (ACG _{wh})						
Access costs gap to farm gate (ACG _{fg})	(7,008.00)	(9,174.37)	(10,191.21)	(11,123.16)	(12,115.66)	(13,871.62)

Source: Own calculations using data as described above.

INTERPRETATION OF THE INDICATORS

Graphs 1 and 2 present the two sets of indicators that MAFAP will generate, including price gaps and Nominal Rates of Protection and Nominal Rates of Assistance. Price gaps give an absolute picture of the policy effort (observed) and of international markets and market development gaps while the ratios provide a percentage that can be compared across countries and products.

Since the groundnut chain for export is a vertically integrated value chain, no wholesale market exists. Without any wholesale price data, no price gaps or NRPs at wholesale level could be calculated.

At the farm gate level, disincentives are recorded for the years 2005, 2007 and 2008, while 2006, 2009 and 2010 show incentives to groundnut producers. In 2008, disincentives reached their highest level when the Nominal Rate of Protection was -34.5 percent. Though international prices sharply increased as a result of the global food crisis, farm gate prices went slightly down compared to 2007. The latter could be the result of the very strong growth in production in 2007, which spilled over into 2008 and created excess supply, resulting in a deterioration of the bargaining position of producers. In 2009 and 2010, incentives were recorded of 7.4 percent and 11.1 percent respectively. This can be attributed to better integration of the value chain by NASFAM and the increases in exports with fair trade certification that generate a premium for producers. As a result, average farm gate prices increased more than international prices and incentives to production rose. As benchmark prices do not account for the increase in quality of domestic production (as they refer to South African exports), the incentive is not policy-related but rather the result of improved value chain management by NASFAM. The higher levels of incentives are clearly noted by farmers as more farmers move into groundnut production and total production levels almost doubled between 2005 and 2010.

When taking into account the structure of the value chain and the adjustments made to correct for excessive profits and costs and inefficiencies, the picture presented is different.

With the exception of 2006, adjusted Nominal Rates of Protection at farm-gate level are negative throughout the period under review. At the farm gate level, NRPs are generally between 10-20 percent, but with an even stronger disincentive of 38.6 percent in 2008. There are two main consequences for the disincentives recorded after adjustments.

First, exchange rate policy turned increasingly harmful to exports as the Malawi Kwacha became overvalued. In 2010, when the overvaluation reached levels of more than 10 percent, producers could have received around MWK 20 000 more per tonne of produce if the currency would not have been overvalued. This explains the strongly negative NRPs in 2009 and 2010. Finally, it must be noted that even though no NRPs are calculated at wholesale level, wholesales also have faced a disincentive in the years when the Malawi Kwacha was overvalued.

Secondly, disincentives are caused by the high transport costs that Malawian exporters deal with. Groundnuts are exported through Durban, mainly because of the underinvestment in the road and rail links to the Mozambican ports of Beira and Nacala, which makes transport through these hubs less reliable compared to South Africa. Transport through Mozambican ports would mean a reduction of more than 1 000 kilometers of road transport and significantly shorter transfer times.

The underinvestment in these corridors is a disincentive for producers and processors alike, as it reduces the competitiveness of Malawian groundnuts on the international markets. Producers and processors could obtain higher prices if the international transport costs were reduced. The negative values of the adjusted NRP at wholesale level highlight the impact of this disincentive.

Table 10 provides the cost of these market inefficiencies and exchange rate policy to producers in monetary terms (so-called Market Development Gaps).

In the current analysis, budgetary transfers are not taken into account and no Nominal Rate of Assistance is calculated. Through the Farm Input Subsidy Programme, some transfers were realized in the period 2005-2009 to legume producers. These transfers primarily included vouchers for purchase of subsidized groundnut seeds. Furthermore, some sources indicate that subsidized fertilizer targeted to maize producers was also used for groundnut production. Therefore, it is not unlikely that some of the price disincentives recorded are offset by budgetary support through the Government’s Farm Input Subsidy Programme.

Figure 11: Observed and adjusted price gaps for groundnuts at wholesale and farm gate in Malawi 2005-2010 (MWK/Tonne)

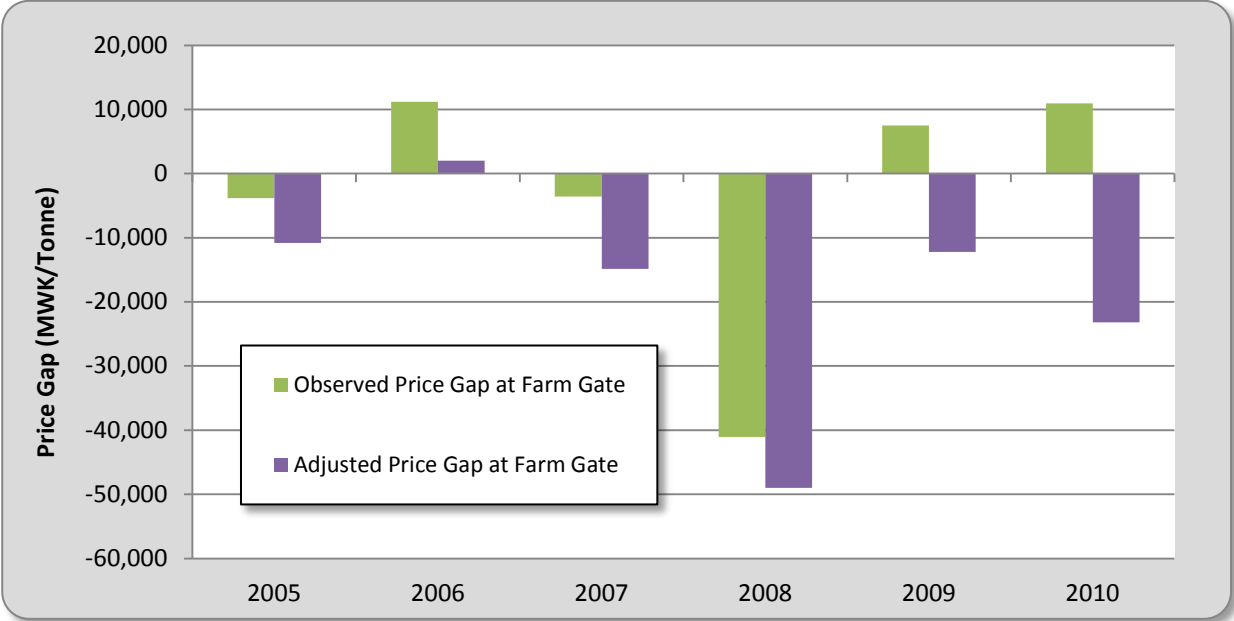
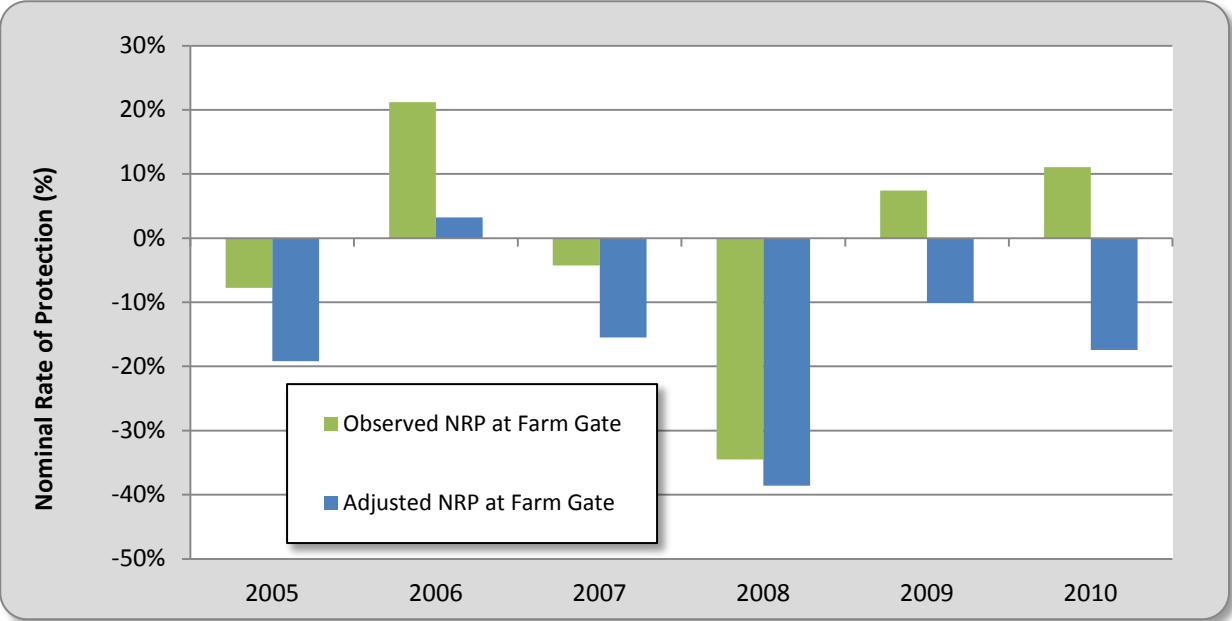


Figure 12: Observed and adjusted nominal rate of protection at wholesale and farm gate for groundnuts in Malawi 2005-2010



PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

MAIN MESSAGE

On the basis of the data currently collected and assuming no major data problems, it seems that the government objective of increasing both groundnut production and exports is being realized. Our analysis shows that the total effect of policy, regulation and market structure throughout the period 2005 – 2010 has created incentives to producers. However, these incentives do not seem to be caused by targeted policy interventions but are rather the result of NASFAM's value chain management and bid for quality products that generate a producer premium in the market.

As our analysis shows, the efforts undertaken by the National Smallholder Farmers' Association of Malawi to develop the groundnut export value chain by increasing availability of improved seeds, improving processing facilities, transport and storage, and opening sales channels to international markets has resulted in relatively low access costs and an increasingly well-integrated value chain. This means that Malawian groundnut producers are increasingly benefiting from higher groundnut prices in the international market. It should also be noted that no duties, levies or taxes exist that create penalizations for farmers.

However, some other elements need to be taken into account when assessing the incentives and disincentives faced by groundnut producers:

- First, our calculations have focused on the smallholder export value chain through NASFAM. The domestic retail market is primarily supplied through wholesalers that buy from small village traders, which on their turn buy directly from farmers. Generally, the average retail prices are almost consistently above FOB prices. Since no specific policies can be identified that would explain this difference, it can be argued that the different structure of the domestic supply chain results in higher costs and greater inefficiencies, causing possible disincentives to domestic consumers as they are confronted with higher prices than international buyers.
- Second, it should be noted that the reinvigoration of groundnut production for export is a very recent development in Malawian agriculture and observed incentives may be subject to rapidly changing market developments. Production of groundnuts is prioritized in the Government's Agricultural Sector Wide Approach (ASWAp) and has received significant attention from donors over the last decade. Several donors have financed projects to strengthen NASFAM's institutional and financial capacities. The farmers' association also improved its technical skills in reducing the presence of aflatoxin diseases in groundnuts, which strengthens its potential for future export growth in developed markets with strong sanitary and phytosanitary protection schemes, such as the European Union. A Regional Groundnut Improvement Program for Southern Africa was implemented by ICRISAT to improve seed quality and availability. More recently, NASFAM has entered into a joint venture with European social investors to establish groundnut processing for the fair-trade market. All these initiatives demonstrate that groundnut production is currently subject to many developments that alter market structure and value addition throughout the chain. Continued monitoring of the incentives and disincentives for the commodity is

recommended in order to determine how producers are affected by changes in the policy and market environment.

- Finally, in May 2012, the Government of Malawi decided to float the local currency to the US dollar. This resulted in a devaluation of the Malawi Kwacha by around fifty percent. This measure no doubt has a positive impact on agricultural exporters and producers, as they faced increasing disincentives as a result of exchange rate policy which had kept the Malawi Kwacha overvalued for several years. As soon as new data is available, it will be relevant to monitor the impact of this policy change on producers of groundnuts and other export commodities alike.

PRELIMINARY RECOMMENDATIONS

In order to increase the attractiveness of investing in groundnut production for growers it will be beneficial for the development of the market if existing disincentives are reduced.

Based on our analysis, suggested policy reforms could include the following measures:

- the recent decision of the Government of Malawi to float the local currency has important positive effects on the producers of export crops, such as groundnuts. It will increase the competitiveness of Malawi's groundnuts in the international market and boosts its export potential. Since promoting agricultural exports is one of the main pillars of the government's strategy for growth in Malawi's agriculture-based economy, it is important to sustain an exchange rate policy that supports this objective;
- at the same time, supportive policies to strengthen the supply side are equally important. This will involve the availability of resistant seeds and continued investment in extension services and technical assistance to farmers, in particular for groundnut producers that are not members of NASFAM;
- finally, our analysis shows that high transport costs provide significant disincentives to producers and traders. Further development of the Nacala corridor, to improve the country's access to the nearby container ports at the Mozambican coast, are key for the country's export potential.

LIMITATIONS

The first limitation is that under the current phase of MAFAP no structural, in-depth collaboration with local counterparts is envisaged in Malawi. This limits the possibilities of data collection and analysis, as local technical and institutional partners are better able to link certain outcomes to specific policy measures, as well as their level of enforcement. In particular, in the absence of institutional and research partnerships has caused difficulties in obtaining access cost data (on transport, storage, processing and user fees) of NASFAM.

Secondly, the analysis has been limited due to the unavailability of wholesale prices. Not only are wholesale prices currently not collected by Malawian authorities, the parallel supply chains of the export market and the domestic retail market also have as a consequence that no clear single wholesale market exists. As a result, only price gaps and Nominal Rates of Protection at the farm-gate level have been calculated.

FURTHER INVESTIGATION AND RESEARCH

- carry out analysis of domestic supply chain in order to calculate the incentives and disincentives faced by groundnut consumers. This is particularly important given the attention for groundnuts as a key crop in improving food security and nutrition at the household level;
- conduct an analysis of the input subsidies to the groundnut sector in order to estimate the level of budgetary transfers and the Nominal Rates of Assistance. In particular, this will involve analyzing the Farm Input Subsidy Programme to determine which share of programme costs has been used for legume vouchers used for subsidized groundnut seeds.

BIBLIOGRAPHY

Chinsinga, Blessings (2011), Agro-dealers, subsidies and rural market development in Malawi: A political economy enquiry, Future Agricultures Working Paper no. 31, www.future-agricultures.org

CYE Consult (2009), Value chain analysis of selected commodities, Institutional development across the agri-food sector, Final Report, Brussels, Belgium

Government of Malawi (2010), Agricultural Sector Wide Approach program (ASWAp). Ministry of Agriculture and Food Security, Lilongwe, Malawi

Jones, Richard, M. Siambi, F. Sichali (2011) Making Legumes Lucrative: The Malawi Seed Industry Development Project, ICRISAT, Nairobi, Kenya

National Statistical Office (2010) Statistical Year Book – 2010, Zomba, Malawi

Sangole, Noel, Tennyson Magombo and Daisy Kalima (2010) Groundnut value chain analysis report, African Institute of Corporate Citizenship, Lilongwe, Malawi

Simtowe, Franklin et al (2009) Assessment of the Current Situation and Future Outlooks for the groundnut Sub-Sector in Malawi, International Crops Research Institute for the Semi-Arid Tropics, Lilongwe, Malawi

Twin.org.uk, Afri-Nut Ltd: A landmark groundnut processing plant for Malawi, <http://www.twin.org.uk/projects/afri-nut-ltd-landmark-groundnut-processing-plant-malawi>

ANNEX I: Methodology Used

A guide to the methodology used by MAFAP can be downloaded from the MAFAP website or by clicking [here](#).

ANNEX II: Data and calculations used in the analysis

Name of product		Groundnuts		Local currency		Malawi Kwacha					
International currency		US Dollars (USD)									
DATA		Unit	Symbol	Year	2005	2006	2007	2008	2009	2010	trade status
					x	x	x	x	x	x	
Benchmark Price											
1	Observed	USD/TONNE	P _{b(int\$)}		831.30	822.05	1,080.25	1,390.19	1,265.94	1,240.20	
1b	Adjusted	USD/TONNE	P _{ba}								
Exchange Rate											
2	Observed	MWK/USD	ER _o		118.42	136.01	139.96	140.52	141.17	150.49	
2b	Adjusted	MWK/USD	ER _a		118.42	136.01	140.94	138.24	147.15	166.83	
Access costs border - point of competition											
3	Observed	MWK/TONNE	AC _{o,wh}								
3b	Adjusted	MWK/TONNE	AC _{a,wh}								
Domestic price at point of competition											
4		MWK/TONNE	P _{dwh}								
Access costs point of competition - farm gate											
5	Observed	MWK/TONNE	AC _{o,fg}		49,028.07	59,064.87	66,415.18	76,306.97	77,496.19	87,712.41	
5b	Adjusted	MWK/TONNE	AC _{a,fg}		42,020.08	49,890.50	56,223.97	65,183.81	65,380.53	73,840.79	
6		MWK/TONNE	P _{d,fg}		45,591.60	63,926.36	81,175.23	77,990.09	108,698.55	109,855.26	
7		MWK/TONNE	E								
8		MWK/TONNE	BOT								
	Quantity conversion factor (border - point of competition)	Fraction	QT _{wh}		1.00	1.00	1.00	1.00	1.00	1.00	
	Quantity conversion factor (border - point of competition)	Fraction	QL _{wh}		1.00	1.00	1.00	1.00	1.00	1.00	
	Quantity conversion factor (point of competition - farm gate)	Fraction	QT _{fg}		1.00	1.00	1.00	1.00	1.00	1.00	
	Quantity conversion factor (point of competition - farm gate)	Fraction	QL _{fg}		1.00	1.00	1.00	1.00	1.00	1.00	
CALCULATED PRICES											
Benchmark price in local currency											
9	Observed	MWK/TONNE	P _{b(loc\$)}		98,442.33	111,809.93	151,188.86	195,353.24	178,708.88	186,633.55	
10	Adjusted	MWK/TONNE	P _{ba(loc\$)}		98,442.55	111,807.02	152,250.44	192,179.87	186,283.07	206,902.57	
Reference Price at point of competition											
11	Observed	MWK/TONNE	RP _{o,wh}		98,442.33	111,809.93	151,188.86	195,353.24	178,708.88	186,633.55	
12	Adjusted	MWK/TONNE	RP _{a,wh}		98,442.55	111,807.02	152,250.44	192,179.87	186,283.07	206,902.57	
Reference Price at Farm Gate											
13	Observed	MWK/TONNE	RP _{o,fg}		49,414.26	52,745.06	84,773.68	119,046.27	101,212.69	98,921.14	
14	Adjusted	MWK/TONNE	RP _{a,fg}		56,422.47	61,916.52	96,026.46	126,996.05	120,902.54	133,061.78	
INDICATORS											
Price gap at point of competition											
15	Observed	MWK/TONNE	PG _{o,wh}		N/A	N/A	N/A	N/A	N/A	N/A	
16	Adjusted	MWK/TONNE	PG _{a,wh}		N/A	N/A	N/A	N/A	N/A	N/A	
Price gap at farm gate											
17	Observed	MWK/TONNE	PG _{o,fg}		(3,822.66)	11,181.31	(3,598.46)	(41,056.18)	7,485.86	10,934.11	
18	Adjusted	MWK/TONNE	PG _{a,fg}		(10,830.87)	2,009.85	(14,851.24)	(49,005.96)	(12,203.99)	(23,206.52)	
Nominal rate of protection at point of competition											
19	Observed	%	NRPO _{wh}		N/A	N/A	N/A	N/A	N/A	N/A	
20	Adjusted	%	NRPA _{wh}		N/A	N/A	N/A	N/A	N/A	N/A	
Nominal rate of protection at farm gate											
21	Observed	%	NRPO _{fg}		-7.7%	21.2%	-4.2%	-34.5%	7.4%	11.1%	
22	Adjusted	%	NRPA _{fg}		-19.2%	3.2%	-15.5%	-38.6%	-10.1%	-17.4%	
Nominal rate of assistance											
23	Observed	%	NRA _o		-7.7%	21.2%	-4.2%	-34.5%	7.4%	11.1%	
24	Adjusted	%	NRA _a		-19.2%	3.2%	-15.5%	-38.6%	-10.1%	-17.4%	
Decomposition of PWAfg											
25		MWK/TONNE	IRG		-	-	-	-	-	-	
26		MWK/TONNE	ERPG		(0.21)	2.91	(1,061.58)	3,173.38	(7,574.19)	(20,269.02)	
27		MWK/TONNE	ACG _{wh}		-	-	-	-	-	-	
28		MWK/TONNE	ACG _{fg}		(7,008.00)	(9,174.37)	(10,191.21)	(11,123.16)	(12,115.66)	(13,871.62)	
29		MWK/TONNE	EG		-	-	-	-	-	-	



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