

## **STRATEGIC OPTIONS FOR AGRICULTURE AND DEVELOPMENT IN MALAWI**

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**Undertaken for the Ministry of Agriculture, Irrigation and Water Development**

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**EVALUATION OF THE 2013/14 FARM INPUT SUBSIDY PROGRAMME, MALAWI**  
**STRATEGIC OPTIONS FOR AGRICULTURE AND DEVELOPMENT IN MALAWI**

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**Executive Summary**

This paper considers potential strategic options for agriculture and development in Malawi in the context of the country's current situation and the prospects the country faces. After briefly reviewing current national and sectoral policy and potential roles of smallholder agriculture in economic growth, we set out the current situation in order to consider strengths, weaknesses, opportunities and threats.

We conclude that a major emphasis is needed on supporting changes that reduce the rate of population growth and promote capacity for adaptation and resilience to climate change. Rapid increases in the productivity of agricultural land and labour and rural incomes will be critical to this (alongside increased education and empowerment of girls and women). There are, however, difficult potential trade-offs to negotiate (for example between increased irrigation and reduced inflows into Lake Malawi) and these need further consideration.

From this analysis we derive a set of nine strategic principles and two operational principles that we suggest could helpfully stimulate and guide strategy development that addresses the opportunities and threats facing Malawian agriculture, as follows:

*Strategic principles*

1. Sustainable investments and activities that are viable for and acceptable to all stakeholders
2. Emphasis on land and wider labour productivity
3. Integration of complementary agricultural and non-agricultural strategies, policies and investment
4. Emphasis on broad based and inclusive growth
5. Emphasis on increased quality and diversity in food production
6. Emphasis on market access and affordability of food for all, particularly the rural and urban poor
7. Promotion of sustainable practices with accumulation rather than depletion of natural resources, taking account of both current and future threats to sustainability
8. Rapid achievement of broad based growth as a significant element in reducing the rate of population growth and in supporting climate change adaptation and resilience
9. Pursuit of agro-processing opportunities to promote value addition with local (downstream) linkages

*Operational principles*

10. Consistent coordinated vision
11. Clear priorities and roles

The application of these principles is illustrated by indicative consideration of policy and investment options focusing on development of different commodities and (broadly defined) resources. Consistent implementation of coordinated and consistent sectoral and inter-sectoral policies to support smallholder agriculture development is critical for achievement of the desired growth and diversification impacts. A number of concrete and immediate policy and investment recommendations are made

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# Strategic options for agriculture and development in Malawi

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## 1 Introduction

This paper considers potential strategic options for agriculture and development in Malawi in the context of the country's current situation and the prospects the country faces. After briefly reviewing current national and sectoral policy, and potential roles of agriculture in driving and supporting broad based growth, we set out the current situation in order to consider strengths, weaknesses, opportunities and threats. From this we derive a set of eleven principles (nine strategic and two operational principles) that we suggest could helpfully stimulate and guide strategy development that addresses the opportunities and threats facing Malawian agriculture, as discussed earlier. The application of these principles is illustrated by indicative and very broad consideration of policy and investment options focusing on development of different commodities and (broadly defined) resources.

## 2 Current policy structures

Current agricultural policies lie within the overall Malawi Growth and Development Strategy II 2012-16 (MGDS II) and the Agricultural Sector Wide Approach (ASWAp) which was developed under MDGSI and sets out targets and budgets for the period 2010/11 to 2014/15. The ASWAp provides an umbrella for a large number of more specific programme and projects.

The MDGSI (Malawi Government, 2012) has as its overarching objective the reduction of poverty "through sustainable economic growth and infrastructure development" (page 12). It identifies Agriculture and Food Security as one of 9 key priority areas. Sector challenges are highlighted as low productivity, over dependence on rain-fed farming with limited irrigation development, low uptake of improved farm inputs, weak private sector participation, and low investment in mechanization. These are associated with "high transport costs, inadequate farmer organizations, insufficient extension services, inadequate markets and market information, limited access to agricultural credit, inefficient input and output markets and low technology development and transfer". The overall goals in this key priority area are therefore "to increase agriculture productivity and diversification" and "to ensure sustained availability and accessibility of food to all Malawians at all times at affordable prices". Key strategies for achieving these goals include a variety of approaches to address the constraints addressed above.

The challenge of over dependence on rain-fed farming with limited irrigation development is addressed in another of the 9 key priority areas, Green Belt Irrigation and Water Development. Green Belt Irrigation has a major focus on increasing agricultural (including fisheries) productivity through development of irrigation infrastructure, potential groundwater resources and of technical and administrative capacities; rehabilitation of irrigation schemes and dams; and research in irrigation technology. The aim is to increase the area under irrigation from 90,000 to 400,000 hectares.

The Agricultural Sector Wide Approach (ASWAp) (Ministry of Agriculture and Food Security, 2010) was developed under the MDGSI, aiming to "increase agricultural productivity, contribute to 6% growth annually in the agricultural sector, improve food security, diversify food production to improve nutrition at household level, and increase agricultural incomes of the rural people" (page v). It provided much of the detail on agriculture and food security in MDGSI. It has three focus areas, two key support services and two cross-cutting issues as follows:

- Focus areas:
  - Food Security and Risk Management;
  - Commercial Agriculture, Agro-processing and Market Development;
  - Sustainable Agricultural Land and Water management.
- Key support services:
  - Technology Generation and Dissemination;
  - Institutional Strengthening and Capacity Building
- Cross-cutting issues:
  - HIV Prevention and AIDS Impact Mitigation;
  - Gender Equity and Empowerment

The ASWAp is consistent with the four pillars of the Comprehensive African Agriculture Development Programme (CAADP) and provides the basis for and focus of the Malawi CAADP Compact. In 2013 the Malawi Government, G8 Development Partners and national and international companies made commitments under the G8 New Alliance for Agriculture and Food Security to promote the development of smallholder farmers' access to markets. The main thrust of the Country Cooperation Framework is to support the implementation of those parts of the ASWAp which both involve partnership with the private sector and promote smallholder agricultural development and improved nutrition for the nation (New Alliance for Food Security and Nutrition, 2013).

### **3 The roles of agriculture in economic growth <sup>1</sup>**

There has been a long standing international debate about the roles of agriculture and particularly smallholder agriculture in growth and poverty reduction. There is strong cross country empirical evidence that growth in smallholder agriculture has had a major and dominant impact on growth and poverty reduction in low income countries in the past (for example Christiaensen et al. (2011)). Such evidence is supported by strong theoretical arguments – but neither the evidence nor the theory suggest that smallholder agriculture is always the best or only basis for broad based or inclusive and poverty reducing growth, and its effectiveness depends upon both context and the effectiveness of policy in stimulating agricultural as compared with other types of growth (Dercon and Gollin, 2014).

Dorward et al. (2008) identify two potential roles that agriculture can play in wider economic growth in low income countries, *driving* growth (providing fundamental increases in productivity and earnings) and/or *supporting* growth processes in terms of multiplying and spreading the benefits of primary growth drivers through an economy. Agriculture can work as a *growth driver* in two ways. First, growth in production of tradables (imported or exported commodities) raises incomes of domestic producers who can produce either below import parity price for domestically consumed products or below export parity price for exports. In either case, production and producer incomes can expand without affecting prices (as these are determined in world markets).

Agriculture can also drive growth through increased production of non-tradable or semi-tradable staple foods which are important in people's expenditure (with high average budget shares). Here growth occurs through increases in consumer incomes as a result of reduced prices and hence reduced expenditure, releasing funds for other expenditures. Even as a tradable, a shift from importing to self-sufficiency or exporting of cereals may lead to some domestic price reductions, through differences between import and export parity prices (and this may be important with seasonal price changes).

Agriculture also has an important role as a *growth supporter* because if people's incomes are rising (as a result of agricultural or non-agricultural growth drivers) this increases domestic expenditure on horticultural and livestock produce. If local agricultural producers are able to respond to this increased demand then this multiplies and spreads the benefits of the original growth stimulus. If local

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<sup>1</sup> This section draws heavily on Dorward et al. (2008)

agricultural producers are not able to respond to this increased demand then the extra demand will lead to imports (leaking out of and being lost from the economy) and/ or inflation (reducing the increases in real income from growth drivers). Increases in staple food productivity also have a role as growth supporters, in releasing resources for other productive resources where there is rising demand for non-staple and non-farm goods and services.

The potential roles of increases in staple food crop productivity in driving and supporting growth are potentially particularly important and effective where large numbers of (particularly poor) people and large amounts of land and capital are involved in their production. 'Deficit food producers' (farmers who produce less food than they consume and are therefore both producers and buyers of food crops) can get a double benefit from staple food crop productivity increases, as both producers and consumers.

Smallholder agricultural growth offers further economic benefits from high growth linkages: income gains from growth circulate in the local economy, and smallholder agriculture multipliers tend to be high because consumption patterns of the rural poor tend to have a high non-tradable content (Delgado et al., 1998; Hazell and Hoggart, 1995; Taylor and Thome, 2013). Finally, there are further benefits where increases in staple food crop productivity lead to low and stable food prices as well as increased real incomes for large numbers of producers and/or consumers. This can (a) stimulate demand for non-staple and non-farm products (as a result of higher real incomes), (b) provide resources for investment in supply to meet this demand (also as a result of higher real incomes) and (c) allow people to shift out of low return food production (which they may be locked into as a result of the need for subsistence production in the context of high and variable food prices) and into higher return non-staple and non-farm activities. Staple food crop productivity can also have environmental benefits if these reduce pressures for cultivation on marginal or forested lands, and/or involve improved soil management (with reduced run-off, and soil erosion).

Increases in non-staple food crop and animal productivity can contribute to growth, food security and poverty reduction in a number of ways. Where these are tradables they can *drive* growth through exports (increasing returns to land and labour, and stimulating growth in employment and wages). Where these are tradables and have high marginal budget shares (as is often the case for horticultural and animal products) they can *support* growth as import substitutes. Increases in non-tradable non-staple products can support growth again where they have high marginal budget shares. Tradable growth drivers and tradable and non-tradable growth supporters can also have positive upstream and downstream multiplier effects.

If therefore smallholder agriculture can play a range of different roles in promoting pro-poor growth, what determines what contributions can be made by the different types of agricultural growth in different contexts?

Dorward et al. (2008) put forward a typology of agricultural products and their potential roles in development in different types of countries, drawing on insights from Hazell et al. (2007), Byerlee et al. (2006) and Poulton and Dorward (2008). This, presented in table 1, sets out the major roles for increased agricultural productivity for different types of products in countries with different characteristics. The table distinguishes first between three different types of staple food crop (and implicitly between different agro-ecological zones associated with these crops). Maize and rice are examples of cereals with potential high responses to significant investments in inorganic (and organic) fertiliser application. Millet and sorghum are examples of cereals that have generally lower yield potential, but there are still possibilities for significant yield responses in the context of integrated soil fertility management (ISFM) practices involving, for example, better water control, use of organic matter and micro-dosing with critical nutrients. Root crops, particularly cassava, have the potential for significant yield increases with intensification: although with time this will require substantial increases in fertiliser inputs, there are generally initial opportunities for major yield increases from improved varieties.

**Table 1 Typology of agricultural products by roles and country types**

Crop types	Broad roles for smallholder agriculture	Specific role by country type		
		Countries with Minerals	Coastal, No minerals	Land locked, No minerals
Staple crops				
High response cereals ( <i>maize, rice</i> )	Pro-poor growth	Support & spread growth	Regional driver & supports growth	Major driver & then supporter
Low response cereals ( <i>sorghum, millet</i> )	Least cost welfare, growth platform	Subsistence support & spread growth	Subsistence & support growth	Subsistence
Roots/ tubers ( <i>cassava, sweet potatoes</i> )	Pro-poor growth	Support & spread growth	Regional driver & supports growth	Major driver & then supporter
Non-staples				
Domestically consumed non-tradables	Support growth, with staple spillovers	Support & spread growth	Support growth	Support growth
Domestically consumed tradables	Support growth, with staple spillovers	Support & spread growth	Support growth	Support growth
Traditional / non-traditional exports	Drive growth with staple spillovers?	Minor driver & spreads growth	Regional driver & supports growth	Driver

The high potential yields achievable with the ‘high response cereals’ and ‘roots and tubers’ suggests that these have the potential to make a major contribution to driving and supporting pro-poor growth in countries where these crops are important in staple diets and can be produced, depending on other potential drivers of growth in these countries. Following Collier (2007), a distinction is made between countries with and without significant minerals and, for countries without minerals, between coastal and land locked countries. Where a country has significant earnings from minerals then these may be expected to drive growth, assuming careful management of mineral earnings and of the macro economy. Under these circumstances, increased productivity of high response cereals and roots and tubers should have a major role in supporting such growth (increasing linkages and reducing leakages) and in spreading the benefits of mineral earnings within the population. Where landlocked countries have no significant minerals then increasing productivity of high response cereals and/or of roots and tubers are likely to be, with cash crops, the major growth drivers. However, as Collier (2007) observes, none of the options for countries in this category are likely to deliver high sustained aggregate growth rates.

The lower but still improved yields achievable with ‘low response cereals’ in more challenging agro-ecological conditions suggest that these will not be able to drive growth but they should have important roles in supporting growth and in providing a low cost subsistence safety net. Again the role will vary between countries with opportunities for minerals, manufacturing industries and cash crops to drive growth (although the more challenging agro-ecologies where these crops are grown are also likely to limit cash crop and livestock development options). However, investment in increased staple productivity may be a least cost way of providing safety nets in a way that encourages economic activity rather than dependency.

A similar analysis can be made for three major kinds of non-staple crop and livestock products. In line with our earlier discussion, we distinguish between domestically consumed non-tradables, domestically consumed semi-tradables, and traditional or non-traditional exports (tradables). Domestically consumed non-tradables are not generally growth drivers, but can play important roles in supporting growth where it is being driven by minerals, by staples, or by traditional or non-traditional exports (tradables) as indicated elsewhere in the table. Domestically consumed tradables (which we define as products which can be imported but are not generally exported) are similar to domestically consumed non-tradables. Traditional or non-traditional exports (tradables), however have the potential to drive growth and can play an important role in the national economies of land locked countries without minerals and in regions of coastal countries that are poorly connected to ports.

Finally, we make an important proviso about the nature or kind of productivity change that is needed to drive pro-poor agricultural growth in low income agriculture. Lipton and Longhurst (1989) argue that if widespread technical productivity change in such agriculture is to be poverty reducing then it must raise both labour and land productivity, but it must raise land productivity by more than labour productivity, and thus increase labour demand and thus push up wages for unskilled labour. Dorward (2013) sets this in the context of wider arguments of the role of agriculture in pro-poor growth. This has important implications for policy with regard to mechanisation and herbicide use, for example, that while on one hand the pursuit of increased labour productivity and reductions in drudgery are extremely important, they must not lead to unemployment of the poor and vulnerable without safety nets to support them. On the other hand, technologies that involve labour intensive use of organic manures will not address poverty if they do not raise labour productivity as well as yields. The difficult trade-offs here change over time and vary with specific farming systems and technologies.

## 4 The current position and prospects

### 4.1 *The current position (past & present)*

Table 3.1 sets out key statistics for Malawi. Information on some variables is difficult to come by, with different estimates from different sources. However the key points we note from this are

- Rapid increases in population with a large proportion of the population under 15 years
- A high (though slowly declining) proportion of the population residing in rural areas
- Falling *per capita* land availability
- Conflicting information on falling or roughly constant poverty incidence, but (with population growth) increasing numbers of poor people and increasing inequality (Beck et al., 2013; National Statistical Office, 2012)
- Dramatic falls in the under-five mortality rate, rising life expectancy and falling but still high HIV prevalence
- High but falling rates of stunting
- Variable national maize production surpluses which mask local deficits and, with likely under reported imports and exports, are variable, under threat with the growing population, dependent on incremental production from the FISP (Dorward et al., 2013), and associated with increasing nominal and real maize prices with high inter- and intra- season year variability, posing major food security problems for poor food buyers.
- Low GNI per capita with highly variable annual GDP growth which on average is only a little above population growth
- High historic variation in macroeconomic performance, as evidenced by periodic high inflation and nominal interest rates, and substantial devaluation of the Malawi Kwacha

**Table 3.1. Key statistics**

		1985	1995	2000	2005	2010	2011	2012	2013
Population	Population, millions	7.2	10.1	11.5	12.9	13.9	14.4	14.8	
	Rural population (% of total)	90	87	85	85	84	84	84	
	Rural population density (n/sq km arable land)	368	468	465	404	417	429		
	Population growth rate (%)	4.3	1.1	2.8	2.7	3.1	3.1	3.1	
	Population under 15 years (% of total)	47.5	44.6	45.8	46.1	45.8	45.6	45.4	
	Household size	4.0	...	4.3		...	4.6	...	...
Welfare	National poverty incidence (%)	...	...	...	52.4	...	50.7	...	...
	Urban poverty incidence (%) NSO (2012)	...	...	...	25.4	...	17.3	...	...
	Rural poverty incidence (%)	...	...	...	55.9	...	56.6	...	...
	National poverty incidence (%)	...	...	...	49.4	...	40.2	...	...
	Urban poverty incidence (%) Beck et al (2013)	...	...	...	29.7	...	17.6	...	...
	Rural poverty incidence (%)	...	...	...	50.7	...	44.3	...	...
	Gini coefficient	...	...	...	0.39	...	0.45	...	...
Health	Life expectancy at birth, total (years)	46	43	40	48.9	53.5	54.1	54.7	...
	Mortality rate, under-5 (per 1,000)	245	193	155	119.8	82.9	77.1	71	...
	Prevalence of HIV, total (% of pop'n ages 15-49)	...	15.5	15.8	13.4	11.2	11.0	10.8	...
Nutrition	Stunting (% children 6 to 59 months) (1977 NCHS/CDC/WHO ref)	...	...	49	43	41.5	...	...	...
	Stunting (% children 6 to 59 months) (2006 WHO ref)	...	...	...	...	47.1	48.1	...	...
	Wasting (% children 6 to 59 months) (1977 NCHS/CDC/WHO ref)	...	...	...	...	3.7	...	...	...
	Wasting (% children 6 to 59 months) (2006 WHO ref)	...	...	...	...	4	...	...	...
	Underweight (% children 6 to 59 months) (1977 NCHS/CDC/WHO ref)	...	...	25.4	22.2	17.8	...	...	...
	Underweight (% children 6 to 59 months) (2006 WHO ref)	...	...	...	...	12.8	...	...	...
National food security	Estimated maize surplus (deficit) with FISP ('000MT)	...	...	-391	1122	755	359	659	...
	Estimated maize surplus (deficit) no FISP ('000MT)	...	...	...	...	-181	-452	-392	...



**Table 3.1 (cont.) Key statistics**

	1985	1995	2000	2005	2010	2011	2012	2013	
Maize	Minimum monthly mean price (MK/kg)	...	1.22	4	16	30	24	25	...
	Maximum monthly mean price (MK/kg)	...	2.8	9	34	46	40	69	...
	Mean price (MK/kg)	...	1.64	7	22	35	30	47	...
	Net imports (informal) '000MT	...	..	..	107	15	-107	-6	...
	Net imports (formal) '000MT	...	-3.121	113	8	..	..	..	...
Education	School enrolment, primary (% gross)	...	...	139	127	138	140	141	...
	Total enrolment	...	...	...	3,384,506	4,109,561	4,290,463	4,458,991	...
Economy	GNI per capita, Atlas method (current US\$)	160	160	150	220	310	340	320	...
	GDP growth (annual %)	...	...	1.7	7.8	9.5	3.8	1.8	5.0
	Agricultural growth (annual %)	...	...	2.1	10.3	3.9	6.7	-2.3	5.7
	Manufacturing growth (annual %)	...	...	0.1	5.4	1.9	2.1	-1.3	6.2
	Inflation, consumer prices (annual %)	21.9	83.3	29.6	15.4	7.4	8.8	21.3	23.3
	Real interest rate (%)	9	-17.0	17.0	15.0	-1.4	19.2	11.7	...
	Exchange rate MK/US\$	...	15.3	59.5	116.4	150.5	156.5	330.5	351.3
	Agriculture, value added (% of GDP)	43.0	30.3	40.0	29.7	29.0	29.9	28.7	28.9
	Smallholder agric. value added (% GDP)	...	21.8	30.9	...	...	...	...	...
	Estate agric. value added (% GDP)	...	8.5	8.2	...	...	...	...	...
	Smallholder agric. growth (5 yr mean annual %)	...	43.6	1.6	...	...	...	...	...
	Estate agric. growth (5 yr mean annual %)	...	30.3	13.0	...	...	...	...	...
	Industry, value added (% of GDP)	11.0	20.0	18.0	17.3	19.9	19.3	...	...
	Manufacturing, value added (% of GDP)	14.5	15.8	12.9	9.3	12.0	11.9	...	...
	Services, etc., value added (% of GDP)	35.0	50.0	43.0	49.6	49.9	50.5	...	...
	Value of aquaculture (US\$)	...	...	595,500	...	1,374,397	2,260,029	2,776,288	...
	Fish catch (mt)	6,888	5,211	3,698	4,225	2,620	3,203	4,044	...

**Table 3.1 (cont.) Key statistics**

		1985	1995	2000	2005	2010	2011	2012	2013
Government finance	Total Revenue (US\$ million)	...	...	441	705	1,749	1,897	785	...
	Domestic Revenues (US\$ million)	...	...	299	488	1,137	1,358	628	...
	Grants (US\$ million)	...	...	42	217	612	539	157	...
	Total Expenditure (US\$ million)	...	...	501	789	1,784	1,980	993	...
	Recurrent expenditure (US\$ million)	...	501	386	588	1,299	1,422	759	...
	Development expenditure (US\$ million)	...	...	115	202	485	558	234	...
	MoAFS expenditure (US\$ million)	...	...	...	186	206	180	..	...
	FISP expenditure as % MoAFS budget	...	...	...	...	60	48	63	...
	Deficit/GDP ratio (before grants)	...	...	-11	-7.8	-7.9	-12.5	-16.2	...
	Deficit/GDP ratio (after grants)	...	...	-3.2	0.2	4.0	-7.5	-6.5	...
	Grants/Total Expenditure Ratio	...	...	28.7	26.3	34.4	12.7	25.2	...
	Grants/Dev Expenditure Ratio	...	...	109.6	109.2	148.5	63.5	135.8	...
	Debt/GDP Ratio	...	...	197.6	151.7	16.3	15.9	28.9	...
	Interest rates, deposits (%)	12.5	37.3	33.3	10.9	3.6	3.8	6.5	...
Interest rates, savings (%)	18.4	47.3	53.1	33.1	18.6	17.8	25.7	...	
External	Balance of payments current account (US\$ million)	...	...	-188.9	-680.6	-785.6	-766.1	-603.3	...
	Exports (US\$ million)	...	...	401.8	518.2	1,059.4	1,427.0	897.4	...
	Imports (US\$ million)	...	...	460.4	1,023.5	2,163.5	2,425.0	1840.6	...
	Services (net, US\$ million)	...	...	- 150.5	- 254.4	- 59.8	...	...	...
Infrastructure	Paved roads (kilometers)	2,061	2,849	...	...	4,073	...	...	...
	Unpaved roads (kilometers)	8,990	11,745	...	...	24,929	...	...	...
	Ownership of mobile phones (%)	...	...	...	3.0	36.0	...	...	...
	Access to electricity (%)	...	...	...	5.7	7.0	...	...	...

**Table 3.1 (cont.) Key statistics**

		1985	1995	2000	2005	2010	2011	2012	2013
Trade	Imports of goods and services (% of GDP)	30	46.7	35.4	36.5	29.1	27.7	25.4	...
	Food imports (% of merchandise imports)	8	14	10	18	...	...	...	...
	Fuel imports (% of imports)	...	...	...	...	8.4	7.4	12.2	...
	Fertiliser imports (% of imports)	...	...	...	...	9.3	7.7	11.7	...
	Fertiliser imports ('000mt) NSO Stats Year book	...	...	58.2	270.4	339.7	269.5	366.3	...
	Fertiliser imports ('000mt) IFDC	...	196	167	319.9	...	...	...	...
	Exports of goods and services (% of GDP)	...	33.0	25.2	18.5	21.1	17.0	22.7	...
	Share of agriculture in exports (%)	89.3	97.6	88.6	78.8	74.3	69.1	...	...
	Share of tobacco in exports (%)	45.1	75.4	63.7	53.9	54.9	39.9	52.1	...
	Share of tea in exports (%)	22.2	6.9	9.5	8.8	7.6	6.1	4.6	...
	Share of sugar in exports (%)	12.6	6.8	10.1	9.2	6.5	15.1	3.4	...
	Share of cotton in exports (%)	3.2	0.5	1.8	3.2	1.1	3.3	4.6	...
	Share of nuts in exports (%)	1.4	...	1.0	2.5	0.7	2.1	3.3	...
	Share of rice in exports (%)	0.0	0.4	0.4	0.0	0.1	0.1	0.7	...
	Share of coffee in exports (%)	2.8	4.0	1.4	0.5	2.0	0.4	0.4	...
Share of pulses in exports (%)	1.9	1.9	0.6	0.6	1.4	2.1	3.7	...	
Share of minerals (uranium) in exports (%)	...	...	...	...	10.7	8.4	11.0	...	
Agriculture	Fertilizer consumption ('000 metric tons)*	65	196	167	292	...	...	...	...
	Fertilizer consumption (kg/hectare of arable land)	...	...	...	30.5	33.0	...	...	...
	Fertiliser prices '000MK/MT	...	...	...	63.7	101.6	154.3	283.7	352.0
	Irrigated land (% of cropland)	0.97	1.50	2.46	0.58	...	...	...	...
	Maize area (% of smallholder crop area)	...	...	...	80.00	72.0	...	69.0	...
	Maize growers (% agricultural households)	...	...	...	97	...	...	...	...
	Forests Area ('000ha)	..	3731.5	3567.0	3402	3237.0	3204.0	..	...
Tobacco	Prices (burley, \$/kg)	...	...	1.02	1.17	1.78	1.13	2.04	...
	Output (all tobacco , '000 mt)	...	...	...	145.4	217.0	236.0	125.4	...
	Revenue (all tobacco, million US\$)	...	...	...	19.3	416.4	293.7	177.8	...

Sources: NSO Year Book 2012, Reserve Bank of Malawi, World Bank, MoAFS market prices, Ministry of Economic Planning and Development, Chirwa & Dorward 2013, Dorward et al 2003, Public Expenditure Review 2013,

- Recent constraints and challenges on government expenditure and on the economy as a whole, with a high dependence on grants
- Persistent balance of payments current account deficits with, until 2012, imports growing more rapidly than exports and large import costs for fuel and for fertiliser
- High and roughly constant proportionate contribution of agriculture to GDP, with a very high share of exports but significant fertiliser import costs
- A particularly high value share of exports of tobacco, but this has suffered major price and volume fluctuations. Smaller values and volumes for tea, sugar, cotton, nuts, and coffee also show large variation, only pulses showing a steady increase
- A very small amount of cropland under irrigation but very high proportion of land under maize
- Both fish catches and forest area showing a steady decline (though there appears to be a recent recovery in fish catches, catch per capita has fallen dramatically)

## 4.2 *Prospects for agriculture*

We discuss the prospects for agriculture by considering current strengths and weaknesses in the agriculture sector and potential opportunities and threats in the future.

### 4.2.1 Strengths

Malawian agriculture has a number of strengths. It has a variety of different land and soil types and agro-ecological conditions that can support a range of different crops for both domestic and export markets. Most of the country has relatively favourable rainfall and there are substantial rivers and lake water sources that can be used for irrigation. There is a strong commitment to agriculture within society, within both political and technical branches of government, and among development partners, expressed for example in continuing investments in FISP and to the major logistical tasks involved in its implementation. There is also an abundance of low cost labour and considerable experience in different aspects of agricultural production and marketing among farmers, private companies, NGOS and government<sup>2</sup>. Agriculture has performed well, but still below potential, in periods of macroeconomic stability and favourable rains.

### 4.2.2 Weaknesses

Despite these strengths, Malawian agriculture has not delivered on its potential in the past, for a variety of reasons. The importance of the sector to different stakeholders has undermined consistent and coordinated strategic policy and programme design and implementation. This has arisen with government, politicians and development partners (on whom development investments have been very dependent) promoting and pursuing particular and often different and changing interests. This has also posed substantial implementation challenges for the MoAFS, with limited staffing capacity and resources and undermined lesson learning and evidence based policy. Lack of coordination of the FISP with complementary investments (for example in extension) and changing trade policy are examples of such difficulties.

There are some particular difficulties with agricultural statistics on critical issues – notably lack of consistent information on crop yields (Dorward and Chirwa, 2010; Dorward et al., 2013) and on the number of farm families (Chirwa and Dorward, 2013) with lack of evidence based making policies and limited evaluation and learning from previous experiences, both resulting from and leading to changing policies (with limited time to learn from longer term implementation and impact lessons) (Chirwa et al., 2008b).

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<sup>2</sup> Thurlow (pers. comm.) points out that low cost labour is not a strength if it also has very low levels of productivity – the critical issue is the relationship between cost and productivity.

Despite its national economic importance and potential, smallholder agriculture has not generally been seen as one of the key drivers of broad based economic growth in coordinated cross sectoral policy - indeed there are different perspectives on the potential for smallholder agriculture to grow and contribute to wider growth, and different perspectives on how smallholder growth is best achieved. Large financial flows in some programmes have also led to politicisation and attracted fraud (as for example with the FISP). There has also been under investment in agricultural extension services and in agricultural research, and only limited investment in critical infrastructure (such as roads and irrigation). Changing policies have also inhibited private sector investment. Despite long standing concerns about food self-sufficiency and to a lesser extent food security in agricultural policy and programmes, there has been little direct emphasis on nutrition, although there have been recent commitments to increase the attention paid to under-nutrition.

Farmers also face major constraints. Roads and markets pose major challenges, and large numbers of farmers face acute difficulties from the effects of poverty and, with very limited financial, land and other resources and lack of access to services, many are caught in different poverty traps. Problems of shortages of land and small holding sizes are exacerbated in some cases by fragmentation of land (Chirwa (2008) find a mean of 2 plots per household but a range of 1 to 10 plots, with small plot sizes potentially incurring large management and other overhead costs). Farm management skills are likely to be undermined by low levels of literacy and education and limited access to extension services.

In addition to asset based poverty traps affecting poor rural people (Carter and Barrett, 2006), there are large numbers of households locked into a long standing 'low maize productivity trap' which then undermines diversification, market access and growth in the local and wider economy (Chirwa and Dorward, 2013; Dorward and Kydd, 2004). An aspect of this trap is the interaction of micro-level (household) traps with meso-level (market coordination) traps (Dorward et al., 2008) which may be linked to limited development of agro-processing value addition and potential 'downstream' multipliers. Poverty and poor child nutrition also contribute to 'life course' and inter-generational poverty traps (Black et al., 2013; Chronic Poverty Research Centre, 2009). Women often face particular difficulties with multiple responsibilities but limited access to and control of resources. Increasing land pressure has not only led to declining holding sizes but also to declining soil fertility from continuous maize cropping and poor soil conservation and fertility management, leading to major soil and yield losses with both local and wider off-site impacts (Yaron et al., 2011). Imports and exports are also inhibited by high road and port costs.

#### 4.2.3 Opportunities

Malawian agriculture has a number of opportunities. Paradoxically, many of the current low levels of performance discussed above under 'weaknesses' also pose opportunities for improvement. There are, for example, opportunities for substantial improvements in crop and animal husbandry and production, in market systems and access, in soil management and fertility, and in infrastructural development. The existence of short to medium term productivity traps also means that if resources can be mobilised and deployed effectively and consistently to address key interlocking causes of these traps then 'vicious circles' can be transformed into 'virtuous spirals'.

There are also other sources of opportunities. There is local level demand and significant local economy multipliers from greater production of non-traditional food crops, such as horticultural crops. Chirwa and Matita (2013) find that horticultural products whose consumption is typically within the local economy tend to be more profitable per unit area than traditional food and cash crops among the smallholder community. In addition, the income flows from such activities tend to have dense networks within the local economy compared to food/cash crops that are consumed outside the local economy. Promotion of these horticultural crops provides untapped opportunities in the agricultural sector. There are also investment opportunities in agro-processing industries at different scales in the agricultural sector. Most agro-processed products in Malawi are imported, and this provides opportunities for import substitution. Furthermore, the increase in supermarkets particularly in urban areas provides further (but challenging) opportunities for linking smallholder farmers with

supported structures for aggregation to supermarkets in supply of horticultural produce and agro-processed products.

General concerns about global commodity supplies have contributed to recent increases in international prices of some commodities, offering higher potential returns for exports. These potential returns are attracting private investors (both domestic and international companies) with the potential to bring in both funds and technical and market expertise. There are also new market opportunities domestically (with a growing middle class urban population) and regionally. Development partners are keen to support the exploitation of these opportunities in ways that will promote improved nutrition (as in the G8 New Alliance for Agriculture and Food Security). Widespread access to mobile phones (with ownership rising from 3% to 35% from 2005 to 2010 (NSO, 2012)) and new marketing organisations and approaches are also improving access to output markets as well as to inputs and finance and to technical and market information.

Potential growth in earnings from minerals also has the potential to improve government finance and the balance of payments, allowing more investment in smallholder agriculture. Meanwhile the very large amount of land and labour that is invested nationally in smallholder agriculture means that relatively low growth rates across the sector have greater potential to promote wider growth than higher growth rates in much smaller sectors or subsectors. The large numbers of poor people engaged in agriculture as farmers and labourers and the importance of food expenditures in the budgets of poor people and the importance of food for their nutrition also means that such growth can have very broad based, pro-poor and welfare increasing impacts or to protect forests or promote tree planting.

Another set of opportunities may arise from the potential for agriculture to benefit from climate change funds, through for example payments for carbon sequestration. Although these opportunities currently exist more in prospect than in reality, there are possible win-win opportunities if they can be used, for example, to fund the building up of soil organic content, as this should then have beneficial impacts on soil fertility, soil moisture holding capacities, and crop production.

#### 4.2.4 Threats

In addition to these generally medium term opportunities, Malawi and its agriculture face some major, mainly longer term, threats. Some of these involve the continuation and potential worsening of current processes (population growth; land degradation; forest, soil and fisheries loss), others concern issues raised under 'weaknesses' which may or may not happen (for example continued dependence on but reduced aid inflows; economic or political instability; corruption; loss of smallholder land to large scale commercial interests), and others are potentially new emergent changes (principally climate change, but we also consider changes in regional markets and possible problems of over nutrition). We consider these in turn.

Probably the major threat to Malawi and its agriculture is population growth. Although widely acknowledged as an ongoing undesirable process, the severity of this threat does not seem to be considered in recent strategic documents. Census projections are for current population growth of 3.14% per year to rise to 3.17% per year by 2019, then fall but remain over 3.1% per year until 2028, falling below 3.0% per year in 2033, and to 2.4% per year by 2050 (National Statistics Office, 2011). The pattern of population growth is derived from a falling trend in total fertility rates over the last forty years taking time to overcome first the effects of falling mortality rates and second the 'population momentum' of historically very high fertility rates which are only falling slowly (National Statistics Office, 2011) and which lead to a very high proportion of young people, and consequent inevitable medium term increases in numbers of women of child bearing age. This 'population momentum' restricts the potential for rapid falls in population growth.

Discussion of population growth rates may seem abstract. However table 3.1 shows that the population doubled in 26 years from 1985 to 2011. Looking ahead, by 2033 the population is expected to be over 28 million and increasing by 1 million people per year. By 2034 the population is predicted to be over 29 million, roughly double the current population (National Statistics Office, 2011). This

suggests the need for an increase of food availability by 100% just to maintain current poor food security levels. This has to come from higher food yields or high value products exported and food imported. Annual growth in agricultural production therefore needs to equal anticipated population growth (around 3%) just to maintain current low agricultural incomes, and a higher rate is needed to substantially improve living standards with greater food availability in terms of both calories and micro nutrients. There are also demanding challenges for structural change. Increased incomes from agriculture are unlikely to be achieved if agriculture has to absorb more labour, and if this is to be avoided then non-agricultural employment and incomes must increase dramatically. This has implications for urban development and investment in infrastructure and services (for example education, housing, health, water, transport, and energy).

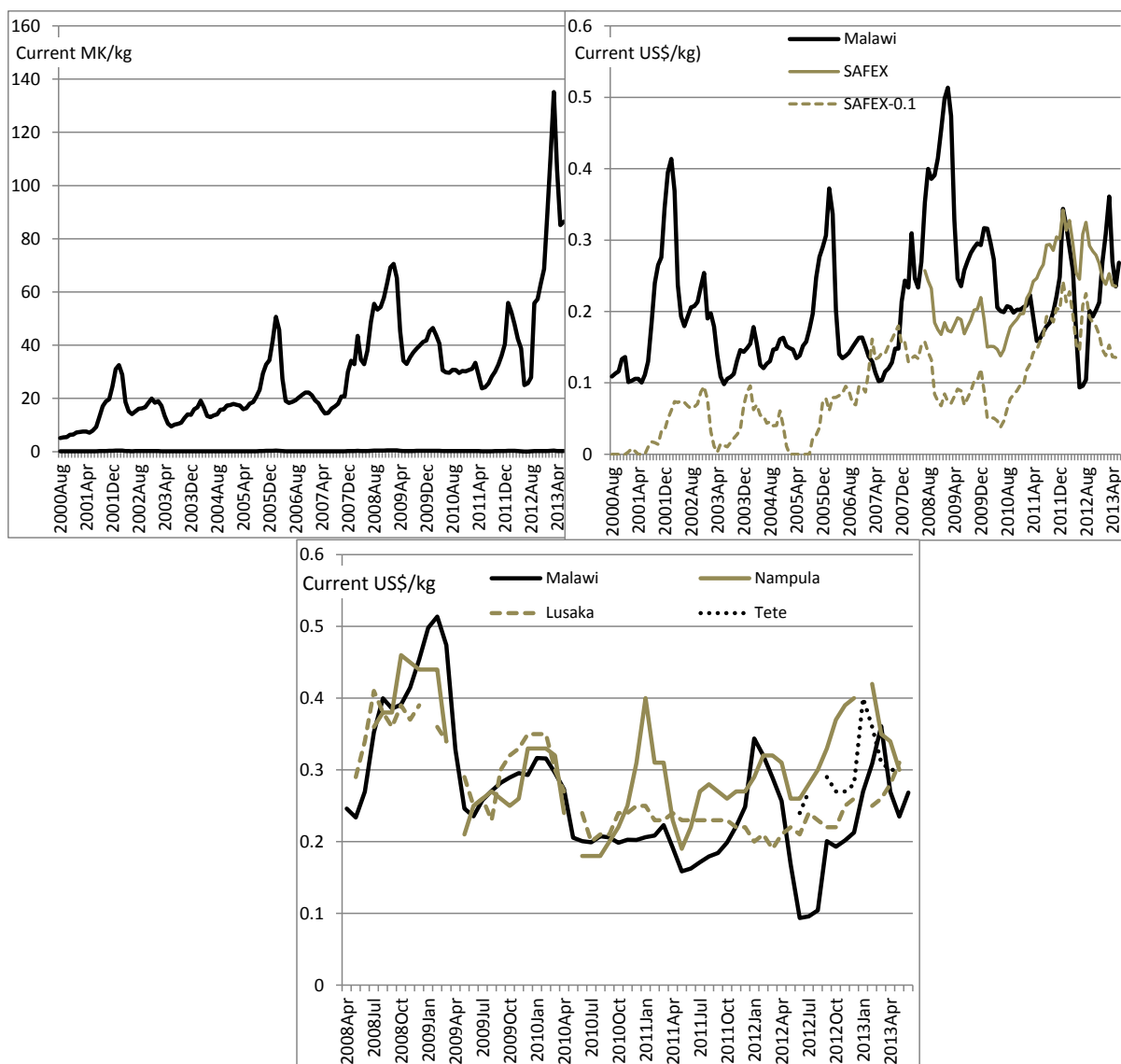
Population growth is likely to increase pressures on land and on wider natural resources (forests and fisheries) with still more fragmented and smaller holdings, loss of land to housing, extension onto steeper slopes, unsustainable cultivation methods, and soil loss.

We are aware of two major 'emergent changes' that pose threats to Malawian agriculture and food security: climate change and changes in regional maize markets.

The likelihood and extent of climate change and its impacts are increasingly recognised. While there is considerable uncertainty about the precise nature of its future extent and impacts in Malawi, there is already clear evidence of increasing temperatures, and predictions of increasing rainfall variability (with more dry periods and greater rainfall intensity) are compatible with perceptions of recent rainfall patterns. Longer term predictions suggest increases in total annual rainfall in Malawi, but consideration of the net effects on water availability need to take into account its distribution and increased evapotranspiration from higher temperatures. This has very wide potential implications. Higher temperatures at critical periods of crop growth, even for short periods, may limit maize yields, as may dry spells. Floods may damage infrastructure and cause severe livelihood disruption and loss to growing crops and assets. Increased evapotranspiration from water bodies may significantly reduce the amount of irrigation offtake that is possible without lowering of lake and dam water levels with negative effects on river flows for hydro-electric power and domestic and industrial water supplies (Kumambala and Ervine, 2010; Steinman, 2014).

Climate change, alongside global economic and population growth, may also lead to increases in global food prices (Lotze-Campen et al., 2014; Nelson et al., 2014; Valin et al., 2013). High food prices could have beneficial effects on food exporters but negative effects on food importers (Dorward, 2012). Such price rises may also be stimulated by increases in fertiliser prices, which would be damaging for both food exporters and for domestic producers in a food import context.

(Dorward and Chirwa, 2014) examine import/export flows and changes in regional maize market prices from 2011 with rising SAFEX and other regional maize prices leading to domestic Malawi prices falling below export parity price. This is despite high domestic Malawi Kwacha prices, and may contribute to increased seasonal price fluctuations as exports after harvest lead to pre-harvest shortages and price increases (see figure 3.1).



**Figure 3.1 Domestic, SAFEX and regional maize prices in Malawi Kwacha and US\$**

Finally, we consider the threat of over-nutrition. While under nutrition remains a major problem in Malawi, as highlighted earlier by the very high rates of stunting in table 3.1, changing diets in low income countries around the world, including southern Africa, are leading to growing problems of non-communicable diseases as a result of over-nutrition from over-consumption of refined high energy foods (such as sugar, confectionary and vegetable cooking oil). When combined with continuing problems of under nutrition, such countries face a ‘double burden’ from the social, human and economic costs of both under- and over-nutrition. Table 3.2 suggests that this process is occurring in Malawi, including rural Malawi, with an increase in cardiovascular disease and diabetes and evidence of increased household consumption of refined high energy foods (although not soft drinks). Although under nutrition is currently a much more serious nutritional problem, the incidence and negative (health and cost) impacts of over-nutrition are likely to increase in the future, leading to a ‘double burden’ of over- and under-nutrition problems (Mendez et al., 2005). Agricultural and food systems play very significant roles in promoting or addressing these problems.



**Table 3.2 Health, nutrition and dietary change, 2004-2013**

	2004	2010	2010 (rural)	2013	% change incidence
<b>Body mass index &amp; disease</b>					
Thin adult females *	9%	9%	9%		
Overweight & obese adult females *	13%	17%	14%		
Obese adult females *		4%			
Adults with diabetes (2009 & 2013) <sup>+</sup>		4.7%		5.3%	12%
Diabetes cases (2013) <sup>+</sup>				372,350	
	2002	2011			
Cardio Vascular Disease, deaths <sup>++</sup>	9%	12%			33%
Cardio Vascular Disease, DALYs <sup>++</sup>	2%	2%			na
Diabetes, deaths <sup>++</sup>	0.55%	0.62%			13%
<b>Dietary intake: % households consuming items in previous week <sup>**</sup></b>	2004/5 (rural)	2010/11 (rural)			
Biscuits	7%	10%			46%
Mandazi (doughnuts)	21%	25%			21%
Sugar	47%	56%			19%
Cooking oil	42%	58%			39%
Soft drinks	9%	8%			-14%

Sources: \* National Statistical Office and ICF Macro (2011)

<sup>+</sup>International Diabetes Federation (); Ministry of Health and World Health Organisation (2010)

<sup>++</sup> (Bowie, 2006); Bowie (2011a, b)

<sup>\*\*</sup> Author calculations from IHS2 and IHS3 survey data

## 5 Strategic policy objectives and principles

Before considering, in the next section, possible policy and investment options, we first draw on the previous two sections to identify overall strategic policy objectives and principles to guide policy development.

### 5.1 Policy objectives

We take as the overall policy objective the reduction of poverty “through sustainable economic growth and infrastructure development” as defined by MGDSII and its specification of two agricultural goals, to

- increase agriculture productivity and diversification and
- ensure sustained availability and accessibility of food to all Malawians at all times at affordable prices

These in turn lead to the ASWAp objectives to

- increase agricultural productivity,
- contribute to agricultural growth,

- improve food security,
- diversify food production to improve household nutrition, and
- increase agricultural incomes of rural people.

## 5.2 *Policy principles*

Consideration of these objectives in the context outlined in section 3 suggests a number of strategic principles to guide analysis and choice of policy and investment options.

1. Requirement of sustainable (viable and acceptable) investments and activities for all stakeholders
2. Emphasis on land and labour productivity
3. Integration of complementary agricultural and non-agricultural strategies, policies and investment
4. Emphasis on broad based and inclusive growth
5. Emphasis on increased quantity and quality in production of food
6. Emphasis on market access and affordability of food for all, and therefore particularly for the rural and urban poor
7. Promotion of sustainable practices and accumulation rather than depletion of natural resources, taking account of both current and future threats to sustainability
8. Rapid achievement of broad based growth as a significant element in reducing the rate of population growth and in supporting climate change adaptation and resilience
9. Pursuit of agro-processing opportunities to promote value addition with local (downstream) linkages

We also suggest the following operational principles to guide the processes of strategy and policy development and implementation

10. Consistent coordinated vision and policies
11. Clear policy and implementation priorities and roles

We consider these eleven principles in turn.

### 5.2.1 Sustainability: viability and acceptability

Sustainable economic growth is at the heart of the overarching objective of MDGSII and it is widely recognised and largely self-evident that development investments and the activities that they are intended to promote must be sustainable in the sense that they can and will continue to function and yield benefits for as long as is necessary for them to generate the expected benefits. It is important, however, to recognise a number of different dimensions of sustainability, in particular economic viability and acceptability as well as environmental sustainability – where economic viability refers to the ability of all stakeholders to continue to support (provide the resources for) the functioning of an activity or resource, and acceptability refers to the willingness and ability of particular stakeholders (for example farmers, private companies, government agencies and employees, development partners) to continue to support (provide the resources for) the functioning of an activity or resource. This will clearly depend upon their perception of the balance of costs and benefits to them from their support to the activity or resource, and this will depend upon the extent of overall costs and benefits (dependent on the effectiveness and efficiency of an activity and its operation) and on the distribution of costs and benefits (net incentives) between different stakeholders. These different dimensions need to be considered against required properties for sustainability: persistence, productivity, stability, equity, and adaptability and resilience (Conway, 1985; Dorward and Macartney, 2009). Taken

together, consideration of all the required properties in all the dimensions for all stakeholders should be a major issue in policy design and implementation.

#### 5.2.2 Emphasis on land and labour productivity

Both the MDGSII and the ASWAp specify increasing productivity of agriculture as a major and fundamental agricultural policy goal. As noted earlier (in section 3) it is important to recognise different elements of productivity, and in particular the importance of both land productivity and labour productivity. These are generally measured by production (or some measure of profit or value added) per unit land (acres or ha) and per labour hour or day employed. With regard to labour, however, it is important to consider not just the productivity of labour actually employed, but the overall productivity of the rural labour force: institutional change (such as land consolidation) and/or innovations that reduce labour use per ha without raising production per ha (or that raise labour productivity by more than yield productivity and hence reduce labour requirements per ha) will lead to unemployment and a reduction in the productivity of the overall labour force, unless there are other productive employment opportunities for the labour that is released. It is also important that to be compatible with the principle of sustainability the different stakeholders' perceptions of productivity must be considered, as well as productivity in terms of often under-valued environmental or eco-system services.

#### 5.2.3 Integration of complementary agricultural and non-agricultural strategies, policies and investment

Synergistic growth, with agricultural growth both supporting and being supported by non-agricultural growth, is critical for Malawi given

(a) the major role that agriculture has in the wider economy (as a user of land and labour resources and as a provider of food and incomes) and

(b) the need for structural change and a shift towards greater relative importance of the non-agricultural economy with both economic development and population growth.

This requires explicit attention to promotion of these synergies in both agricultural and non-agricultural policy development and implementation. This could involve, for example, consideration of income from minerals as a source of investment funds for agriculture at one level, investments in rural roads and communications to promote both agricultural and non-agricultural growth in rural areas, and consideration of how to promote non-agricultural growth to complement agricultural growth in rural areas.

#### 5.2.4 Emphasis on broad based and inclusive growth

This principle follows from the overarching objective of the MDGSII, the reduction of poverty through sustainable economic growth and from the emphasis of both the MDGSII and the ASWAp on food security for all Malawians. It also follows from consideration of the need for equity in sustainable development.

#### 5.2.5 Emphasis on increased quality as well as quantity in production of food

Historically agricultural development policies around the world have generally emphasised increased production of food in terms of calories alongside increased added value in production and market systems. Renewed concerns about the persistence and damaging effects of under-nutrition, with widespread problems of 'hidden hunger' from micro-nutrient deficiencies, have, together with the growing problem of over-nutrition (and the double burden of under- and over-nutrition) led to increasing interest in the different roles of agriculture in promoting better nutrition. There is a particular need for improvements in the quality of food production, as well of quantity, with more diversity in production and diets to include legumes, fruit and vegetables, and small but critical

amounts of animal products. This requires greater productivity of core staples (to free resources and create effective demand for other foods) and production of and access to other, higher quality foods.

#### 5.2.6 Emphasis on market access and affordability of food for all

While increased productivity, production and availability of food is critical for food security and nutrition, it is a necessary but not sufficient condition. Food must also be accessible to all Malawians, and for this prices must fall relative to income, with stability both within and between years. As discussed earlier, increasing and volatile food prices have posed a major challenge in Malawi and policies must address this, despite the many challenges in domestic and international markets.

#### 5.2.7 Promotion of sustainable practices and natural resource accumulation

As discussed earlier, the increasing population of Malawi has led to depletion of critical natural resources (notably soils, forests, and fisheries). Given the importance of these resources to peoples' livelihoods, to the national economy and to food security, and the challenges of population growth and climate change, the reversal of this depletion is critical for Malawi's medium and long term future.

#### 5.2.8 Rapid achievement of broad based growth

As discussed earlier, population growth and climate change pose major threats and challenges to Malawi. Rapid broad based growth should be a critical part of strategies to combat the effects of these. With regard to population growth, not only do improvements in the welfare of Malawians depend upon economic growth that is faster than population growth, global experience is that increased wealth (alongside women's empowerment, education and access to family planning services) is critical for lowering fertility rates and hence for reducing rates of future population growth. With regard to climate change, national and individual capacity for adaptation and resilience to change is critically dependent upon the accumulation of natural, physical, financial and human capital, and broad based economic growth is critical for such capital accumulation. These considerations therefore add further urgency to the need for rapid per capita growth. With regard to policy development and implementation, this suggests a high discount rate should be applied in choices between different investment options, although care must be taken that this does not lead to under valuation of critical natural resources.

#### 5.2.9 Agro-processing opportunities with local linkages

Agro-processing may pose special opportunities for adding value and growth linkages within the rural and wider economy. In addition to the emphasis on food quality and quantity to improve real incomes and nutrition, opportunities for value addition in local processing of food and/or non-food crops should also be sought, to promote local employment and linkages.

#### 5.2.10 Consistent coordinated vision and policies

As noted earlier under 'weaknesses', conflicting and changing views of and interests in different aspects of agriculture for different stakeholders (for example government, politicians and development partners) have undermined consistent and coordinated sectoral and inter-sectoral policy and programme design and implementation, and changing policies have also inhibited private sector investment. However farmer and formal private sector investment confidence requires stable and consistent policies. The ASWAp has provided a basis for this, but it has at times been overshadowed by wider events and concerns. There is therefore continued need for clear, consistent vision for agriculture that is coordinated across and within the wider development vision and strategy for the country, as noted earlier as regards the need for integration of complementary agricultural and non-agricultural strategies.

### 5.2.11 Clear policy and implementation priorities and roles

Linked to the issue of the need for a clear and coordinated vision for agriculture is the importance of clear priorities between different policies (though these may need to change over time) and clear roles and responsibilities for different implementing agencies, both within and between different ministries and involving Civil Society Organisations (including farmer and consumer organisations) and the private sector.

## 6 Policy and investment options

It is not the intention of this paper to set out and compare in detail different policy and investment options but rather to set out the context and suggest principles to be applied in the consideration and, where appropriate, development and implementation of these options. Nevertheless it is necessary to provide some illustration of how these principles may be applied and to suggest from this if there are any broad conclusions that can be drawn about policy and investment strategy and choices. Table 5.1 therefore sets out the main alternative issues for policy and investment options in agriculture, with a short commentary and scoring of each issue against the 9 strategic principles defined above. For the purposes of illustration, the issues are divided into two main classes: commodities and resources. Preliminary judgements have been made on the potential for investment in each commodity and resource, and scores allocated accordingly. Commentary in the table is intended to provide some explanation for the scores provided, but the judgements and scores are by necessity broad brushed and may well be challenged, highlighting the need for further examination. We hope that the process of assessing policy and investment options against the principles can stimulate strategy development that addresses the opportunities and threats facing Malawian agriculture, as discussed earlier.

Apart from roads, investments in other sectors are not included. However this is not to suggest that other sectors do not have important linkages with agriculture. Health and education, for example, have large potential benefits for rural people engaged in agricultural and non-agricultural activities, and in reducing population growth and vulnerability to climate change. Private and public resources available for investment in health and education are also dependent on agricultural growth, and there are further critical inter-sectoral intersections around health, schooling and agriculture for example concerning children's access to food and nutrition. There are further interactions between and within sectors as regards sources of resources for investment in agriculture with mineral led growth and, within agriculture, export crop led growth providing potential resources for investment in staple crop development, while health and education compete for resources, at least in the short term.

Table 5.1(a) suggests that, with appropriate policy design and implementation, there are strong arguments for making large investments in maize and legumes, with more mixed considerations for other commodities. There also appear to be strong arguments for investing in all the resources considered in table 5.1(b): roads, soils, water, markets, technical information (through research and extension), farmer organisation, and critically selected and well implemented subsidies. There are however significant questions about water investments (raised earlier as regards the effects of climate change on overall water availability and hence on the distributional impacts of different types of water investments). For investments in all these resources there are critical questions as to how they are prioritised and managed to be cost effective in supporting investments in commodity development. This raises questions about complementary commodity and other investments and about the need for identifying, for example, the critical information needs of smallholder producers and critical constraints which require new research which can rapidly yield significant, attractive and sustainable solutions to the constraints that they face.

**Table 5.1(a) Indicative scoring of policy and investment options: commodities**

Commodities	Description & comments	Score against principles								
		1	2	4	4	5	6	7	8	9
		Stakeholder sustainability	Land & labour Productivity	Ag & non-ag Integration	Inclusive growth	Food & diet quantity & quality	Food market access	NR accumulation	Rapid returns	Agro-processing
Maize	Widespread low productivity cultivation gives potentially very high returns in productivity, with wide (but not universal) stakeholder support & with strong integration in wider economic growth &, through stimulating demand & releasing resources, potential to promote diversity & diet quality	**	**	**	**	**	**	**	**	*
Cassava	As for maize but with less widespread cultivation & consumption. Generally offers lower national potential but high potential in some areas. It also has potential in supplying industrial starch but may deplete soil fertility.	*	*(*)	**	*(*)	*	*(*)	--	*(*)	**
Tobacco	Despite its widespread cultivation & major role in the Malawian economy there are questions about demand for Malawian production & hence about short & long term price effects of increased cultivation.	*	*	*	**	*	*	*	*	*
Legumes	Potential for supporting integrated soil fertility management in association with maize, & for improving diet quality through local consumption as well as earnings from domestic & export sales	**	**	**	**	**	**	**	**	*
Horticultural crops	If rising local incomes for some groups lead to a breaking of the low maize productivity trap and growing demand for horticultural products, this has major potential for a large number of positive linkages.	**	**	**	**	**	**	**	**	**
Traditional export crops	Coffee, tea, sugar, cotton: these can be grown in fairly restricted areas & have had mixed success as regards the organisation of smallholders & their relationships with processing company interests (Chirwa et al., 2007, 2008a; Chirwa and Kydd, 2005)	**	*(*)	**	*	*	*	**	*	**
Oilseed crops	These have been growing rapidly & provide substantial growth & income opportunities but have potential negative dietary impacts	**	**	**	*	--	*	*	*(*)	**
Cattle	Limited ownership &, in many areas, land availability restrict potential growth without prior increases in crop productivity	*	*	*	.	*	*	.	.	**
Goats	May be higher potential than for cattle due to robustness & smaller size	*	*	*	*	*	*	*	*	*
Poultry	Small size, rapid growth & reproduction, egg production all offer potential	**	*	*	**	**	*	*	*	*

Key: see overleaf

**Table 5.1(b) Indicative scoring of policy and investment options: resources**

Resources	Description & comments	Score against principles								
		1	2	3	4	5	6	7	8	9
		Stakeholder sustainability	Land & labour Productivity	Ag & non-ag Integration	Inclusive growth	Food & diet quantity & quality	Food market access	NR accumulation	Rapid returns	Agro-processing
Roads	Roads have wide ranging & rapid beneficial impacts for both agricultural & non-agricultural growth. Food quality & NR impacts depend upon commodity & market focus of complementary policies.	**	**	**	**	.	**	.	**	**
Soils	Soils are critical for all aspects of crop & hence agricultural production.	**	**	**	**	**	**	**	**	**
Water	Water availability & management are critical for all aspects of crop & hence agricultural production but there are important potential trade-offs between different uses & these need careful consideration.	?	**	?	?	**	?	?	*	**
Markets & information	Input & output market access & information are critical for all aspects of agricultural production. Maize price stability is particularly important & difficult.	**	**	**	**	**	**	**	**	**
Technical information & innovation	Technical information & innovation are critical for all aspects of agricultural production, & require research & extension. Specific commodity & constraint focus is critical for high, rapid, sustainable, inclusive impacts.	**	**	**	**	**	**	**	**	**
Farmer organisation	Farmer organisations can play a critical role in reducing service costs and expanding service access and in promoting NR management. There are however major challenges in supporting their development without undermining their sustainability (Chirwa et al., 2005).	**	**	**	**	**	**	**	**	**
Subsidies	As discussed elsewhere (Chirwa and Dorward, 2013) the FISP has the potential to perform well against almost all criteria, but much depends upon its design & implementation & on its integration with complementary policies & investments.	**	**	**	**	**	**	**	**	*

- Key:
- \*\* High potential
  - \*(\*) High potential but limited scope
  - \* Limited potential
  - . Low potential
  - Potential negative impact
  - ? Can be positive or negative, further information needed

## 7 Policy and investment priorities

Consideration of the various options set out in the tables suggests some conclusions which we put forward for discussion and review (somewhat tentatively, with deeper investigation needed on some topics). We phrase our conclusions in terms of where more or less resources should be invested (recognising limited overall resources and capacity and the need for prioritisation), and where emphasis is needed on doing things better.

It is first important to address the ongoing debate regarding the relative merits of investing in smallholder as opposed to larger scale farms in Malawi. Wider theoretical arguments for smallholder agriculture making important contributions to growth were summarised earlier in section 3. These arguments apply strongly in Malawi. Smallholders manage the vast majority of agricultural land and supply the vast majority of agricultural labour. Agricultural development that raises the productivity of this land and labour can therefore have large impacts on wider growth (as argued in 4.2.3), with much stronger growth linkages than are found with large scale agriculture. For commercial agriculture to achieve similar rates of growth in national land productivity, there would have to be large scale transfers of land from and displacement of smallholders which may be difficult to implement. This would pose major problems for the livelihoods of displaced smallholders, and pose major welfare, economic, social and political challenges. It would also reduce the labour productivity of large numbers of people. Increased mechanisation and reliance on fossil fuels would increase foreign exchange demands for imports. It should also be noted that while Malawi has a poor record of achievement in achieving productivity growth in smallholder agriculture, this also applies to large scale farming.

It is difficult, therefore, to justify a major emphasis on large scale agricultural development at the expense of investment in smallholder agriculture. We do not, however, suggest that large scale agriculture should be ignored or discouraged. On the contrary, there are potential complementarities between large scale and smallholder agriculture as regards infrastructure, market and technology development, and these should be actively sought out and promoted. More fundamentally, in the long run successful smallholder agricultural growth should lead to increasing growth in the non-agricultural sector, a shift of labour out of agriculture, and a consequent increase in farm sizes and in mechanisation and farm incomes. This process, however, needs to follow from a process of economic development and transformation, not try to drive it.

Within smallholder agriculture, improved maize productivity is, in our view, critical for achieving broad based growth and improved nutrition in both the short and long term. This should be with the aim of promoting both supply and demand opportunities for diversification out of maize. Very large amounts of resources are currently being expended on maize production, under the FISP. While this should be continued on a large scale, opportunities should be realised of doing more (or better) with less, of reducing its costs but expanding its impacts, through design and implementation features that raise the incremental production of subsidised inputs. This should free up resources for complementary investments to raise maize productivity and/or exploit diversification (out of maize and out of agriculture) and linkages. Attention may also need to be given to other staple crops in areas where maize is not grown so much or where other crops have more potential for raising land and labour productivity in accessing staple food. It is important to recognise that the emphasis on complementary investments means that FISP should not be seen as a 'stand alone' intervention and investment for the promotion of maize productivity – a wider variety of other infrastructural, market and organisational interventions are also needed in the maize value chain if the FISP is to have a transformative impact. A particularly critical issue here is the reduction of intra- and inter- seasonal variability in maize prices.

Given historic investments in traditional export crops (including tobacco), it is questionable if further large investments would represent a good use of resources as compared with investments in other crops, such as legumes, which are currently experiencing export growth and have the potential for



cultivation by a larger range of farmers in the country (as compared with sugar tea and coffee) as well as offering human nutrition and soil fertility benefits. Attention to value chain bottlenecks is, however, needed for legume crops. For traditional export crops, better support, and where necessary 'defensive' investment, is important for maintaining farmer and national income from these crops.

Horticultural crops appear to have considerable potential, offering good returns to land and labour, and high positive linkages (in terms of growth multipliers and nutrition). Demand is, however, dependent upon broad based income growth. It is not clear what technical and value chain support may be needed to promote these crops, but there are likely to be important synergies with increased maize productivity (see for example Snapp et al. (2010) and reduced intra- and inter-seasonal variability in maize prices. This can build on wider cultivation of 'home gardens' for domestic consumption.

Oilseed crops have considerable potential as regards supply and demand, as well as in small scale agro processing. While this offers opportunities for local value addition and 'downstream' multipliers, the potential future dangers of over consumption of oils and associated non-communicable diseases need consideration.

Rural roads are recognised to have been critical in promoting agricultural and rural growth and development in other countries – stimulating development of a range of agricultural and non-agricultural input and output markets, reducing transport and transaction costs, and hence promoting growth. Benefits extend beyond market development to improving and lowering costs of delivery and access for a wide range of services. This is an area where greater investment is required for rural road construction, while more and more effective maintenance of existing roads is also needed.

As noted in table 5.1(b), soils play a critical role in crop production, and hence in livestock production. Good soil structure is also important for stabilising water flows, and reducing siltation and pollution of rivers and lakes (affecting freshwater ecosystems and their productivity; domestic, irrigation, and industrial water supplies; and hydro-electric power generation). Greater attention to improved soil fertility management is therefore of major importance, and requires research and extension (for example on agronomic methods and economic performance of 'conservation farming' practices) as well as crop diversification. This leads on to recognition of the importance of agricultural research and extension, and we highlight the importance of this being focussed on addressing critical constraints with potential for high and rapid impact in terms of uptake of technological and institutional change. Similar prioritisation is needed with regard to support for the development of farmer organisations and related development of input and output market access (for example with regard to seed and fertiliser input markets and the maize market).

More broadly, these suggestions presume that wider policy weaknesses discussed earlier are addressed. This involves coherent long term strategies expressed in policies that are coordinated within the sector and across sectors, and are also consistently applied. This in turn involves responsiveness to changing circumstances (hopefully as the agricultural sector and wider economy grow and diversify as well as responding to changing external conditions) and to learning - but it also involves implementation that farmers and other private sector actors can rely on as they invest in different activities to develop agricultural value chains.

## **8 Conclusions**

This paper has considered potential strategic options for agriculture and development in Malawi in the context of the country's current situation and prospects.

A major emphasis is needed on supporting changes that reduce the rate of population growth and promote capacity for adaptation and resilience to climate change. Rapid increases in the productivity of agricultural land and labour and rural incomes will be critical to this (alongside increased

education and empowerment of girls and women). There are, however, difficult potential trade-offs to negotiate (for example between increased irrigation and reduced inflows into Lake Malawi) and these need further consideration.

From this analysis a set of nine strategic principles and two operational principles are suggested to guide strategy development that addresses the opportunities and threats facing Malawian agriculture. These focus on the need for sustainable investments and activities that are viable for and acceptable to all stakeholders; land and wider labour productivity; the integration of complementary agricultural and non-agricultural strategies, policies and investment; broad based and inclusive growth; increased quality and diversity in food production; market access and affordability of food for all; sustainable practices with accumulation rather than depletion of natural resources; and pursuit of agro-processing opportunities to promote value addition. Rapid population growth and the threats of increasing climate change mean that time is of the essence, as on the one hand these processes threaten productivity increases while on the other increased incomes, together with increased education and empowerment of girls and women, should help to slow population growth and increase resources and options for climate change adaptation. There are, however, difficult potential trade-offs to negotiate (for example between increased irrigation and reduced inflows into Lake Malawi). These and other trade-offs have to be finely judged in well informed decisions about resource allocations to different policy and investment options.

Policy choices then need to identify commodity and resource and service priorities for increasing investment and/or for doing things better, perhaps with less investment. Some tentative and broad suggestions for prioritisation are put forward for consideration, within the context of coordinated and consistent sectoral and cross sectoral policies.

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