

Reaching the Vision: Analysis of Possible Options

Draft

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National Economic Council

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EXECUTIVE SUMMARY

With a per capita income of less than US \$200, Malawi today is one of the poorest countries in the world. There has been a very marginal improvement in the provision of social services despite national attainment of economic growth and adoption of structural adjustment programs. A significant number of households suffer from acute food insecurity. The health status of the majority of the population remains low. Literacy rates are very low. The conditions of the Economic Infrastructure, particularly roads has deteriorated. The high growth of population continues to exert pressure on land, natural resources, the environment, employment and the provision of social services.

In recognition for the need to change the future development destiny for the country, Malawians prepared a long-term shared vision to provide a framework for development planning and management. The process of developing this shared vision began in January 1996 with a study of the development prospects known as the Vision 2020. The exercise culminated in the compilation of a Vision 2020 document that reflects the aspirations of Malawians in various sectors of the economy. The objective of the Vision 2020 was to help government, the private sector and society in general to reach consensus on national development goals, policies and strategies in order to improve development management.

It is recognised that this consensus will depend upon, among other things, careful evaluation of the options available in reaching the vision. This report therefore provides a quantitative analysis of long-term development strategies within the Vision 2020 framework in an effort to recommend options towards realising the nation's aspirations. The major themes, issues and aspirations from Vision 2020 provide the framework for the analysis. These themes, issues and aspirations are quantified using indicators that allow measures of both historical development performance and future progress towards the Vision 2020 aspirations. In order to project future trends of the various indicators an integrated and multi-sectoral computer model called Threshold 21 is used. The model allows analysis, within a consistent framework, of the future consequences of strategies intended to improve the development of the nation.

Trends and Issues

Malawi's economy is dominated by agriculture which employs a large proportion of the population and contributes a significant share to national output. The structure of the economy is mainly informal and dependent on smallholder agriculture. Largely due to its dependence on agriculture, the economy remains fragile and susceptible to external shocks.

After independence, the economy experienced rapid growth in gross domestic product and the volume of exports expanded rapidly. However, the performance of the economy slackened during 1979 – 1981 period largely due to external shocks and deteriorating terms of trade. The sluggish economic performance during 1980s compounded by rapid population growth translated into lower per capita GDP. Both domestic savings and investment to GDP

ratios have remained low. Investment is barely replacing capital stock, let alone modernising or building essential new transport and communications infrastructure.

Currently Malawi has one of the highest population growth rates in Africa estimated at 3.2 per cent per annum. The rapid population growth is putting pressure on natural resources, land, the provision of social services and efforts to create employment opportunities. This is particularly serious considering that infant mortality remains high, the HIV/AIDS epidemic in Malawi is one of the most severe in the region, the quality of education has dwindled and the nation's energy remains highly dependent upon fuelwood.

Further, the domestic supply of grain and the lack of access to adequate food supplies by households have a negative effect on nutrition, resulting in undernourishment, wasting and stunting in children. This is worsened by the fact that land, which is one of Malawi's major assets, is unequally distributed. Population pressure has aggravated the problem of access to land.

Research in science and technology has concentrated on agriculture reflecting the priority of the sector. While progress has been achieved in technology research in the agriculture sector, the transfer and adoption of such technology has not been widespread due to improper strategies of dissemination.

Possible Options for Malawi

Given the current situation, Malawi must make a choice to either remain in the present situation or move away from poverty and achieve sustainable development. There are many options to be considered in striving towards 2020. However, in this document a limited number of strategies, which can be analysed quantitatively, have been considered. Strategies of similar focus have been grouped into simplified development scenarios in order to facilitate analysis. These scenarios include the **Base Scenario**, **Agricultural Based Scenario**, the **Social Development Scenario** and the **Growth Based Scenario**.

The projections in the Base Scenario show stagnating incomes, high fertility rates, high mortality rates, high levels of HIV infections, low productivity, declining per capita food production and declining forest land. This scenario presents a pessimistic view of the future and demonstrates the need for strategies, or interventions, to change the development course and steer the country closer towards its long-term development aspirations as outlined in the Vision 2020 document.

The Agricultural Based Scenario focuses mainly on agriculture sector interventions and strategies that directly target the poor. The major strategies in this scenario include boosting agricultural productivity, improving the food security situation, improving land utilisation and management, using safety nets to protect the vulnerable and increasing employment opportunities.

The Growth Based Scenario focuses on stabilising the macroeconomic environment, increasing investment in pursuing economic growth. Hence, the strategies for the Growth Based Scenario include creating a supportive macroeconomic environment, increasing

savings and investment, strengthening the financial sector, promoting industry and exports and commercialising agriculture.

The Social Development Scenario focuses on improving the social status of Malawians through provision of good infrastructure and investment in human capital thereby raising productivity and living standards. Strategies in this scenario include supporting good governance, providing basic social services and supporting the environment and natural resources development.

Analysis of Scenarios

While the different development strategies proposed by experts may be logically sound, the strategies are usually not integrated. In addition, these strategies are usually not quantitatively qualified. The T21 model handles this problem because it is an integrated and quantitative tool. Thus, the document analyses development strategies using the Malawi Threshold model in a logically consistent and quantifiable framework. The analysis highlights the extent to which each scenario changes the development path from the Base Scenario and brings the country closer to its Vision 2020 aspirations.

The results of the analysis show that the Agriculture Based, Social Development Based, and Growth Based scenarios all consistently yield better results than the Base Scenario. In the long-term, the Growth Scenario performs worse than expected because it leads to a decrease in per capita GDP due to lack of investment in social services. The Agricultural Based Scenario achieves the best levels of agricultural production. However, it does not perform exceptionally well in any of the non-agricultural sectors. The Social Development Scenario performs well in the social sectors. However, its impact on the economic sectors is not felt until the longer-term. The results of the analysis further show that none of the scenarios satisfies all the long-term development aspirations of the nation. Overall the analysis implies that there are difficult decisions to be made if the vision is to be realised.

Best Options

Possibilities for a better scenario would therefore be to either combine all the strategies into single scenario or to selectively combine the best strategies. Analysis of these two scenarios, the Combined and Selective Scenarios, indicates that the Selective Scenario yields better results than the Combined Scenario. The Combined Scenario does not perform exceptionally well because it tries to improve all the sectors without consideration for resource constraints or priorities.

An Optimistic Scenario

Based on the scenario analysis and review of best options it is evident that none of the scenarios analysed fully reaches all of the aspirations outlined in Vision 2020. One reason for this is that the scenarios were analysed using quantitative analysis of past realities thereby undervaluing qualitative and innovative ideas. The report presents an Optimistic Scenario that considers both quantitative and qualitative factors as well as innovative ideas. The

Optimistic Scenario is based on assumptions that qualitative and innovative strategies will positively affect the country's development in ways that are new, significant and hard to measure.

The results of the Optimistic Scenario underscore the fact that there is considerable room for improvement in Malawi, particularly in the area of governance and economic management. Good leadership and good government will be critical in determining the outcome of the reform process necessitated by the journey toward the Vision.

Conclusions

Malawi has the potential to achieve its desired development aspirations. The Vision 2020 provides a framework for achieving the aspirations. However, analysis reveals that there is need to change the trends of the past. The task of fully realising the Vision is enormous, but Malawi can make concerted efforts to change its development path as demonstrated by the analysis of various scenarios.

The Selective Scenario, which includes best options from Agriculture, Social Development and Growth Scenarios, shows that by carefully choosing and implementing sound development strategies the country can realistically move closer to the vision aspirations. The Optimistic Scenario presents more hope for achieving the vision aspirations. However, it must be noted that the assumptions of this scenario call for a complete departure from the current approach to development. Such a radical departure from past norms may be extremely difficult, particularly because of financial and human resource requirements as well as the difficulty of changing the mindset of all Malawians. Overcoming these constraints calls for a serious commitment by all development stakeholders.

While quantitatively analysing the issues presented in Vision 2020 is an important step towards addressing the nation's aspirations in a practical way, some of the themes and issues in Vision 2020 are difficult, if not impossible, to quantify. These include, for example, many of the issues presented in Vibrant Culture and Good Governance. In the future, it will be therefore important to conduct more qualitative studies that can complement the quantitative analysis. For example, studies on Malawian culture could reveal its potential for influencing other areas of development such as economic growth or social welfare.

This report is intended to contribute to the initial efforts in long-term strategic planning necessary to operationalise Vision 2020. There is need for further analysis, both at the national and sectoral levels, in an effort to come up with specific strategies and recommendations that can be implemented.

There are many possibilities including further quantitative analysis, or qualitative studies. However, for this to materialise, there will be need to strengthen and support long-term strategic planning throughout the Government and the private sector. In a broader sense, there is need for continuous co-operation among the Government, international partners and the civil society in accepting the challenge of the Vision 2020 aspirations and using it as a framework for development.

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INTRODUCTION

The Vision: A New Framework for Development

“By the Year 2020, Malawi as a God-fearing nation will be secure, democratically mature, environmentally sustainable, self-reliant with equal opportunities for and active participation by all, having social services, vibrant cultural and religious values and being a technologically driven middle-income country.”

-Malawi Vision 2020

Malawi has arrived at a critical point in its development history. The incidence of poverty remains very high despite the national attainment of positive economic growth, adoption of structural adjustment programs and the implementation of short and medium-term development plans. There has been a very marginal improvement in the provision of social services particularly against the background of rapid population growth. In order to influence the future development destiny for the nation, Malawians have developed a long-term shared vision to provide a framework for development planning and management.

The process of developing the shared vision began in January 1996 when the Government of Malawi initiated a study of the country's development prospects known as Vision 2020. The consultation exercise, which was conducted over a period of two years, culminated in the compilation of a Vision 2020 document that reflects the aspirations of Malawians in various sectors of the economy. The objective of Vision 2020 was to help government, the private sector and society in general to reach consensus on national development goals, policies and strategies in order to improve development management (*Vision 2020*, 1998). This consensus will depend upon, among other things, careful evaluation of the options available in reaching the Vision.

Objective

This report, “Reaching the Vision: Analysis of Possible Options”, provides quantitative analysis of long-term development strategies within the Vision 2020 framework in an effort to recommend options towards realising the nation's aspirations.

Methodology

The major themes, issues and aspirations from Vision 2020 provide the framework for the analysis. These themes, issues and aspirations are quantified using indicators that allow measures of both historical development performance and future progress towards the Vision 2020 aspirations.¹ In order to project future trends of the various indicators an integrated and

¹ Many of the indicators used in this analysis were developed through collaboration between the National Economic Council (NEC) and the Vision 2020 National Core Team.

multi-sectoral computer model called Threshold 21 is used.² The Threshold 21 model is a system dynamics model that allows analysis of the complex interactions between various economic, social and natural resource sectors. Unlike econometric models, which allow more accurate point projections into the near future, the strength of the Threshold 21 model is its ability to project and analyse long-term trends. The model allows analysis, within a consistent framework, of the future consequences of strategies intended to improve the development of the nation.

Structure of the Report

The report has six chapters. Development trends and issues are presented in Chapter One. Chapter Two of this report groups strategies of similar focus into simplified development scenarios in order to facilitate analysis. Chapter Three translates each scenario described in Chapter Two into a set of interventions which can be analysed through simulations of the future using the Malawi Threshold 21 model. Chapter Four uses the analysis from Chapter Three to recommend strategies, or best options towards moving from Vision to reality. Chapter Five presents an optimistic scenario that considers both quantitative and qualitative factors. The final chapter presents conclusions, limitations of analysis and recommendations.

Trends and Issues

Agriculture remains the dominant activity in Malawi employing a large proportion of the population and contributing a significant share to national output. The structure of the economy is mainly informal with smallholder production of food crops accounting for the bulk of informal activities. Largely due to its dependence on smallholder agriculture, the economy remains quite fragile and susceptible to external shocks.

A significant number of households live in poverty and suffer from food insecurity. The health status remains low as evidenced by the high incidence of illness and deaths. Literacy rates are low. Despite the growth of road networks, the condition of roads in the country has deteriorated. Malawi has one of the lowest telephone penetration rates in the world. Malawi's population continues to grow at a high rate, one of the highest in Africa. The growth of the population exerts pressure on natural resources, the environment, employment and the provision of social services.

Alternative Scenarios for Malawi

Given the current situation the road ahead is difficult for Malawi. Malawi must now make a choice, either to remain in the present situation or to move away from the poverty and achieve sustainable development for the welfare of the people. There are many possible strategies to be considered in striving towards 2020 as evidenced in the Vision 2020 document. However, this document focuses on a limited number of strategies that can be quantitatively analysed.

² The Threshold 21 model was originally developed by the Millennium Institute in Arlington, Virginia. Over the past 18 months, the NEC has adapted the model to Malawi.

Analysis of Strategies

While the different development strategies proposed by experts are logically sound, the strategies are generally not integrated. For example, strategies to invest in labour-intensive, export-oriented industry may generate many benefits while investments in other sectors such as agriculture and social services may be reduced leading to relatively lower crop-yields, less family planning or less HIV prevention. Thus, many recommended strategies ignore cross-sector consequences.

Additionally, many recommended strategies are not quantitatively qualified. Strategies may not indicate the relative size of the intervention or investment. Too little investment may not be strong enough to make a difference, while too much may be counter-productive because of cross-sector impacts. Thus, it may be helpful to know not only the strategies to adopt, but also the relative resources to be devoted to the strategies and the possible implications.

The analysis of development strategies is done using the Malawi Threshold 21 model because of its ability for quantitative and integrated (cross-sector) analysis. The results are evaluated in terms of the degree to which they move Malawi closer to the aspirations outlined in Vision 2020.

Best Options

Analysis of strategies reveals strengths and weaknesses of each scenario. No single scenario satisfies all of the development aspirations. Thus, two other possible scenarios are considered to recommend a mix of strategies that move the nation closer towards achieving the nation's long-term development aspirations.

An Optimistic Scenario

The Optimistic Scenario presents more hope for achieving the Vision aspirations. The scenario calls for a complete departure from the current approach to development.

Conclusions

Malawi has the potential to achieve its desired development aspirations. The Vision 2020 provides a framework for achieving the aspirations. However, analysis reveals that there is need to change the trends of the past. The task of fully realising the Vision is enormous, but Malawi can make concerted efforts to change its development path as demonstrated by the analysis of various scenarios.

CHAPTER 1: TRENDS AND ISSUES

Introduction

Malawi gained political independence in 1964. Despite numerous development plans and strategies embraced over the years the status of the ordinary Malawian has not improved significantly. Hence, Malawians have expressed the desire to reverse the past trends and achieve economic development as outlined in the Vision 2020 document.

This chapter presents trends of the past to identify and illustrate some of the major issues to be addressed in reaching the vision. The chapter is organised along the nine themes of the vision including; Sustainable Growth and Development; Good Governance; the Social Sector; Economic Infrastructure; Vibrant Culture; Food Security and Nutrition; Equitable Income and Wealth Distribution; Natural Resources and Environmental Management and Science and Technology.

Sustainable Growth and Development

“Malawians aspire to have a diversified and middle income economy with a sustainable macroeconomic environment able to produce competitively, goods and services for both the domestic and export markets”

-Malawi Vision 2020

At independence Malawi had no significant private sector so naturally government assumed the responsibility in spearheading the development efforts. With no mineral resources and absence of a vibrant manufacturing sector, the agriculture sector assumed the role of the engine for growth. It is not surprising therefore that the dominant economic activity in Malawi is agriculture. Hence, the structure of the economy’s productive base renders performance to be highly susceptible to the weather conditions.

Economic Performance

Average Annual Real GDP Growth:

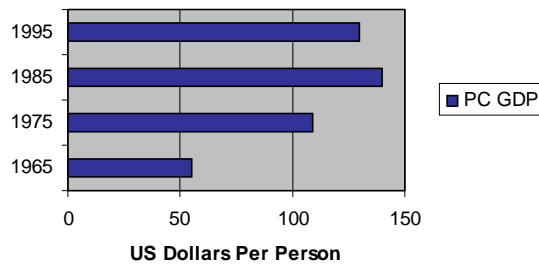
<i>1964 - 69</i>	<i>4.3 Percent</i>
<i>1970 - 79</i>	<i>6.1 Percent</i>
<i>1980 - 89</i>	<i>2.3 Percent</i>
<i>1990 - 96</i>	<i>2.7 Percent</i>

-Economic Report, various years.

After independence the economy experienced rapid growth in gross domestic product and the volume of exports expanded rapidly. Agriculture was the main source of growth, and it had spill over effects into other sectors like construction and manufacturing, particularly agro-processing. After a remarkable performance during late 1960s up to mid 1970s, the performance of the economy slackened during 1979-1981 largely due to

external shocks and deteriorating terms of trade. After rapid economic growth from 1965 up to the late 1970s, per capita GDP more than doubled (*see Figure 1, below*). However the sluggish economic performance during 1980s compounded by rapid population growth translated into lower per capita GDP. Consequently, per capita GDP is among the lowest in Southern Africa.

Figure 1: Historical GDP per Capita in US Dollars



Source: World Bank

To improve economic growth rates, mitigate the effects of external shocks and stimulate domestic production Malawi embarked on a structural adjustment program in 1981. The result was a temporary improvement in GDP witnessed by growth during the mid-1980s. However, the underlying structural weakness of the economy re-surfaced towards the end of 1980s and the policy response was in terms of more structural reforms. Economic recovery was frustrated by continued transport bottlenecks that faced the country and deteriorating terms of trade. During the same period, the performance of the agriculture sector, in general, and maize production, in particular, declined further retarding economic recovery.

Macroeconomic Indicators, 1997

Budget Deficit/GDP Ratio:	8.6 Percent
Current Account/GDP Ratio:	-12.0 Percent
Investment/GDP Ratio:	12.2 Percent
Domestic Savings/GDP Ratio:	2.0 Percent
<i>-Economic Report, 1998</i>	

Despite continuing structural adjustment programmes the macroeconomic environment remains largely unstable. Currently both domestic savings and investment to GDP ratios remain low.

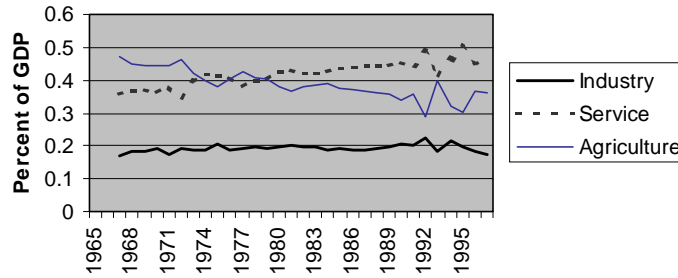
At 12 percent Malawi’s annual investment, which is now more or less equally divided between the public and private sectors, is barely replacing capital stock let alone modernising plant or building essential new transport and communications infrastructure.

Structure of the Economy

There has been a remarkable transformation in the structure of the economy since independence. It is estimated that the share of the informal sector in the economy has declined from about 50 percent of GDP in 1964 to less than 30 percent in 1997.³ However, the informal sector continues to play a significant role as a source of income and employment for a large number of people. The agriculture sector continues to play an important role in terms of employment, export earnings and contribution to GDP.

³ Calculation based on Macsol Model 1994-1998, Macroeconomics Section, National Economic Council

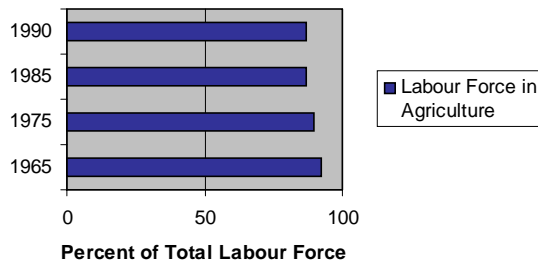
Figure 2: Historical Trends in Composition of GDP



Source: National Economic Council

Currently agriculture contributes about 36 percent of GDP while the industrial sector accounts for almost 20 percent of GDP (see Figure 2, above). At independence the service sector⁴ contributed about 11 percent of GDP and now accounts for over 45 percent of GDP with the distribution sector alone accounting for 24 per of GDP in 1997. (Economic Report, 1998)

Figure 3: Percent of Labour Force in Agriculture



Source: World Bank

Despite the falling share of agriculture in GDP, over 80 percent of the labour force remain engaged in the agriculture sector (see Figure 3, above). Smallholder farmers comprise the majority of those engaged in agriculture. After the 1977 population census, it was established that close to 77 percent of the economically active population were employed in the subsistence agriculture.

Structure of Formal Sector Employment

	1977	1990
Agriculture	50 %	46%
Services	30%	32%
Industry (Manufacturing)	20%	22%
	(11%)	(11%)

-National Statistics Office

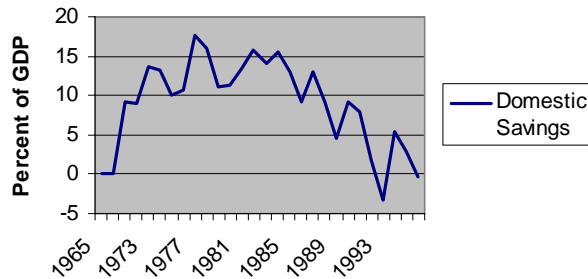
There has been a slight change in the structure of formal employment. The share of formal employment in agriculture has declined slightly from 50 percent in 1977 to 46 percent in 1990 while the shares in industry and services have gained.

⁴ The Service sector includes distribution, banking, insurance and finance, transport and communications.

Savings and Investment

Domestic savings as a proportion of GDP showed an increasing trend through the 1970s but in recent years there has been a dramatic decline (*see Figure 4, below*). In 1977 domestic savings ratio reached a record high of 17.6 percent and the worst level was in 1993 when the ratio was - 3.3 percent. The decline in savings rate is mainly a reflection of unsustainable government deficits.

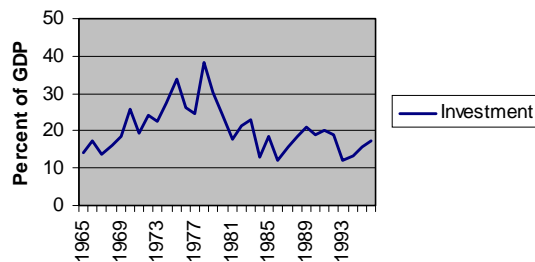
Figure 4: Historical Trends in Domestic Savings



Source: National Economic Council

The annual investment to GDP ratios have remained higher than domestic saving ratio (*see Figure 5, below*) reflecting the fact that most of the investment in Malawi is financed through foreign savings, particularly government fixed capital formation. It is estimated that the government finances only 20 percent while the remaining 80 percent of the governments development expenditure is financed by external donors (*Situation Analysis of Poverty, 1992*).

Figure 5: Historical Trends in Investment



Source: National Economic Council

Good Governance

“Malawians aspire to be united, secure and democratically mature with socio-economic development spread to all parts of the country.”
-Malawi Vision 2020

Malawi is a relatively young democracy. Until 1994, Malawi was governed by a one party state. After the transition to democracy, a refreshing sense of openness became evident. Issues which were at one time difficult to handle such as AIDS, hunger, family planning, and sexuality are for the first time on the public agenda, where politicians, health workers, the media and the population can analyse causes and debate options. With the ushering in of multiparty democracy, the government has put efforts to strengthen

some of the democratic institutions including a free press. Further, the government is in the process of strengthening participation of local people in the political life to ensure that the government upholds and respects the concepts of human rights, transparency and accountability. In pursuant of these goals, several institutions such as the Anti-Corruption Bureau, the Office of the Ombudsman and numerous Non Governmental Organisations for human rights and democracy have been established to facilitate the existence of an accountable, transparent and democratic society.

There are efforts to make public sector institutions more effective and responsive to the needs of the society. The role of the civil society in good governance is being enhanced through provision of more community participation in decision making and ensuring transparency and accountability. Despite the nation's efforts to address good governance, many Malawians perceive that there are still many difficulties including corruption and internal security.

Total Government Expenditure by Main Functions

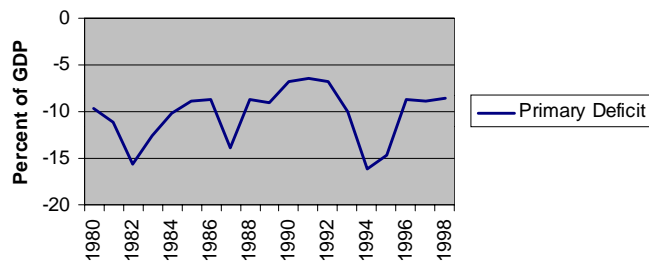
	<u>1981</u>	<u>1996</u>
Administration	29%	20%
Social and Community Service	21%	36%
Economic Services	16%	14%
Debt Service	12%	10%
Other	22%	20%

-Economic Report, Various Years

The public sector has played a leading role in the development process of the country. As a result the level of government expenditure has rapidly increased relative to the growth of its revenue base. The deficit excluding grants, the primary deficit, remains unsustainable (*see Figure 6, below*). In 1995/96 the primary deficit as a percentage of GDP was approximately 15 percent (*Economic Report, 1997*). Initially government

directed its resources in the provision of economic infrastructure and in recent years government expenditure in social services claims a substantial proportion of government expenditure.

Figure 6 : Historical Trends in Primary Deficit



Source: National Economic Council

In broader context issues of good governance include maintaining a viable public finance position. To the extent that public finance affects the economy in many different ways, through issues of revenue, expenditure and public sector deficit, government should therefore act responsibly in these areas to achieve macroeconomic stabilisation. Public finance position partly determines the inflation rate, current account deficit, the growth of the national debt and even the level of economic activity.

Social Sector Development

“Malawians aspire to have adequate and accessible high quality social services.”

-Malawi Vision 2020

Population

Currently Malawi has one of the highest population growth rates in Africa. In 1965 the population was estimated at 3.9 million and it had reached 7.982 million by 1987, and the estimated average growth rate was 3.2 percent per annum (Ministry of Health and Population, 1994). In 1998 the population is estimated at 11 million and is expected to reach over 20 million by the year 2020⁵. Malawi has a high fertility rate because of early child bearing, low contraceptive prevalence rate, high female illiteracy rates and desire for large families.

Social Indicators

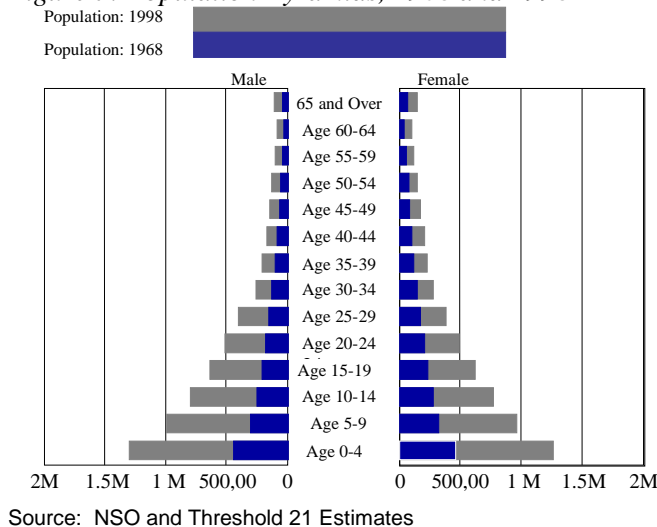
Total Population (est.: 1998):	11 million
Population Growth Rate (est.: 1994):	3.2%
Life Expectancy at Birth (1992):	
Male	43.6 Years
Female	46.5 Years
Maternal Mortality Rate (1995)	620 per 100,000 live births
Adult Literacy (1992):	
Male	60%
Female	35%

- Ministry of Health and Population, NSO and NEC

As a result of a low life expectancy and a high fertility rate Malawi’s population is youthful. The percentage of the population under age 15 has risen from 43.9 percent in 1966 to 47.3 percent in 1992 (see Figure 7, below). The dependency ratio, the proportion of the population which is not economically active to population which is economically active, has shown a rising trend from 0.92 in 1966 to 1.05 in 1992.

Rapid population growth is putting pressure on natural resources, the provision of social services and efforts to create employment opportunities. The provision of socio-economic infrastructure is crucial in creating the enabling environment for sustainable economic growth and development. In terms of social development, Malawi’s social indicators confirm the presence of widespread poverty.

Figure 7: Population Pyramids, 1968 and 1998

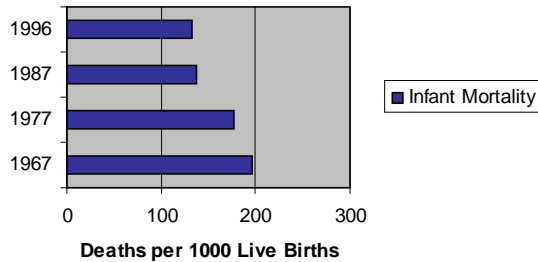


⁵ Based on projections from Threshold 21 model.

Health

In the health sector, the overall goal has been to improve the health status of all Malawians. Although the infant mortality rate has declined over time, it remains high (see Figure 8, below).

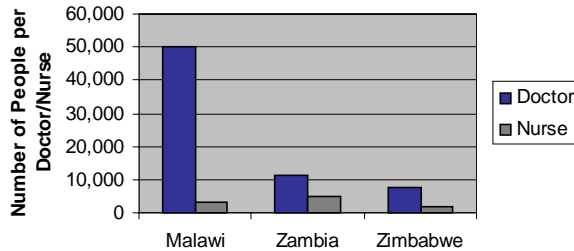
Figure 8 Infant Mortality per 1000 Live Births



Source: Ministry of Health and Population and World Bank

The number of health units⁶ has been increasing over time. There were about 280 units reported in 1986 most of which were dispensaries or maternity facilities (*Statement of Development Policies*, 1987). The main problems faced in the delivery of health services in Malawi include inadequate resources (human, financial and material equipment), rapid population growth, limited private sector involvement in the health sector and poor work ethics. Health workers to population ratios are still unfavourable (see Figure 9, below).

Figure 9: Population per Doctor and Nurse, 1988-1991



Source: Ministry of Health and Population and United Nations

The HIV/AIDS epidemic in Malawi is one of the most severe in the region, and in the world. It is estimated that over 13 percent of the population aged 15 to 49 is infected with HIV (National AIDS Secretariat, 1997). With such a large percent of the economically active population affected, the HIV/AIDS epidemic is depleting the nation's labour force and thereby undermining development prospects. At the same time the epidemic is placing a huge burden on the public health system. The increasing number of orphans due to HIV/AIDS, estimated at 100,361 in 1996 (National AIDS Secretariat, 1997), implies additional social expenditures.

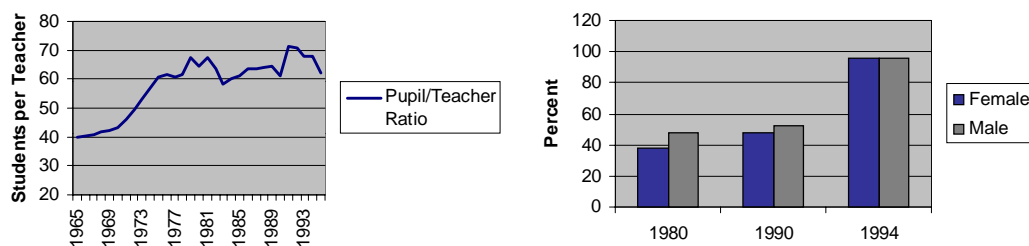
⁶ Health unit refers to hospitals, primary health centres, dispensaries, maternity and health posts.

Education

The role of education as a catalyst for development is recognised both in the medium term, through the provision of specific skills in short supply, and in the longer term, through the impact of improved general standards of education. However, limited resources have affected the quality of education.

Missionaries first introduced formal education in Malawi during the 19th century. After independence the government came up with an education plan whose objective was the fulfilment of specific needs of the labour market, development of more relevant school curricula, and the improvement of efficiency in the utilisation of resources (*Statement of Development Policies*, 1987). The government introduced free primary education in 1994 to improve primary enrolment. While primary enrolment has improved in recent years, the pupil/ teacher ratio remains high (see Figure 10, below). To address gender imbalances in education a special program on girls attainment of basic education was also launched to improve female attainment in education, particularly at primary and secondary level.

Figure 10: Primary Pupil/Teacher Ratio and Net Enrolment



Source: Ministry of Education and World Bank

In Malawi government remains the main provider of education from primary through tertiary level. However, budgetary constraints threaten to undermine government commitment to quality education. One major weakness of the current education system is its greater orientation in preparing graduates towards formal employment rather than producing an adaptable and creative workforce.

Economic Infrastructure

“Malawians aspire for a well-developed and maintained economic infrastructure including air, rail, water and road network in both rural and urban areas.”

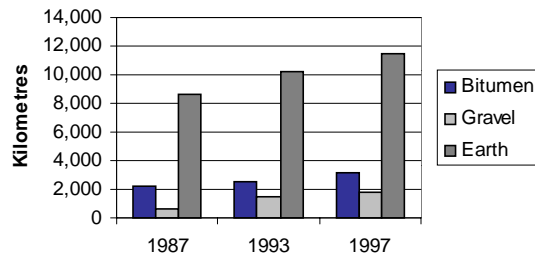
-Malawi Vision 2020

The provision of reliable economic infrastructure is crucial in the development process. Regular power supply, availability of water and sanitation services, good transportation and good port facilities, efficient telecommunications and infrastructure are necessary to complement public and private initiative in production and commerce. The government provides socio-economic infrastructure through such agencies as the Ministry of Works, Ministry of Transport and Telecommunications, Water Boards, Electricity Supply Commission and the Department of Physical and Town Planning.

Road and Rail

At independence the country had an underdeveloped communications sector and a restricted road network which was concentrated in the Southern Region.

Figure 11: Inventory of Roads by Type



Source: National Economic Council

Although there has been growth in the inventory of the road network (*see Figure 11, above*) the condition of the roads has largely deteriorated due to lack of maintenance. In 1997, a parliamentary bill was passed to allow the formation of the National Roads Authority which administers a dedicated road fund to ensure adequate funding for the maintenance and rehabilitation of the road infrastructure in the economy. Malawi as a land locked country depends on international road and rail network links for purposes of international trade. The cost to the economy of using distant ports is high. Currently the Nacala rail link, which is only 700 km to the sea, is being under-utilised despite undergoing partial rehabilitation works following the end of civil strife in Mozambique (Economist Intelligence Unit, 1998).

Telecommunications

Telephone Capacity (Lines)

	1971	1995
Automatic	7,181	65,854
Manual	1,285	2,588

Main Telephone Lines per 1000 Persons, 1997

Malawi	3
Zimbabwe	12
South Africa	90

-National Economic Council and United Nations

Malawi used to depend on other countries in the region for external telecommunications links but there are now two direct satellite earth stations dedicated to India and the Far East and the other for Europe, North America and parts of Africa. Microwave links with neighbouring countries have been set up including Zambia, Tanzania and Zimbabwe. The total telephone exchange capacity has also grown and modernised. However, Malawi still has one of the lowest telephone penetration rates in the world (*Human Development Report, 1998*). Cellular telephone service

was introduced in 1996 and the number of connection has rapidly increased. Currently the communications sector, particularly main telephone services, is highly monopolistic and there is consideration to introduce effective competition through licensing of new operators.

Social Services Infrastructure

As the transport sector is underdeveloped in Malawi, most people particularly in rural areas have to walk long distances in order to access social service outlets. For example, the Malawi Social Indicators Survey (MSIS) in 1995 found that 57 percent of rural households have to travel more

than 5 kilometres to get to the nearest health facility. The same MSIS found that access to primary school is much better than access to health services. About 20 percent of the villages in Malawi have their own local school. Only 4 percent of the villages are located more than 5 km from the nearest primary school. Access to safe water and sanitation is still a problem for most Malawians. The situation has not improved very much as 49 percent of the population still can not access protected water. Of the 51 percent of population who access protected water, only 2.1 percent have access to piped water within dwelling, 16.4 percent access public tap water, 27.8 percent use bore-hole water and 5.1 percent access protected well or spring water. Malawi's performance is below average for Africa. In 1990 it was reported that only 52 percent of the population in Africa (Malawi, 51%) had access to safe water. In terms of sanitation only 5.5 percent of the Malawian population has access to adequate sanitary facilities located within a convenient distance of dwellings and 30 percent have no sanitary facility (MSIS, 1995).

Energy Sector

Energy Sources, 1997

<i>Fuelwood</i>	<i>93%</i>
<i>Petroleum</i>	<i>3.5%</i>
<i>Electricity</i>	<i>2.3%</i>
<i>Coal</i>	<i>1.0 %</i>
<i>Other Biomass</i>	<i>0.2%</i>

Composition of Fuelwood Consumption, 1990

<i>Household</i>	<i>70%</i>
<i>Tobacco and Tea Processing</i>	<i>20%</i>
<i>Other Industry</i>	<i>10%</i>

-National Sustainable and Renewable Energy Program Report, 1997

According to the *National Sustainable and Renewable Energy Program Report 1997*, Malawi's energy is largely dependent upon fuelwood. The massive use of traditional energy sources is an indication of acute poverty and rural based economy. In 1985, it was estimated that 9.2 million cubic meters of fuel wood was consumed. The problem is that fuelwood consumption exceeds sustainable supply by 2.37 million cubic metres and expressed into deforestation, this deficits translates into net clearing of 50,000 hectares a year. If the situation remains unchecked, it could result in very serious land degradation and siltation of rivers and lakes.

Only 4 percent of the population in Malawi have access to electricity and that constitutes 20 percent and 1 percent of the urban and rural population respectively (*National Sustainable and Renewable Energy Program Report, 1997*). The demand for electricity is likely to increase due to industrial expansions as well as urbanisation and general increased coverage. In terms of energy supply, there is potential to exploit other renewable sources, apart from hydro-electricity.

Vibrant Culture

“Malawians aspire to have vibrant cultural values that support socio-economic development”

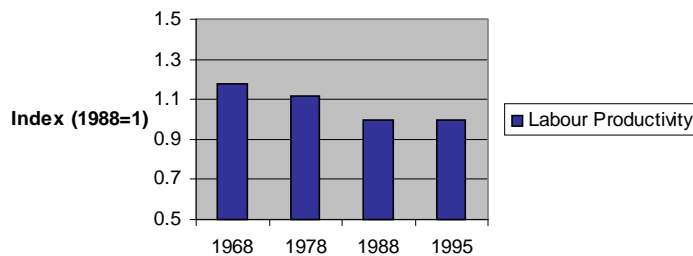
-Malawi Vision 2020

Malawi's culture has been passed on from generation to generation through various means such special as ceremonies, beliefs, religion, theatre and folklore. The colonial administration had little respect for the indigenous culture, hence disregarded it. Little understanding of what constitutes Malawian culture, compounded by the lack of a strong government policy on role of culture in the development process has led to a situation where people can not identify themselves with their culture with confidence. Despite lack of written policy, the one party state system leadership emphasised discipline, hard work respect for the elderly and decent dressing

particularly among the youth (Vision 2020, 1998). This was epitomised by the establishment of youth training bases and four cornerstones of unity, loyalty, obedience and discipline.

Traditionally, Malawians have strong cultural values embedded in hard work. Hard work can translate into increased economic production through increased labour productivity. Labour productivity in industry has actually declined (*see Figure 12, below*) due to both cultural, and non-cultural factors which have constrained the spirit of hard work. Some of these factors include low levels of investment, deteriorating capital stock and increasing feelings of dependency at individual, household, community and national levels.

Figure 12: Index of Industrial Labour Productivity



Source: National Economic Council

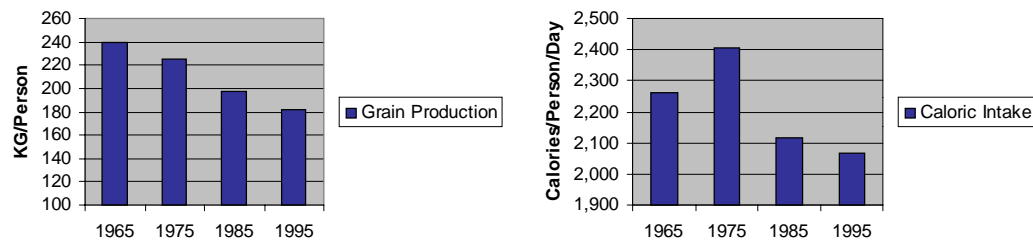
Food Security and Nutrition

Malawians aspire to have access to adequate and safe food at all times of the year to meet their nutritional requirements
-Malawi Vision 2020

The staple food for the majority of Malawians is maize most of which is produced by smallholders. Recently the production of other food crops such as tubers and pulses is showing an increasing trend. This implies there is potential to improve food security and nutritional status by diversifying production and diet.

In 1970, grain production was 1.1 million tonnes. By 1985 production was 1.35 million tonnes and increased to 1.47 million tonnes in 1997 (Economic Report, various years). Despite increases in total grain production, the level of grain per capita and caloric intake have shown a declining trend (*see Figure 13, below*).

Figure 13: Per Capita Grain Production and Daily Caloric Intake



Source: Ministry of Agriculture and Irrigation and United Nations

In some instances, poor physical infrastructure limits peoples access to food supplies. Additionally, declining levels of real income have also made it difficult for people to purchase food to meet their nutritional requirements.

The declining per capita grain production, the lack of access to food supplies and declining incomes have had a negative effect on the nutritional status of many households. Undernourishment within the Malawian families remains quite high. The National Sample Survey on Agriculture (NSSA) in 1981 found that the rate of stunting in children was 56 percent. Fourteen years later the Demographic and Health Survey revealed that the stunting rate had not significantly improved. By 1995 the stunting rate was still high at 48.3 percent. Wasting also continues to be a problem. Currently 30 percent of children are under weight (MSIS, 1995).

Equitable Distribution of Income

"Malawians aspire to have a fair and equitable distribution of income and wealth. "

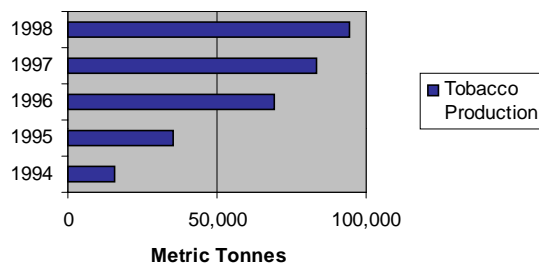
-Malawi Vision 2020

Malawi has been characterised by considerable income inequality over time. In 1968 the top 10 percent of the population had over 50 percent of national income while the bottom 65 percent of the population earned only 31 percent of the income (*Patterns for Rural Development*, 1985). The income Gini coefficient in 1968 was 0.448 and it had worsened to 0.62 by 1995 (Vision 2020; UNDAF, 1998). Currently Malawi is ranked as the third highest in the world in terms of income inequality, after Brazil and Namibia (*HDI Database, 1997*). It is estimated that 60% of the population live in absolute poverty (*Situation Analysis of Poverty in Malawi*, 1993) and largely depend on agriculture. Currently categories of people in poverty include the urban poor, estate workers and tenant farmers, in addition to subsistence farmers.

Land is one of the major assets in Malawi; however, its distribution is not equitable. About 1.6 million families operating under customary tenure cultivate just 1.8 million hectares while 3,000 estates currently own about 1.1 million hectares of suitable agriculture land (*Situation Analysis of Poverty in Malawi*, 1993). Apart from the unequal distribution, population pressure has aggravated the problem of access to land. The size of land holdings has been declining. About 56 percent of small holder households cultivate less than 1 hectare, 31 percent between 1-2 hectares, and only 13 percent above 2 hectares (*Statement of Development Policies*, 1987). This implies most small holder farmers cultivate a piece of land which is inadequate, even for subsistence requirements.

The liberalisation of the agriculture sector to allow small holder farmers to engage in growing high value cash crops such as burley tobacco is one measure for enhancing small holder incomes. For example the 1995/96 smallholder net profits from burley production were approximately \$20-25 million (*Accelerating Malawi's Growth*, 1997). By 1997, 175,000 to 200,000 smallholder households were engaged in burley production thereby increasing total smallholder tobacco production (*see Figure 14, below*).

Figure 14: Smallholder Tobacco Production



Source: National Economic Council

Over time the activities of micro and informal sectors, which are concentrated in the distribution sector, have provided an alternative and growing source of employment for the country’s labour force. This is evidenced by the growth of the share of distribution in GDP from 12.6 percent in 1990 to 24.3 percent in 1997 (*Economic Report*, various years).

Natural Resources and Environmental Management

The management of Malawi's natural resources, including land, forests, and water is crucial to the achievement of sustainable development. The widespread incidence of poverty and lack of alternatives has resulted in many poor people relying on natural resources for their livelihoods. This has contributed the depletion and degradation of Malawi’s natural resources and environment. Current problems facing the natural resources include soil erosion, deforestation, over-fishing, siltation, pollution and poaching.

"Malawians aspire to have sustainably managed natural resources and environment."
-Malawi Vision 2020

The population increase has exerted pressure on land over time resulting in intensive land use. The rate of soil erosion has increased due to the cultivation of marginal land which is highly susceptible to soil erosion. Poor farming practices have also exacerbated the problem.

Average Annual Rate of Deforestation
1972-1990 3.5%
1990-1995 2.5%
-National Environmental Action Plan, 1994

Deforestation has also occurred at a very rapid rate in order to pave way for farmland. Lately the rate of deforestation has been declining, however it remains a problem. Most of the forest in the customary land has been cleared in the south, whereas the northern part of Malawi still has some forest cover. Supply of fuelwood and charcoal is a major cause of deforestation in the areas close to or with access to urban communities.

About a quarter of Malawi is comprised by Lake Malawi and several other smaller lakes. These water bodies are habitat to a diverse aquatic life which provide a major source of protein for the country as well as livelihoods to numerous communities. Fish is estimated to contribute to between 60 and 70 percent of the total animal protein intake in Malawi (MSIS, 1995). However, production has declined significantly in the major water bodies in the country. For example, fish production on Lake Malombe declined from 10,000 tonnes per annum in 1986 to between 200 and 300 tonnes per annum in 1994 (*National Environmental Action Plan*, 1994). Unsustainable human activities threaten to result in the loss of bio-diversity and reduction in other benefits of

the ecosystem.

Science and Technology

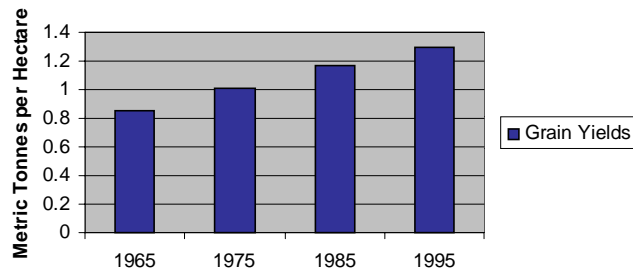
"Malawians aspire to have a science and technology-driven economy through improved training, commercialisation of Research and Development, promotion of environmentally sound technology and increased use of information technology"
-Malawi Vision 2020

Research in science and technology has concentrated on agriculture reflecting the priority that this sector has been to the country. The number of agricultural research stations evidences this. Currently there are thirteen agricultural research stations compared to only one industrial research institute, the Malawi Industrial Research and Technology Development Centre.

Agricultural research has been devoted to the developing and promoting high yielding, early maturing and drought resistant crops. Consequently, yields for crops such as grain have improved over time (see Figure 15, below).

While progress has been achieved in technology research in the agriculture sector, the transfer and adoption of such technology had not been widespread due in part to improper strategies of dissemination. For example, the focus of agriculture extension on maize and tobacco has hindered the adoption of new high yielding varieties of other crops such as seedless oranges, mushrooms and spices.

Figure 15: Historical Grain Yields



Source: Ministry of Agriculture and United Nations

There is potential for increased application of technology in areas of health, education, industrial production and telecommunications.

**Enrolment in
Technical Colleges**

1970	236
1986	510
1995	1,054

-Basic Education Statistics,
1995

The growth in the use of science and technology is dependent upon education. The enrolment in technical colleges has increased over time. However, the numbers are still low. Additionally, most graduates are not directly involved in work that furthers the level of science and technology in the country.

CHAPTER 2: ALTERNATIVE SCENARIOS FOR MALAWI

Introduction

This chapter begins by summarising key issues from Chapter 1 and presenting them in the form of projections for the future. These projections form a scenario, called the Base Scenario, which assumes that the development of the country will continue based on current and historical trends. The future projections in the Base Scenario will highlight the need for strategies, or interventions, to change the development course and steer the country closer towards its long-term development aspirations as outlined in the Vision 2020 document.

Following the Base projections the Chapter presents alternative interventions aimed at changing the trends in the past. These interventions were adapted from recommendations in various policy documents including the Vision 2020. However, in order to facilitate analysis, only a limited number of quantifiable strategies have been considered. Strategies of similar focus have been grouped into simplified scenarios of Malawi's future. The scenarios include an Agricultural Based Scenario, a Social Development Scenario and a Growth Scenario. The strategies in each scenario are analysed in Chapter 3 using an integrated and quantitative model, called the Malawi Threshold 21 model (*see appendix 1 for more information on the Malawi Threshold 21 model*). The analysis will highlight the extent to which each scenario changes the development path from the Base Scenario and brings the country closer to its Vision 2020 aspirations.

Base Scenario

Chapter One presented major development trends and issues within the Vision 2020 framework. Using the Malawi THRESHOLD 21 model, the trends of the major, quantifiable indicators can be projected into the future to see the direction in which the country is heading. These projections present a "possible" future that assumes a continuation of the historical trends and policies. This possible future is called the Base Scenario.

Model Validation for Reasonable Projections of the Future

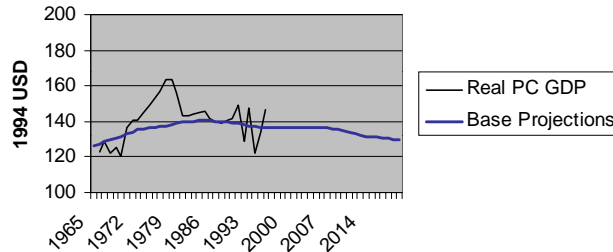
As a means of model validation (quality control of model behaviour), THRESHOLD 21 starts from a date in history, such as 1965. The model first simulates from 1965 to the present, and the results are compared to existing and available historical data. If the simulation results fit reasonably well with historical data, then THRESHOLD 21 is ready to simulate alternative scenarios for the future, such as from the present to 2020. If the simulation results do not match historical data, it indicates possible errors, and the model needs further modification before it can be used for projecting the future.

The projections for the Base Scenario are presented in graphs, below. Most of the graphs contain two lines. One line, usually shorter and less smooth, represents actual data collected in building the model. The other line, usually longer and smoother, represents future projections using the model. The reason that both lines are presented is to demonstrate how the model projections "fit" historical data to ensure the validity of the model. Given the impossibility of accurately capturing reality in a model, most projections do not fit historical data perfectly but do represent a reasonable approximation.

Sustainable Growth and Development

Malawians aspire to move towards a middle-income economy by 2020 (Vision 2020, 1998); however, the slowdown in growth of GDP combined with continuing high rates of population growth jeopardise the possibilities for significant growth in GDP per capita. The Base projections for real GDP per capita show stagnation and a slight decline for the future (*see Figure 16, below*).

Figure 16: Base Projections for Real Per Capita GDP

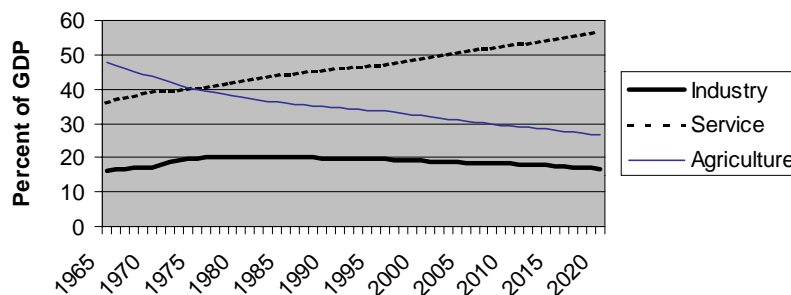


Source: Economic Report and T21 Projections

Increased investment is crucial to the attainment of high economic growth rates. The relatively low growth rates of GDP are partially explained by the low levels of investment projected in the Base Scenario. The base projections for the investment to GDP ratio grow slightly, but remain below 20 percent.

One of the Vision aspirations is to reduce economic dependence on agriculture by promoting the role of the industrial sector, particularly manufacturing. While the economy is projected to continue moving away from its dependence on agriculture, the sectoral share of industry in GDP is not projected to increase. The declining share of agricultural production is accompanied by a growing share of the service sector in GDP (*see Figure 17, below*).

Figure 17: Projected Sectoral Composition of GDP



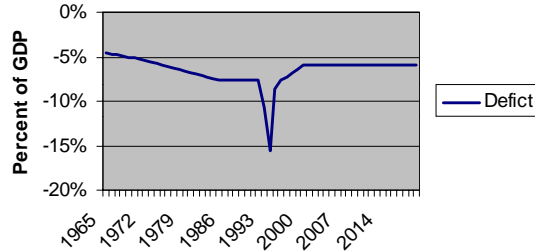
Source: Economic Report and T21 Projections

Good Governance

Malawians are striving to have an effective and efficient public sector, strengthened democratic institutions and a united and secure country (Vision 2020, 1998). Public sector performance is especially important for providing a stable macroeconomic environment conducive to investment and growth. The projected trend shows that ratio of government deficit to GDP continues at an

unsustainable level (see Figure 18, below). The implications could include diverting resources from development programmes to debt servicing and the destabilisation of the macro-economic environment.

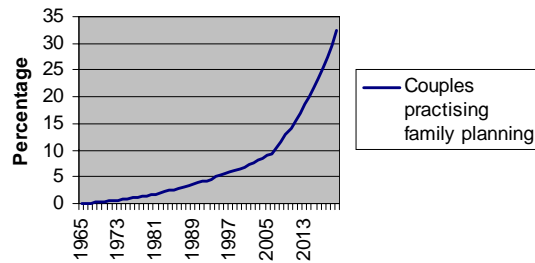
Figure 18: Projected Government Deficit to GDP Ratio



Source: Economic Report and T21 Projections

Openness is one of the attributes of good governance. Malawi's trend towards more openness in addressing difficult issues such as family planning, HIV/AIDS control and reproductive health has positive implications for development. Currently, the contraceptive prevalence rate in Malawi is nearing 20 percent and growing indicating more openness in family planning and reproductive health. However, the proportion of couples adopting and effectively practising family planning remains low. Projected increases in the proportion of couples effectively practising family planning (see Figure 19, below) could reduce the total fertility rate and slow population growth.

Figure 19: Projected Proportion of Couples Effectively Practising Family Planning

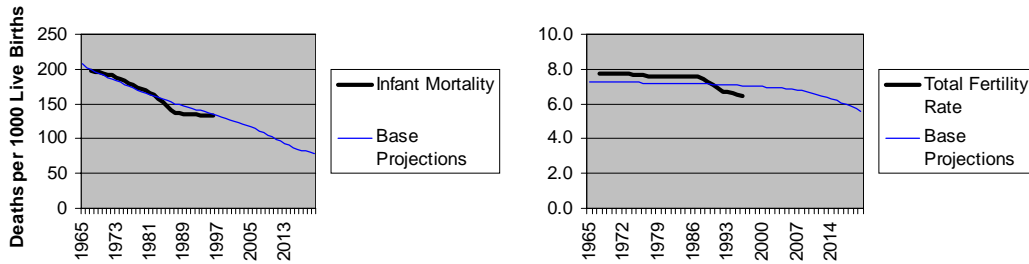


Source: T21 Projections

Social Sector Development

In pursuit of adequate and high quality social services, Malawians endeavour to have reduced mortality and fertility rates, improved literacy rates and improved accessibility to social services.

Figure 20: Projected Infant Mortality and Total Fertility Rates

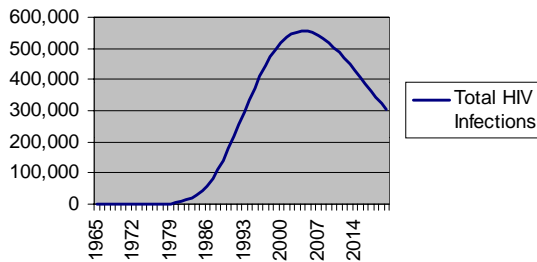


Source: Ministry of Health and Population, World Bank and T21 Projections

Although the base projections for total fertility rate reveal a decline, the rate remains high (*see Figure 20, above*). The high fertility rate combined with a projected decline in infant mortality implies a high population growth and further pressure on the land, the environment and the delivery of social services.

HIV/AIDS is also projected to have a significant impact on the social service delivery system. Due to an estimated 5 to 10 year time lag between infection and death, the number of people infected with HIV will continue to grow (*see Figure 21, below*), even assuming a decline in additional HIV infections. The implications could be very costly in terms of both the direct costs for treatment as well indirect costs for productivity loss and human suffering.

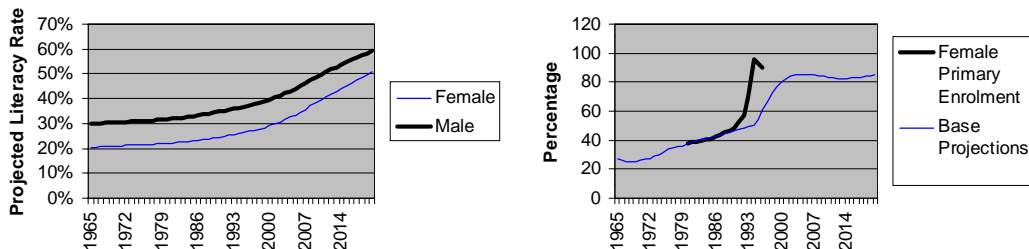
Figure 21: Projected Total HIV Infections



Source: National AIDS Control Programme and T21 Projections

The recent improvements in primary enrolment rates are projected to have a significant impact on adult literacy rates in the future (*see Figure 22, below*). This could have a positive impact on labour productivity, family planning acceptance and living standards.

Figure 22: Projected Adult Literacy and Primary Enrolment Rates



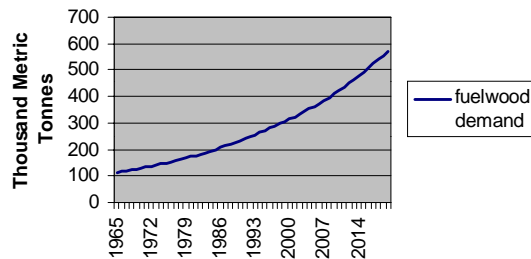
Source: Ministry of Education, World Bank and T21 Projections

Economic Infrastructure

The provision of reliable economic infrastructure is necessary to complement public and private initiative in the economy. Malawians desire a regular power supply, accessible water and sanitation services, good transportation and port facilities and efficient telecommunications. Insufficient investment in infrastructure could jeopardise investment opportunities.

Malawi's dependence upon fuelwood as the major source of energy is projected to continue into the future. Consequently, the demand for fuelwood will greatly increase with the growth of the population (see Figure 23, below). This could have serious environmental implications.

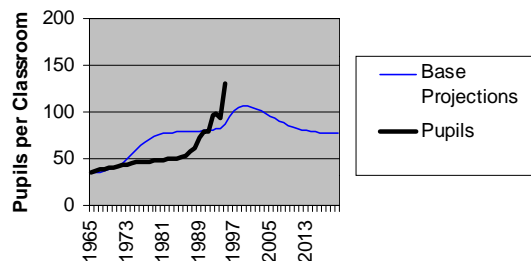
Figure 23: Projected Demand for Fuelwood



Source: T21 Projections

The provision of social infrastructure including schools, hospitals and community centres contributes to the improvement of the social welfare of Malawians. For example, although primary enrolment is increasing projections indicate that primary students per classroom may remain high (see Figure 24, below) thereby affecting the quality of education.

Figure 24 : Projected Primary Students per Classroom

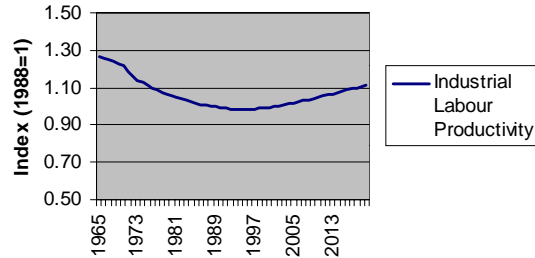


Source: Ministry of Education, World Bank and T21 Projections

Vibrant Culture

Malawians aim to have a strong cultural identity, which positively impacts on national development. Malawians have strong cultural values embedded in hard work, which could be enhanced to increase the productivity. This could reverse the projected trend revealed in Figure 25, below.

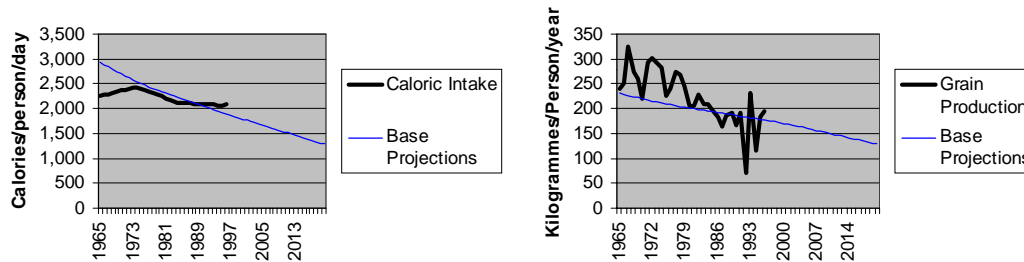
Figure 25: Projected Labour Productivity



Source: National Economic Council and T21 Projections

Food Security and Nutrition

Figure 26: Projected Daily Average Caloric Intake and Annual Per Capita Grain Production



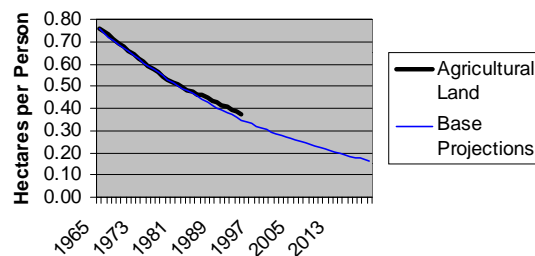
Source: Ministry of Agriculture and T21 Projections

Base projection for per capita grain production reveals a declining trend. Low domestic food production combined with low incomes could have serious implications for the nation's aspirations for food security and the nutritional status (*see Figure 26, above*).

Equitable Distribution of Income

The equitable distribution of income facilitates the improvement of living standards of the entire nation. Since land is one of the most important productive assets in Malawi, improving access to land is critical in attaining a more equitable income distribution. This is especially important considering the projected decline in the agricultural land per capita (*see Figure 27, below*).

Figure 27: Projected Agricultural Land per Capita

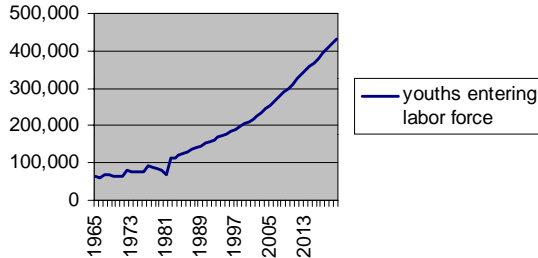


Source: Ministry of Agriculture, World Bank and T21 Projections

Liberalisation of the agricultural sector, particularly allowing smallholders full access to cash crops and allowing private traders to participate in marketing, is one way of promoting the

equitable distribution of income. Better prices through competitive purchasing of output and increased output of cash crops can ensure increased income for smallholder farmers.

Figure 28: Projected Number of Youths Entering Labour Force Annually



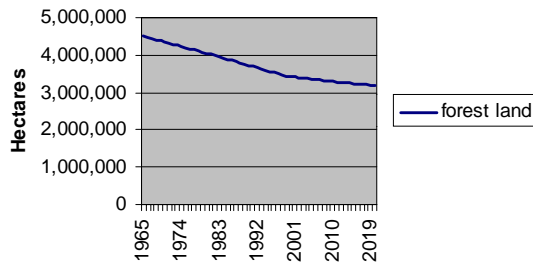
Source: T21 Projections

Given the increased population pressure on land resources, and the growing numbers of youth entering the labour force (*see Figure 28, above*), it will be necessary to find increased off-farm employment opportunities to complement on farm employment.

Natural Resources and Environmental Management

Malawi's economic development is dependent on its natural resources. In order to achieve sustainable development, Malawi's natural resources must be well managed. Base projections show a general deterioration in the natural resource base. For example, projected future trends, depicted in Figure 29, below, show that Malawi's forests are being depleted. This could have serious effects on agricultural production and energy supply.

Figure 29: Projected Hectarage under Forest

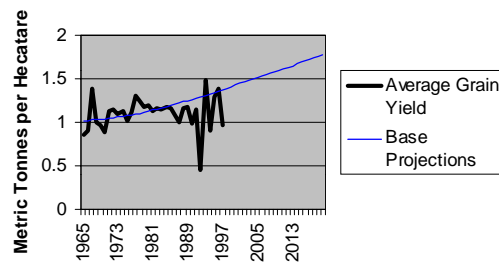


Source: T21 Projections

Science and Technology

Science and Technology enhances economic productivity through the development and promotion of effective and efficient means of production. Malawians aspire to have an economy driven by technology.

Figure 30: Projected Trends in Average Grain Yield



Source: Ministry of Agriculture and T21 Projections

Science and technology research has been focused in the agriculture sector. Base projections reflect the benefit of this technology through increased yields (*see Figure 30, above*). However, industrial productivity remains relatively low (*see Figure 25*), due in part to, relatively less research in science and technology. Currently Malawi relies heavily on the export of primary products. Science and Technology can be used to develop industries to add value to these products.

Summary of Base Scenario

The projections in the Base Scenario show stagnating incomes, high fertility rates, high mortality rates, high levels of HIV infections, low productivity, declining per capita food production and declining forest land. This scenario presents a pessimistic view of the future and hence demonstrates the need for strategies, or interventions, to change the development course and steer the country closer towards its long-term development aspirations as outlined in the Vision 2020 document.

Possible interventions aimed at changing the trends in the past are presented below. Strategies of similar focus have been grouped into simplified scenarios of Malawi's future. The scenarios include an Agricultural Based Scenario, a Social Development Scenario and a Growth Scenario.

Agricultural Based Scenario

Overview

It is estimated that 60% of the population live in absolute poverty (*Situation Analysis of Poverty in Malawi, 1993*) and largely depend on agriculture. Consequently, many strategies aimed at reducing poverty also address issues of improving the livelihoods of those who depend upon agriculture. The Agricultural Based Scenario, described below, focuses mainly on agriculture sector interventions and strategies that directly target the poor.

Strategies

The major strategies of the Agricultural Based Scenario include boosting agricultural productivity, improving the food security situation, improving land utilisation and management, using safety nets to protect the vulnerable and increasing employment opportunities.

Boosting Agricultural Productivity

The majority of the poor depend on agriculture. Low agricultural productivity, especially by smallholder farmers, is one of the factors that contribute to poverty in Malawi. For example, average grain yields have not increased significantly. Base projections indicate modest increases in yields (*see Figure 30*). Thus, there is potential to increase yields even further, thereby enhancing agricultural production. Boosting agricultural productivity will directly assist a large percentage of the poor through increased output of food crops, improving self-sufficiency in food, and increased output of cash crops, enhancing income levels. Specific strategies to improve yields include increasing affordability and availability of agricultural inputs; investing in irrigation schemes, promoting crop diversification, extending credit facilities to all farmers, developing and disseminating appropriate agricultural technologies and farm mechanisation.

Improving Land Access, Utilisation and Management

Increasing access to land by farmers could have a direct impact on poverty reduction by increasing their share in one of Malawi's most productive assets. Proper land use and management directly affects agricultural production. Base projections show declining land per capita (*see Figure 27*). Improving land access, utilisation and management will be critical to maintaining adequate levels of agricultural productivity. Specific strategies include conserving soil fertility, checking soil erosion, adopting environmentally sound technologies and market-based land redistribution.

Improving Food Security and Nutrition

One of the most serious problems facing the poor is food insecurity. Base projections indicate that both per capita income and per capita grain production could continue to decline (*see Figure 16 and Figure 26*). This implies that many poor people may not be able to either produce or afford food. There is need to improve food security through, among other things, increased food production, crop diversification, improved food processing and storage and increased income earning opportunities.

Nutritional status of many Malawians remains low largely due to food insecurity, un-diversified diets and low income. In order to reverse this trend, there is need to enrich the nutritional content of diet. Specific strategies include, promoting varieties with high nutrient values; promoting nutrition awareness and education through micro nutrient programmes and community health volunteers.

Using Safety Nets to protect the vulnerable

Safety nets are necessary to protect and safeguard the standard of living of the most vulnerable groups, especially in light of the socio-economic impact of the on-going structural adjustment programmes. For example, feeding programmes targeting vulnerable groups can ensure that minimum acceptable nutrition requirements are met. Specific strategies for safety nets include food for work, labour intensive public work programmes and disaster relief programmes.

Increasing Employment Opportunities

Scarcity of off-farm income earning opportunities is one of the factors that contribute to poverty in Malawi (*Situation Analysis of Poverty in Malawi*, 1993). Most of the labour force is engaged in agriculture. Due to land constraints and population pressure, the sector as a source of employment has limited potential to absorb the projected increasing number of youths joining the labour force (*see Figure 28*). There is need, therefore, to increase non-agricultural employment by nurturing and supporting activities in the Small and Medium Enterprises (SME) and informal sector. These off-farm employment opportunities can make a significant contribution to the economic empowerment of the poor through the productive utilisation of their labour. Additionally, increasing access to quality education including the provision of business and vocational training enhances people's earning capacity.

Growth Based Scenario

Overview

Since the 1980's, sluggish economic performance coupled with rapid population growth translated into falling GDP per capita. Despite continuing structural adjustment programmes the macroeconomic environment remains unstable. Consequently, domestic savings and investment remain low. Increased investment levels are a prerequisite for attaining high economic growth rates. The financial sector plays an important role in mobilisation and reallocations of savings to finance investment. There is potential to increase the role of the financial sector in the development process. The Growth Based Scenario focuses on stabilising the macroeconomic environment, increasing investment and pursuing economic growth.

Strategies

The strategies for the growth based scenario include creating a supportive macroeconomic environment, increasing savings and investment, promoting industry and exports, commercialising agriculture.

Creating a supportive macroeconomic environment

There is need to create a supportive macroeconomic environment to attract and maintain high levels of investment in various sectors of the economy. Base projections indicate that the ratio of government deficits to GDP may continue at an unsustainable level (*see Figure 18*). This could imply the crowding out of private sector investment, high interest rates and high inflation rates, all of which negatively affect investment. Specific strategies for creating a stable macroeconomic environment include keeping budget deficits and inflation low and maintaining a viable exchange rate.

Increasing the level of Savings and Investment

Increased levels of savings and investment lead to higher levels of economic growth. If current trends continue there is a danger of the continuation of relatively low levels of investment. Specific strategies for increasing investment include improving physical security and

infrastructure, increasing the availability of credit facilities, providing incentives for both foreign and local investors and investing in human capital to complement physical capital.

Additionally, domestic savings may be raised through sound financial policies and savings instruments. A comprehensive financial sector reform coupled with macroeconomic stability would lead to growth in private savings and investment.

Promoting Industry and Export Diversification

Diversifying away from agriculture and into industry, especially labour-intensive, export oriented industry, would release pressure on land, reduce exposure to external shocks and provide off-farm employment opportunities. While the economy is projected to move away from its dependence on agriculture, base projections show that the sectoral share of industry in GDP remains relatively low (*see Figure 17*). There is potential for export growth based on manufacturing, tourism, and mining and quarrying. Strategies to promote the development of industries include providing serviced industrial sites, strengthening transport linkages, providing efficient utilities and telecommunication infrastructure, focusing on small and medium scale enterprises and labour intensive technologies and rationalising tax policies, investing in mineral exploration and improving the physical security.

Commercialising Agriculture

There is need to widen the focus of agriculture from merely meeting the subsistence requirement of the population to commercial agriculture. Specific strategies include provision of marketing services, provision of infrastructure in terms of transport, telecommunications and marketing infrastructure; promotion and diversification of estate agriculture; mechanisation of the agricultural sector; irrigation development; adoption of appropriate technology in areas of inputs, irrigation, and storage.

Social Development Scenario

Overview

The social status of many Malawians, especially the poor, is relatively low. This is witnessed by low literacy rates, high mortality rates, high fertility rates, low productivity and low levels of income. The Social Development Scenario focuses on improving the social status of Malawians through provision of good infrastructure and investment in human capital thereby raising productivity and living standards.

Strategies

Strategies for the Social Development Scenario include supporting good governance, providing basic social services and supporting the environment and natural resources development.

Supporting Good Governance

Good governance sets a sound and enabling environment for national development. It can, for

example, provide an efficient and accountable public-sector and increase public performance. In addition, good governance can enhance national unity and engage the civil society to participate in the development of the country. Specific strategies include improving the management and performance of the public sector, supporting programmes for democratic consolidation and human rights, encouraging political participation and improving internal security.

Provision of Basic Social Services

In order to facilitate economic development and attain better living standards, the population should have access to basic social services including functional literacy, primary education, primary health care, clean water and sanitation and decent shelter.

Literacy rates remain low in Malawi. This has very serious implications for labour productivity, reproductive health and population growth. For example, increases in adult literacy rates will encourage the understanding and use of family planning methods which leads to reduced fertility rates. The introduction of free primary education by the government is a step towards solving the literacy problem. Base projections indicate that male and female adult literacy rates will increase significantly in the future due to increases in primary enrolment (*see Figure 22*). There is need to continue investing in the education sector to ensure high quality, relevant and efficient education.

High infant and maternal mortality rates, low life expectancy, high incidence of illness and poor nutrition all demonstrate the poor health status of the Malawian population. Improving the health standards will increase productivity. While infant mortality is projected to decline in the future (*see Figure 20*), there is need to reduce it further as it is still high. To improve the health status it is necessary to ensure provision of efficient and effective health services, encourage improvement of hygiene and sanitation practices, improve partnership with the private sector and invest in human resources.

With respect to the HIV/AIDS epidemic there is need to arrest the spread of new infections. In addition to prevention, there is need for a clear policy on treating and caring for those already infected in order to alleviate human suffering. This also includes taking measures to care for those children who are orphaned by the disease.

High rates of population growth, especially among the rural poor, increase pressure on land as well as on the social services delivery system. Unless strategies are undertaken to reduce fertility, base projections show that the total fertility rate could remain very high (*see Figure 20*). Strategies for reducing the problem includes implementing a comprehensive reproductive health care program, improving literacy, promoting gender equity and promoting rural development.

The majority of the Malawian population lives in rural areas. Providing infrastructure in rural areas can support the delivery of basic social services. Roads, for example, facilitate transportation and improve accessibility for the rural poor to social services.

Supporting the Environment and Natural Resources Management

The state of the environment directly affects the welfare of people. If current trends continue Malawi's forest resources could be severely depleted (*see Figure 29*). This could have disastrous implications for agricultural production and energy supply, which will directly worsen the social status of the majority of Malawians. Specific strategies for supporting the environment and natural resources management include promoting community participation and gender roles in the management of natural resources, increasing awareness at the local level of the linkages between the environment (water, soil quality, forest etc.) and the economy and encouraging the involvement of the local communities in planning and implementation of natural resources and environment policies. Other strategies include promoting afforestation programmes, promoting the use of energy efficient technologies and improving management of catchment areas.

CHAPTER 3: ANALYSIS OF STRATEGIES

This chapter begins by analysing and comparing the projected outcomes of the scenarios described in Chapter 2. From this analysis, conclusions are drawn, and two new scenarios, which combine elements of each scenario, are developed and analysed. The analysis uses several different indicators, that is, several different measures of success, to compare the outcomes of each of the strategies. The Threshold 21 model is used as a tool for integrated and quantitative analysis. (Refer to Appendix 1 for more information on the Threshold 21 model).

Before analysing the effects of different strategies on selected indicators, assumptions must be introduced into the Threshold 21 model. Table 1, below, summarises the key strategies of the three scenarios in terms of the assumptions added to Threshold 21. Appendix 2 lists all the quantitative details of the assumptions implemented into Threshold 21 to simulate the different strategies.

Table 1: Assumptions added to Threshold 21 to Analyse Strategies

Scenario Strategies	Assumptions in Threshold 21
<i>Agriculture Based Scenario</i>	
Boosting Agricultural Productivity	Increase investment in agriculture.
Improving Land Access, Utilisation and Management	Increase access to land (Shift idle land into production).
Improving Food Security and Nutrition	Increase investment in agriculture.
Using Safety Nets to Protect Vulnerable	Expanded safety net projects for poor.
Increasing Employment Opportunities	Increase off-farm employment (Industry and Services)
<i>Growth Based Scenario</i>	
Creating a supportive macroeconomic environment	Increase revenues and control budget deficits
Commercialisation of Agriculture	Increase investment in agriculture.
Increasing level of savings and investment	Higher investment levels due to improved investment environment.
Promoting Industry and Exports	Increased investment bias in industry, increased industrial employment and exports.
<i>Social Development Scenario</i>	
Supporting Good Governance	Empower the people to increase productivity.
Provision of Basic Social Services	Increase investment bias in Social Services, lower new HIV infections, reduce primary school dropouts.
Supporting the Environment and	Empower communities to manage

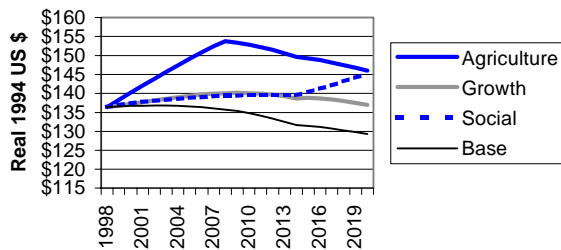
Projected Impact of Alternative Strategies on Key Indicators

Sustainable Growth and Development

Projected values for real per capita GDP, displayed in Figure 31, show that all of the alternative scenarios perform better than the base scenario. The Agriculture Based scenario performs very well until 2008 because of the assumption that in order to increase smallholder production idle land will be shifted into the sector for production. After 2008, per capita GDP begins to fall because no more idle land is available and agricultural productivity is unable to keep pace with population growth.

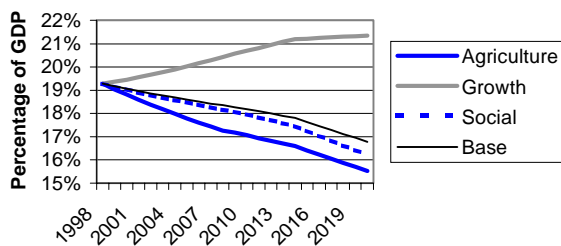
The Social Scenario provides a good level of social services, such as health care, AIDS prevention and education, but the limited remaining financial resources are the cause of uninspiring levels of economic production. In the long-term, however, low fertility rates may lead to relatively lower population growth rate and higher levels of per income.

Figure 31: Real Per Capita GDP



The key to the Growth strategy is a successful implementation of an enticing macroeconomic environment that encourages domestic investment and draws in foreign investment. The accumulation of economic capital, in agriculture and industry, increases production directly. Despite increases in economic production, the Growth Scenario creates levels of real GDP lower than the levels of GDP created by the implementation of the Agricultural Based Scenario or Social Scenario because population growth is not checked adequately. In addition, industrial production only has a small effect on GDP because industry currently makes up only a very small fraction of Malawi's GDP, as demonstrated in Figure 32.

Figure 32: Share of Industry in GDP



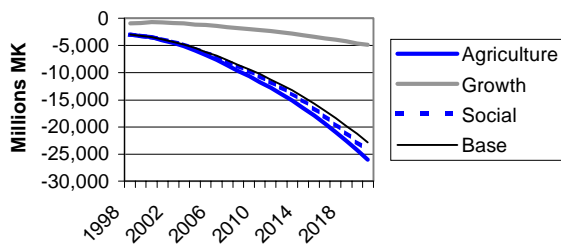
Although industrial production causes the share of GDP due to industry to increase, it only

increases from below 20 percent in 1998 to approximately 21 percent in 2020, making up just slightly more than one fifth of total output.

Good Governance

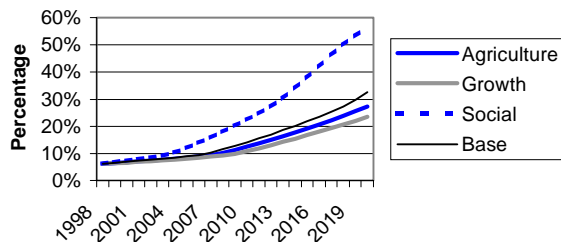
Figure 33 shows that the Growth Scenario performs better than the Agriculture and Social Scenarios in controlling budget deficits. The projected deficit to GDP ratio under the Growth Scenario is about 2 percent compared to 6 percent for the other two scenarios. The Growth Scenario performs relatively well because of the specific strategies to control the deficit and stabilise the economy. The strategies in the Agriculture and Social Scenarios place a larger burden on government expenditure.

Figure 33: Budget Deficit



As democracy matures, the degree of openness will increase as people will feel free to discuss and address all political, economic and social issues. For example, Figure 34 shows that the proportion of couples effectively practising family planning is increasing. This increase is relatively large in the Social Scenario than other scenarios because of strategies to invest in social services including education, reproductive health and family planning.

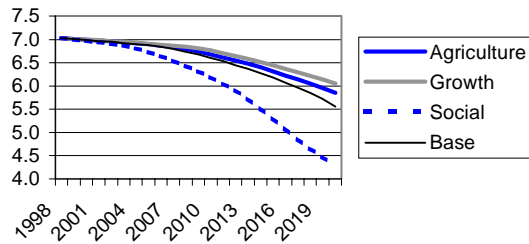
Figure 34: Percentage of Couples Practising Family Planning



Social Sector Development

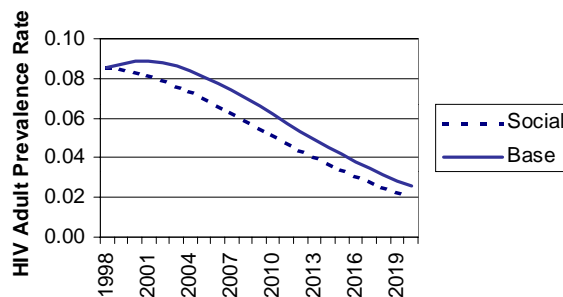
One of the results of Social Scenario is improved family planning, which significantly reduces fertility rates, not by altering desired family size, but by increasing the percentage of the population practising family planning, lowering the number of unwanted children. Figure 35 demonstrates the decrease in fertility rates due to family planning. By investing in family planning, fertility rates may drop from an average of 6.7 children per woman in 1997 to almost 4 children per woman in 2020.

Figure 35: Total Fertility Rate



Another critical effect of investment, in social services in the Social Scenario, is that of addressing the AIDS epidemic. Investment in social services, specifically in AIDS awareness programs, decreases the HIV infection rate, which in turn reduces the HIV prevalence rate, as shown in Figure 36.⁷ The projections for HIV adult prevalence rate for the Growth and Agriculture Scenarios are the same as the base projections.

Figure 36: HIV Adult Prevalence Rate

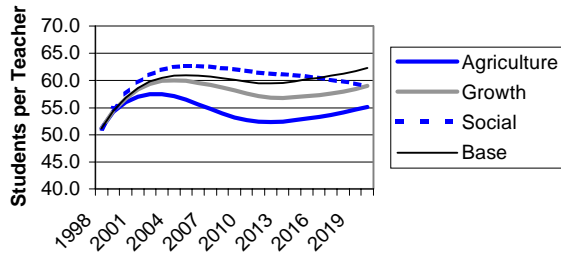


Reducing the HIV prevalence rate in adults also alleviates the problem of AIDS orphans, which could require more government expenditures if it remained unchecked.

Investment in social services has less of an effect on primary education because of the recent policy extending free primary education which has already greatly improved the enrolment ratio, from approximately 25 percent in 1965 to over 80 percent in 1997. In terms of pupil-teacher ratio, the Agriculture Scenarios achieves better results in the medium term because higher GDP translates to relatively higher levels government expenditure which enables government to hire more teachers. The Social Scenario performs poor in the medium term because it assumes a decline in the number of drop-outs. However, the Social Scenario shows consistent improvement while the performance of other scenarios worsen, (see Figure 37 below).

⁷ The National AIDS Secretariat (1997) estimates that approximately 13 percent of the population aged 15 to 49 is infected with HIV. Threshold 21 estimates of HIV prevalence appear lower because they include population aged 15 to 49, and above. Threshold 21 estimates for total HIV infections, however, are very close to those of the National AIDS Secretariat.

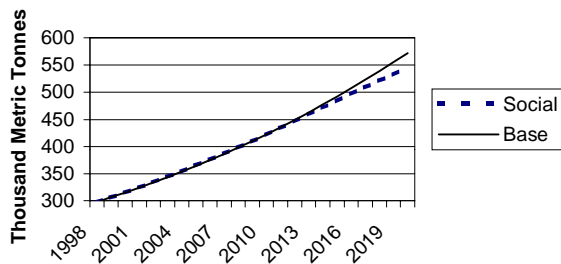
Figure 37: Pupil/Teacher Ratio



Economic Infrastructure

Provision of reliable Economic Infrastructure is necessary to complement public and private initiatives for development. As the level of population and economic activity increases, the demand for energy will also increase. This could have serious implications for Malawi's environment. All Scenarios assume that fuelwood will continue to be the primary source of energy, as a result the projected demand for fuelwood increases rapidly as shown in Figure 38. Only the Social Scenario differs significantly from the Base Scenario because of relatively lower population.

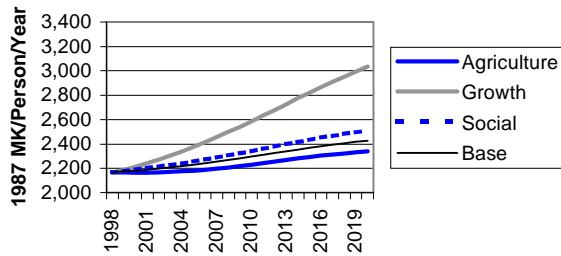
Figure 38: Total Fuelwood Demand



Vibrant Culture

The spirit of hard work is a strong element of Vibrant Culture and it could be enhanced through improved macroeconomic conditions. Using industrial labour productivity as an indicator of this spirit, it is projected that productivity will increase significantly in the Growth Scenario, which emphasises economic stabilisation (see Figure 39 below).

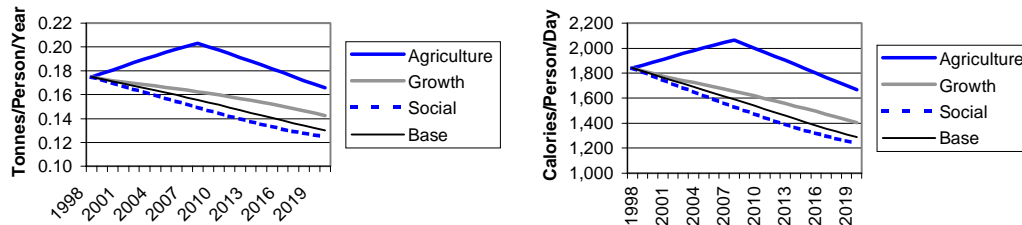
Figure 39: Industrial Labour Productivity



Food Security and Nutrition

The Agricultural Based Scenario is the best of the proposed scenarios for directly improving the food security situation of the majority of Malawians. Per capita grain production and, hence, per capita grain consumption, will have a more direct effect on the lives of the poor than macroeconomic aggregates like gross agricultural production. Increasing access to agricultural land may temporarily increase per capita grain production (*shown in Figure 40*), but projections show that both per capita grain production and average daily caloric intake may eventually begin to fall again. This is due to the limited amount of land, increases in population and relatively low yields.

Figure 40: Per Capita Grain Production and Average Daily Caloric Intake

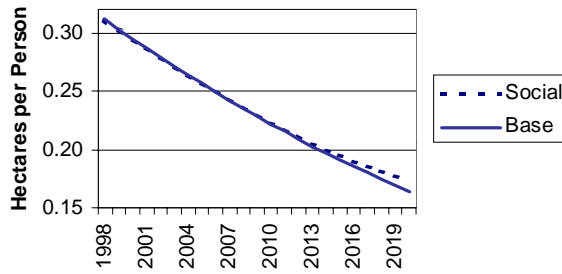


Because the Social Scenario promotes investment in social services, it leaves Malawi with relatively less investment in agriculture. Consequently, the Social Scenarios performs worse in terms of per capita grain production. The Growth Scenario performs slightly better than the base because of the strategy which encourages investment in agriculture.

Equitable Distribution of Income

Figure 41 shows that as the population continues to grow there will be less land per capita available for agricultural production. Even when the population growth is slowed, as in the Social Scenario, the amount of agricultural land per person is not significantly different from the Base. The limited amount of land implies that the strategy to increase access to agricultural land has limited potential for increasing income for the rural poor.

Figure 41: Agricultural Land per Capita

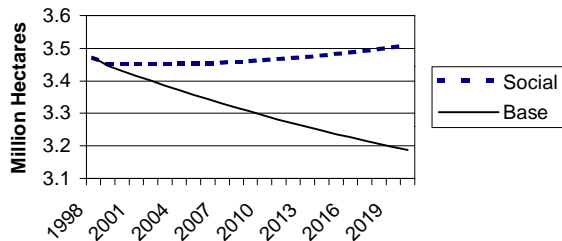


Given the land constraint and the projected large number of youths entering the labour force annually, increases in off farm employment opportunities will be necessary for addressing the issue of equitable distribution of income.

Natural Resources and Environmental Management

As Malawi strives to attain development there will be need to manage the environment and natural resources in a sustainable manner. Figure 42 shows projections for forested area. The only scenario whose projections for forested area differ from the Base Scenario is the Social Scenario. Besides social services, the other focus of the Social Scenario is to work to protect the environment and conserve natural resources. This can be accomplished with a variety of programs, such as planting trees and increasing the efficiency of fuel wood. The investment in reforestation should, in the long run, help prevent soil erosion leading to higher agricultural output.

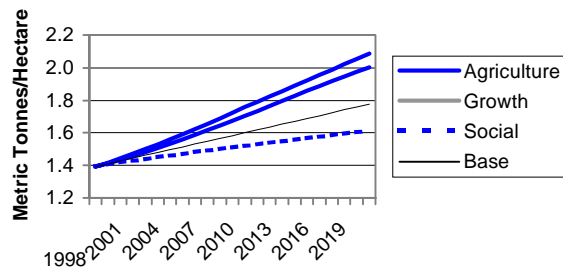
Figure 42: Forested Area



Science and Technology

The relatively high investment in agriculture in the Agriculture and Growth Scenarios increases productivity of land, as demonstrated by grain yields in Figure 43.

Figure 43: Average Grain Yield



Note that agricultural yield cannot increase indefinitely. The above increases in yield may be overly optimistic without consideration of science and technology. Investment in appropriate technologies may produce even higher yields than shown above because of investment in small-scale irrigation projects, the promotion of crop rotation, crop diversification and improving the quality of the soil.

Summary of Analysis

The Agriculture Based, Social Based and Growth Scenarios all consistently yield better results than the Base Scenario which is a continuation of historical policies and practices. Table 3, below, rates each scenario relative to the Base Scenario for some of the Vision 2020 indicators (+++ is the best, ++ is better, + is somewhat better, - is worse, and -- is worst).

Table 2: Summary of Scenario Performance on Selected Indicators

	Agriculture Based	Growth Based	Social Development
Sustainable Growth and Development			
• Real Per Capita GDP	+++	+	++
• Industry Share of GDP	--	+	-
Good Governance			
• Budget Deficit	--	+	-
• Proportion of Couples Practising Family Planning	-	--	+
Social Sector Development			
• Total Fertility Rate	-	--	+
• HIV Adult Prevalence	-	-	+
• Pupil-teacher ratio	+++	+	++
Economic Infrastructure			
• Fuelwood Demand	-	-	+
Vibrant Culture			
• Industrial Labour Productivity	-	++	+
Food Security and Nutrition			
• Per Capita Grain Production	++	+	-
• Average Daily Caloric Intake	++	+	-
Equitable Distribution of Income			
• Agricultural Land Per Capita	-	-	+
Natural Resources and Environmental Management			
• Forest Land	-	-	+
Science and Technology			
• Grain Yield	++	+	-

In the long-term, the Growth Scenario performs worse than expected because it leads to a decrease in real per capita GDP due to a lack of investment in social services, specifically, in family planning. The Agricultural Based Scenario achieves the best levels of agricultural production and per capita food production, but does not perform exceptionally well in any of the non-agricultural sectors. The Social Scenario performs well in the social sectors; however, its impact on the economic sectors is not felt until the longer term.

The relative success of the different Scenarios depends on the indicators chosen and the relative importance placed on the different indicators. In other words, a definition of success depends on one's priorities. However, none of these scenarios is realistic because they were oversimplified and focused in one particular area. This focus allows an easier analysis of strengths and weaknesses of different strategies. Some of the lessons drawn from the analysis are outlined below.

Agricultural Based Scenario

Based on analysis of the Agricultural Based Scenario it is apparent that agriculture alone is not a long-term solution for achieving the Vision 2020 aspiration. The major problem with agriculture is land constraints. Even if farmers are given greater access to land, the growing population will more than offset the gains realised in the long-term.

Nevertheless, in the short-term there is need to focus on agriculture. The structure of the economy is still dominated by agriculture, and farmers make up the vast majority of the economically active population. Consequently, the agriculture sector can quickly absorb the increased investments in agriculture, including irrigation and technology, and respond immediately with additional production.

Given that land is limited and population is growing rapidly, in the long term off-farm employment is important to absorb the increasing numbers of youth entering the labour force. This will also provide alternative means of earning income thereby reducing reliance on agriculture production for food security.

Care should be taken when using safety nets in alleviating poverty. While in the short term they can provide livelihood to the vulnerable in the long term they could increase budgetary expenditures because they are direct transfers from government. Unless the increased expenditures on safety nets are matched with increased revenue, this could result in budget deficit.

Growth Based Scenario

Given a stable macroeconomic environment, investment could have a significant impact on growth if increased immediately in the next five years. However, this is unlikely to happen so quickly because experience with structural adjustment has shown that it takes time to stabilise the macroeconomic environment and even longer for investment to respond.

Based on the Growth Scenario, industrial and agricultural production will increase, thereby expanding exports and alleviating the national debt burden. However, the consequence is not having enough money left over to invest in social services. The lack of investment today in the social sectors will have consequences that will eventually feed back to harm the rest of the economy.

Social Development Scenario

The Social Scenario provides a good level of social services, such as health care, AIDS prevention and education, but the limited remaining financial resources are the cause of uninspiring levels of economic production. In the long term, however, higher literacy rates, lower fertility rates and low mortality rates may lead to increase in labour productivity and relatively high levels of per capita consumption and per capita production. Additionally, investment in reforestation should, in the long run, help prevent soil erosion, leading to higher agriculture output.

The Social Scenario also addresses issues of good governance that are crucial in setting a sound and enabling environment for national development. Good governance promotes public accountability, efficiency and effective performance. Economic growth requires investment and efficient use of that investment. By promoting entrepreneurship accountability, and self-reliance, while investing in human capital, the Social Scenario increases efficiency and effectiveness of investment.

The major weakness of the Social Scenario is that it does not directly address issues of economic production. Its effects are only seen in the very long term. Consequently, it does not alleviate short-term problems of income, employment, food security.

CHAPTER 4: BEST OPTIONS

Based on the above analysis, it is apparent that none of the three scenarios satisfies all the long-term development aspirations of the nation. Possibilities for a better scenario could be to combine all the strategies into a single scenario or to selectively combine the best strategies, in a consistent framework. This chapter analyses these two possibilities, the **Combined** and **Selective Scenarios**, to recommend best options towards achieving the nation's long-term development aspirations.

The Combined Scenario

The Combined Scenario includes all the strategies from Agriculture, Growth and Social Scenarios (*see Table 1, above, for a complete listing of these strategies*).

The Selective Scenario

The selective scenario selectively combines the best strategies from the Agriculture Based, Social Development and the Growth Scenarios. These strategies are based upon the lessons drawn from the analysis in the previous chapter. Following each strategy listed below, the corresponding assumption is included in parenthesis (*see Appendix 2 for the quantitative details for each assumption*).

1. Continue to support agriculture as a short-term strategy for growth and food security. Specific measures include increasing access to land and raising yields through investment in irrigation, inter-cropping, soil management and appropriate technologies. (*Assumptions include: increased access to land and increased investment bias in agriculture-until 2008*)
2. Create an environment conducive to investment, both foreign and domestic. Specific measures include controlling government deficit, lowering inflation and interest rates and maintaining a competitive exchange rate. Improved infrastructure and security will also encourage investment. (*Assumptions include: higher investment levels due to improved investment environment*).
3. Invest in social services as a long-term development strategy. This will raise levels of education and health, lower the incidence of HIV/AIDS and lower population growth rate. The indirect benefit will include higher productivity levels and higher levels of per capita income. (*Assumptions include: increased investment bias in social services; increased investment bias in services; reduced primary school drop-outs; reduced new HIV infections*).
4. Create off-farm employment opportunities to absorb growth in the labour force. Specific measures include investing in human capital, encouraging small and medium enterprises and researching and disseminating labour intensive technologies. (*Assumptions include: increased off-farm employment*).
5. Empower the population especially women, youth and the poor to participate in development of the country. Specific measures include promoting democracy, the rule of law, respect for

human rights, civil education and cultural values. (*Assumptions include: empowering the people to increase labour productivity*).

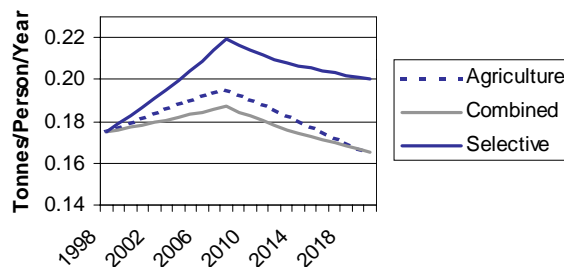
6. Conserve Malawi's natural resources and protect the environment. Specific measures include planting more trees, using resources more efficiently and arresting deforestation and land degradation. (*Assumptions include: planting more trees*).

Analysis of the Combined and Selective Scenarios

In the analysis of the Agriculture, Growth and Social Scenarios, the Base Scenario was used as a point of reference to compare the outcomes of the other three scenarios. In the analysis below, the scenario which performed best for any given indicator was chosen as a point of reference to compare the outcomes of the Combined and Selective Scenarios. For illustration purposes, the analysis below was done using only three indicators – one from the agriculture sector, one from the macro-economy, and one from the social sectors.

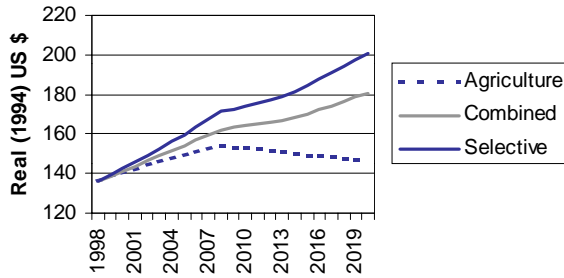
The Selective Scenario yields best results for per capita grain production followed by the Agriculture Scenario (*see Figure 44, below*). The Combined Scenario does not perform as well because it includes higher investment biases in agriculture, industry and social services. Given the resource constraint investment is spread across all sectors in relatively smaller amounts. Consequently, the Combined Scenario engenders lower levels of agricultural production and per capita grain production.

Figure 44: Projected Grain Production for Combined and Selective Scenarios



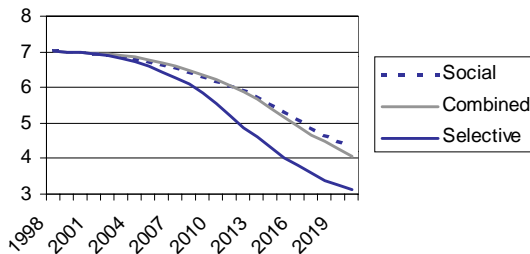
In the previous analysis, projected values for real per capita GDP (*see Figure 31*) showed that the Agriculture Scenario performed best. However, figure 45 below indicates that the Selective Scenario performs better than the Agriculture and Combined Scenarios. Again, the Combined Scenario does not perform as well because it includes all strategies. The Combined Scenario tries to improve performance in all sectors through increased investment. Given resource constraints the investment becomes diluted across the sectors. The Selective Scenario includes only the best strategies, thereby prioritising investment and performing better.

Figure 45: Real GDP per Capita for Combined and Selective Scenarios



The combined Scenario is not significantly different from the Social Scenario in terms of projected fertility rates (see Figure 46, below). The Social Scenario performs well because of its direct investment in social services. The Combined Scenario attempts to increase direct investment in social services, however, the investment is diluted across all sectors as explained above. The relatively good performance of the Combined Scenario can be explained by its performance in raising income, real GDP per capita (see Figure 45, above). Increasing income indirectly lowers fertility rates. The Selective Scenario performs best because of the effects of direct investment in social services and the indirect effects of increased income.

Figure 46: Projected Fertility Rate for Recommended Scenario



Summary

Given the resource constraint and the “netting out effect,” the Selective Scenario performs best in the above analysis compared to both the Combined Scenario and the three scenarios from Chapter 3. The Selective Scenario realistically selects the best strategies from each sector that can be adopted without negatively affecting other sectors. The Combined Scenario is somewhat unrealistic because it combines all strategies without consideration of resource constraints or priorities. Based on this conclusion, to achieve the long-term aspirations, the selective Scenario might be considered.

CHAPTER 5: AN OPTIMISTIC SCENARIO

Based on the analysis in Chapters 3 and 4 it is evident that none of the scenarios analysed fully reaches all of the aspirations outlined in Vision 2020. One reason for this is that the previous scenarios were analysed based on quantitative analysis of past realities, thereby disregarding qualitative and innovative ideas. This Chapter presents an Optimistic Scenario that considers both quantitative and qualitative factors. The Optimistic Scenario is based on the assumption that qualitative and innovative strategies will positively affect the country's development in ways that are new and hard to measure.

Assumptions and Strategies for the Optimistic Scenario

The following analysis of the Optimistic Scenario focuses on five major socio-economic indicators. The analysis is based on assumptions derived from strategies from Vision 2020.⁸ Given these assumptions the performance of the indicators is much closer to the aspirations of Malawians. The assumptions for the Optimistic Scenario and corresponding strategies are listed below.

Increased investment efficiency

The more efficient use of current investment offers the possibility of increasing the impact of investment in the face of limited resources. For example, good governance can contribute to achieving macroeconomic stability and the creation of the general enabling environment for efficient investment. Possible strategies for increasing efficiency of investment include: improving the role and performance of the public and private sectors, enhancing and sustaining the rule of law, nurturing and electing foresighted leaders, improving internal security, and improving transparency and accountability to curb corruption.

Increased Private Sector Investment

Given decreasing external support and a limited role for the public sector, economic growth in the 21st century in Malawi and through out the world will be dependent on the growth of private sector investment. This implies that the private sector must assume a leading role in development. However the challenge in Malawi is that in addition to formal sector entrepreneurs the private sector refers to a mix of different things including bureaucrats who turned to business, semi-educated traders, expatriate managers of multinational corporations and informal sector petty-traders. There is need for private sector consolidation because such a highly fragmented sector with no common agenda, no group solidarity and above all no clear vision of what the economic future of the country should be, cannot meaningfully work towards the realisation of a vision. To make such a sector take responsibility in launching the economy to the road of sustained growth requires imaginative reforms.

⁸ Only a few selected and general strategies from Vision 2020 are considered. For more comprehensive details of these strategies refer to Vision 2020 documents.

Improved Science & Technology

Science and technology helps to bring in productivity and hence a competitive edge in the international markets. The challenge for Malawi is to shift her comparative advantage up market away from current dependence on low-skill, low income and erratic growth economic activities. Possible strategies include: improving science and technology education, promotion and commercialisation of research and development, promoting the transfer and adoption of new and emerging technologies, promoting environmentally sound technologies, achieving effective science and technology, promoting use of information technology and reviewing legislation and policies which hinder the adoption and use of appropriate technologies.

Empowerment of the Population

Malawians can take responsibility for their future destiny in terms of social and economic development by using their positive work ethic and strengthening self-reliance and community participation. Strategies include: Restoring confidence and pride in being a Malawian; reducing gender imbalances; enhancing spiritualism that promotes ethical and moral conduct; reducing disparities between population groups, in particular persons with disabilities, in economic development; investing in human capital and promoting cultural practices that enhance health and support good management of natural resources and the environment.

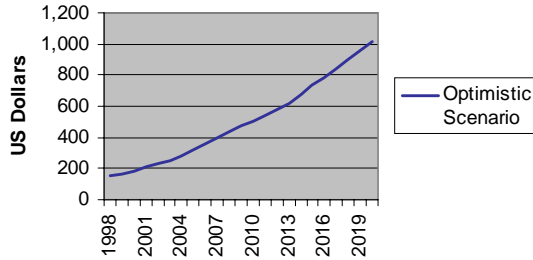
Increased Share of Industry

In view of the adverse terms of trade facing primary exports and Malawi's over reliance on such exports, there is need to strengthen other sources of growth. The share of industrial output, particularly manufactured exports will have to increase substantially. Strategies include: establishing industrial research centres, conducting promotional campaigns to attract foreign investment in export industries, promoting the establishment of investment banks to finance investment in manufacturing industries, ensuring the production of good quality products, developing sound marketing practices, encouraging Malawians to buy locally manufactured products and promoting the export operations of small industrial exporters.

Analysis of the Optimistic Scenario

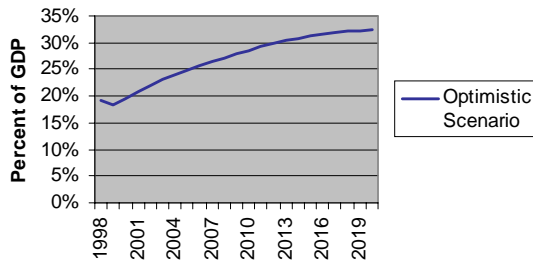
Malawi is currently among the poorest nations in the world but aspires to become a middle income economy by the year 2020. One of the targets for the Vision is to attain a per capita GDP of 1,000 US Dollars by the year 2020. Increasing the level of private sector investment and the efficiency of all capital investment provides the engine for significant economic growth. Investment efficiency is further enhanced by empowerment of the labour force and improved science and technology. After incorporating these assumptions into the model projected per capita GDP reaches 1000 US Dollars by 2020(*see Figure 47, below*).

Figure 47 : Projected Per Capita GDP for Optimistic Scenario



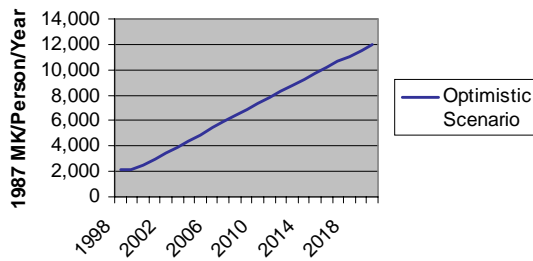
By focusing on industry, especially the efficiency of capital and labour in industry, the Optimistic Scenario increases the share of industry in GDP to over 30 percent (see Figure 48, below).

Figure 48: Projected Percentage Share of Industry in GDP for Optimistic Scenario



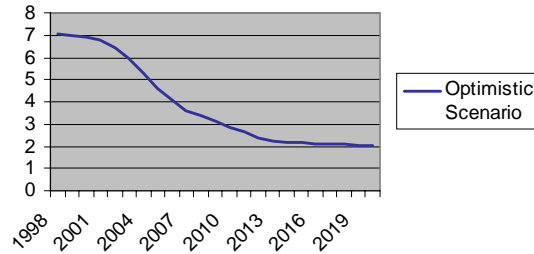
By empowering the population through the strategies listed above the Optimistic Scenario increases labour productivity (see Figure 49, below).

Figure 49: Projected Industrial Labour Productivity for Optimistic Scenario



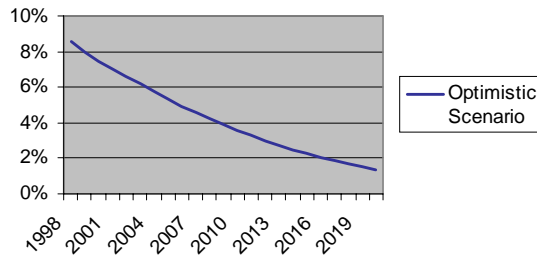
As a consequence of investment in human capital and increased incomes, fertility and population growth under the Optimistic Scenario are projected to decline significantly (see Figure 50, below). A considerable slowdown in the population growth rate will have positive impact not only on per capita GDP level but also the quality of social services as well.

Figure 50: Projected Total Fertility Rate for Optimistic Scenario



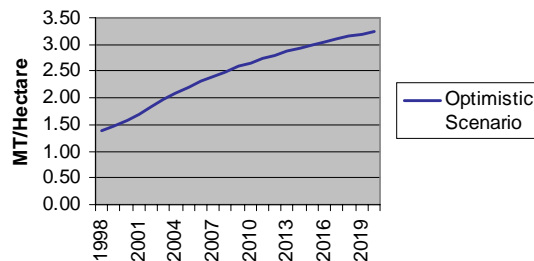
An additional consequence of investment in human capital is a decline in new HIV infections. Projections under the Optimistic Scenario show that the HIV adult prevalence rate could fall below one percent by 2020 (see figure 51 below).

Figure 51 : Projected HIV Adult Prevalence Rate for Optimistic Scenario



Science and can technology productivity and increase competitiveness in international markets. By assuming increased levels of science and technology in agriculture the Optimistic Scenario reveals increases in grain yields to about 3000 kilograms per hectare (see Figure 52, below).

Figure 52: Projected Grain Yield for Optimistic Scenario



Summary of the Optimistic Scenario

The Optimistic Scenario underscores the fact that there is considerable room for improvement in Malawi, particularly in the area of governance and economic management. Good leadership and good government will be critical in determining the outcome of the reform process necessitated by the journey toward the Vision.

Malawi should draw lessons from other African countries that are currently rated as Middle income economies. Thirty years ago Mauritius, Botswana and Tunisia were among the poorest twenty countries in the World. As the Global Competitiveness Report and the African

Competitiveness report noted, these three countries demonstrate that dynamic, stable economies with solid export based perform best. All have a history of sustained, respectable economic growth. In terms of per capita GDP Tunisia is at \$2,000, Botswana is at \$2,693 while Mauritius is at \$ 3,690 at 1996 prices. There is no reason why Malawi can not surpass the humble target of \$1,000 per capita income and become a middle income country by the year 2020.

CHAPTER 6: CONCLUSIONS

Malawi has the potential to achieve its desired development aspirations. The Vision 2020 provides a framework for achieving the aspirations. However, analysis reveals that there is need to change the trends of the past. The task of fully realising the Vision is enormous, but Malawi can make concerted efforts to change its development path as demonstrated by the analysis of various scenarios.

The Selective Scenario, which includes best options from Agriculture, Social Development and Growth Scenarios, shows that by carefully choosing and implementing sound development strategies the country can realistically move closer to the vision aspirations. The Optimistic Scenario presents more hope for achieving the vision aspirations. However, it must be noted that the assumptions of this scenario call for a complete departure from the current approach to development. Such a radical departure from past norms may be extremely difficult, particularly because of financial and human resource requirements as well as the difficulty of changing the mindset of all Malawians. Overcoming these constraints calls for a serious commitment by all development stakeholders.

Limitations of Analysis

The objective of this report is to provide quantitative analysis of long-term development strategies within the Vision 2020 framework in an effort to recommend options towards realising the nation's aspirations. However, it must be recognised that there are limitations to the analysis.

The Threshold 21 model is a system dynamics model that allows analysis of the complex interactions between various economic, social and natural resource sectors. Unlike econometric models, which allow more accurate point projections into the near future, the strength of the Threshold 21 model is its ability to analyse long-term trends. Consequently, the projections are indicative, and not precise.

The Threshold 21 Model has some limitations in that there are some important sectors and issues that are not captured in the model. For example, the model has no sector for transport or communications. In the future, there is need therefore to add these sectors into the model.

Some sectors, such as natural resource, environmental and financial sectors, are not very strong. While these sectors are included in the model, there is need to collect more information and data to ensure that they capture the reality of the situation in Malawi. There might be need also to conduct detailed studies and analysis on sectors which are very crucial to the economy, such as Agriculture, so that the model can allow more detailed study of critical issues such as irrigation.

Areas for Future Study

While quantitatively analysing the issues presented in Vision 2020 is an important step towards addressing the nation's aspirations in a practical way, some of the themes and issues in Vision 2020 are difficult, if not impossible, to quantify. These include, for example, many of the issues

presented in Vibrant Culture and Good Governance. In the future, it will be therefore important to conduct more qualitative studies that can complement the quantitative analysis. For example, studies on Malawian culture could reveal its potential for influencing other areas of development such as economic growth or social welfare.

This report is intended to contribute to the initial efforts in long-term strategic planning necessary to operationalise Vision 2020. There is need for further analysis, both at the national and sectoral levels, in an effort to come up with specific strategies and recommendations that can be implemented.

There are many possibilities including further quantitative analysis, or qualitative studies. However, for this to materialise, there will be need to strengthen and support long-term strategic planning throughout the Government and the private sector. In a broader sense, there is need for continuous co-operation among the Government, international partners and the civil society in accepting the challenge of the Vision 2020 aspirations and using it as a framework for development.

APPENDIX 1: THRESHOLD 21: A TOOL FOR INTEGRATED AND QUANTITATIVE ANALYSIS

There are two common features to the strategies proposed in the documents reviewed to construct the development scenarios – Agricultural Based, Growth Based and Social Development:

1. The strategies are generally not integrated. For example, the strategy to invest in labour-intensive, export-oriented industry may generate many benefits. But when industrial investment is increased, investments in other sectors, such as in agriculture and social services, will be reduced, leading to lower crop yields, less family planning, and less HIV prevention. Most strategies ignore cross-sector consequences.
2. The strategies are not quantitative. The above example of the strategy recommending investment in labour-intensive, export-oriented industry, gives no indication of how much money should be invested. Too little may not have a strong enough effect to make a difference, while too much could be counter-productive. In many decision-making situations, it would be helpful to know not only which direction to take, but also how far it should go.

THRESHOLD 21 can complement these strategies (documents) with its strengths as an integrated and quantitative model. The THRESHOLD 21 National Sustainable Development Model answers both the general question of national development strategy and specific, sectoral questions. The general question addressed by Threshold 21 is: *How will the economic growth, social development, and environmental condition of the country change if incentives shift the balance of investment funds among the sectors of the economy.*

In addition, hundreds of specific questions can be answered, such as:

- How should agricultural funds be divided among competing uses, such as irrigation projects and fertiliser subsidy?
- How will the total population and population pyramid change in 20 years if total fertility rate starts to change in a certain pattern?
- How would national savings rate affect GDP growth rate?
- How would water availability influence harvested area and crop yields in the long run?
- How will greenhouse gas emission change due to deforestation and fossil fuel consumption?

THRESHOLD 21 has several unique features that make it an exceptionally powerful and user-friendly tool for policy exploration:

- The model has no secrets. It's assumptions, structures (relationships among sectors and

between variables), equations, and data, are “transparent,” which means they are readily available to the user for review, verification and even modification.

- A user-friendly interface has been developed for the model to make it easy for decision makers and users who have only limited experience with either computers or models to begin using the model in a matter of minutes. All that is required in most cases is a mouse-click.
- THRESHOLD 21 Malawi has some of the Vision 2020 indicators. It also includes many of the indicators used or proposed by UN agencies and other bodies, such as the United Nations Development Program (UNDP), the UN Commission on Sustainable Development (UNCSD), the UN Environmental Program (UNEP), the United Nations Children’s Fund (UNICEF), the UN Fund for Population Activities (UNFPA), the European Union, and the World Bank. Coupling these indicators with a model capable of making projections allows policymakers to see the future impact of policy choices as measured by the indicators of interest.

In designing and developing THRESHOLD 21 we have tried to avoid “re-inventing the wheel”. Almost all the sectors are inspired and based on respected models and documentation, such as the World Bank’s Revised Minimum Standard Model - Extended (RMSM-X), the Intergovernmental Panel on Climate Change’s (IPCC) Greenhouse Gas Inventory Workbook, the US Department of Energy’s Fossil2 model and the IDEALS model, the Population Council’s FIV-FIV model, the RIVM’s (National Institute of Public Health and Environmental Protection of the Netherlands) Targets model, the DICE Integrated Climate-Economy model, and the US Department of Agriculture’s CPPA model.

As a means of model validation (quality control of model behaviour), THRESHOLD 21 starts from a date in history, such as 1965. The model first simulates from 1965 to the present, and the results are compared to existing and available historical data. If the simulation results fit reasonably well with historical data, then THRESHOLD 21 is ready to simulate alternative scenarios for the future, such as from the present to 2050. If the simulation results do not match historical data, it indicates possible errors, and the model needs further modification before it can be used for projecting the future.

THRESHOLD 21 is designed in a modular way, which means that new sectors can be developed and added to the model with ease, and existing sectors can be taken out completely, or taken out, modified, and then put back into the model. In that sense THRESHOLD 21 is a work in progress, and is being improved constantly, as new requests from countries arrive, or as new data and methods become available.

APPENDIX 2: IMPLEMENTING ASSUMPTIONS INTO THRESHOLD 21

Assumptions in Threshold 21	Implementation in Threshold 21
Increase access to land	600,000 ha of land will be added to production during 1999 - 2008, of which 400,000 ha for planting grain and 200,000 ha for other crops ⁹
Increase investment bias in Agriculture	Increase investment bias agriculture from 1 to 1.2
Increase Off-Farm Employment (Industry and Services)	Employment in industry and service will increase 1% annually over the Base case during 1998 to 2008
Expanded Safety Net Projects for Poor	Government expenditure will not be reduced due to expanded safety net projects for the poor
Higher investment levels due to improved investment environment.	Steadily increase investment/GDP ratio to 25% for 2020 (was 17% for 2020 for Base strategy)
Increased investment bias in industry	Increase investment bias industry from 1 to 1.2
Increase industry employment	Steadily increase industry employment to 10% during 1998 to 2020
Increase exports.	Total export value will increase by an additional 1%/yr due to export-oriented industry
Increase investment bias social services	Increase investment bias social service from 1 to 1.2
Increase investment bias in services	Increase investment bias services from 1 to 1.1
Reduce primary school dropouts.	Reduce primary dropouts by 50% due to improved social services
Reduce new HIV infection	Reduce new HIV infections by 20% due to improved social services
Plant more trees	Double tree planting beyond 1999
Empower the people to increase productivity	Labour productivity in industry and services will steadily increase by 10% cumulative during 1999-2020 due to empower

⁹ This number is based on Customary Land Utilisation Survey of idle customary land (low estimate) as reported in the initial findings of the Presidential Commission on Land Reform.

APPENDIX 3: MALAWI VISION 2020 INDICATORS

MALAWI VISION 2020 STATEMENT: The Vision Of Malawians, With Indicators of Progress¹⁰ September, 1997¹¹

By the year 2020, Malawi as a God-fearing nation will be secure, ecologically balanced, democratically mature, self reliant with equal opportunities for and active participation by all, having social services, vibrant cultural and religious values and being a technologically driven middle-income country, that serves as a model for Africa.

This vision has nine components. These are:

1. Governance

Malawi will be a united, secure and democratically mature country. Malawians wish to see national harmony with socio-economic development spread to all parts of the country. Every Malawian will live in an environment where the safety of property and the person will be assured and where there will be protection of human rights and freedoms to internationally acceptable standards.

The Government will operate in an environment of transparency, accountability and rule of law. There will be effective participation of all citizens in the governing of the country coupled with clear separation of powers between the three branches of government. The Government will operate according to the principle of merit in all public appointments.

All Malawians will be fully aware of their rights and responsibilities. The

¹⁰ The Mangochi Workshop, 18 September 1997, was attended by both the THRESHOLD 21 Modelling Team and the Vision 2020 Core Team. For the first three days the Core Team worked with Dr. Gerald O. Barney, President, Millennium Institute, developing the short *Vision 2020 Statement* and developing indicators of progress for each part of the vision. This was done by examining each sentence in the *Statement* and asking, "How do we measure progress toward this goal?" The next day the Core Team met together with the Modelling Team to review the indicators. Mr. Douglas Symalla, Development Planner, Millennium Institute, co-ordinated the discussions, and some modifications were made to the indicators as a result of the joint discussion. The Vision 2020 Indicators are a collaborative effort of two teams, and as many as practicable of the indicators will be incorporated in THRESHOLD 21.

¹¹ In August 1998 the SPA section of the NEC reviewed this list of indicators in preparation for their report, "Reaching the Vision. After consideration it was decided that some indicators could not be incorporated into the analysis. These indicators are crossed through with double lines.

country will be led by foresighted leaders within the confines of a constitution that reflects the true wishes, values and needs of the people. The country will achieve enhanced capabilities in political and strategic studies.

Vision	Indicator	Possible Source/Other Comments
United	Regional Voting Patterns	Check with Electoral Commission
Secure	Crime rates	Ministry of Home Affairs
Democratically mature	Voting turnouts Number of political parties	Check with Electoral Commission
Socio-Economic Development across regions	Health, Nutrition, Education, Income and Infrastructure by Region	Attempt to collect all data by district level
Human Rights and Freedom	Number of detentions without trial Number of deaths in prison Incidents of police brutality	Check with Centre for Human Rights
Transparency	Number of independent media organisations.	Research Internationally accepted indicators. Check for Transparency International.
Accountability	Frequency of extra-budgetary expenditures Number of corruption cases	As Above
Fully aware of rights and responsibilities	Number of human rights cases Number of cases of vandalism	Centre for Human Rights
Foresighted leaders	Education level of leaders	NA
Respect of constitution	Frequency of proposed amendments Number of cases involving violation of constitution	NA

2. Competitive Economy

Malawians aspire to have a diversified and middle income economy with a sustainable macroeconomic environment able to produce, competitively, goods and services for both the domestic and export markets.

They wish to have developed agriculture, tourism and industrial activities

(including manufacturing, construction and mining). In addition , the services sector including banking and financial services will have been developed.

Vision	Indicator	Possible Source/Other Comments
Diversified Economy	Agriculture as % of GDP Industry as % of GDP (25% by 2020) Service as % of GDP Tobacco exports as % of total Non-traditional exports as % of total	National Accounts data
Middle Income	US\$1,000 GDP per capita	GDP per capita in USD
Sustainable Macroeconomic Environment	Inflation rate Exchange rate Employment rates	Evaluate the trends.
Competitive Economy	Prices of domestic goods vs. foreign goods Growth and composition of exports Real Exchange Rate Indices Labour Productivity	Check with International Competitive report for a full set of accepted indicators.
Developed Agriculture Sector	Yield/HA Labour Productivity Yield/Head	Also add irrigation percentage and multicropping index
Developed Tourism	Tourists/Year Share of Tourism in GDP	Add employment in sector and Forex earnings of the sector.
Developed Industry	Share in GDP Productivity Increased share of Manufactures in Exports	Check with the SADC productivity report.
Developed Service Sector	Share of GDP	OK

3. Vibrant Culture

The preservation of traditional aspects of Malawian culture that are conducive to national development is deemed crucial and important. Malawians wish to have a cultural identity with rich cultural heritage , dominated by respect for parents and elders, traditional chiefs, and cultural institutions for Malawian art, music, dance, language and literature, respectful dress and good moral behaviour.

They also wish to reject the negative elements of traditional culture. Instead the population desires freedom from "servitude" and low self esteem and develop values that support socio-economic development, improved attitude towards one another, a competitive, innovative, and entrepreneurial spirit.

The country will have developed a new, modern and scientific culture of equal opportunity and rights for all including men, women, children, persons with disabilities and responsible youth. There will also be a positive work ethic that emphasises quality service in employment and customer care. And as a God-fearing nation, spiritualism and religious values that provide an ethical and moral base for a vibrant culture will have been promoted.

Vision	Indicator	Possible Source/Other Comments
Respect of parents and elders	Frequency of disciplinary problems in School Frequency of crimes by youth Frequency of "hooliganism"	Are these good indicators?
Institutions for Malawian Art, Music, dance, language and literature	Number of such institutions Number of visitors Budgets of such institutions	Ministry of Education and Culture
Good moral behaviour	Incidence of drugs crimes	Add rape crimes. Check with MWYCS and Home Affairs
Low self-esteem	Ratio of contracts by Malawians to contracts by foreigners Composition of imports	Need better indicators.
Values supporting development	Decline in vandalism	Home Affairs
Competitive, innovative, and entrepreneurial spirit	Number of new corporations Numbers of patents, copyrights and trademarks	Copyright Society
Culture of equal opportunities and rights	Proportion of different groups of Malawians in various organisations	Who is responsible for these issues?
Positive work ethic	Productivity Decline in absenteeism Punctuality	Ministry of Labour

Quality of service	Time to receive telephone Number of blackouts Number of water shortages	Use coverage rates for electricity and water.
God fearing nation	Number of people attending churches, mosques, etc.	Needs more thought

4. Food Security and Nutrition

Malawians will have access to adequate and safe food by all members of the household at all times of the year. They will eat a wide variety of foods to meet nutritional requirements and will have good practices (storage, preparation and eating habits) to remain active and healthy.

Policies and strategies on agricultural produce pricing and marketing, land tenure and labour employment will be conducive to increased agricultural production and incomes.

Vision	Indicator	Possible Comments	Source/Other
Adequate food	Caloric intake Income Food production Food reserves		Food Security Bulletin
Wide variety	Number of food types produced		Food Security Bulletin
Nutrition	Quantities of food produced Stunting rates for children Rate of underweight children Use of micro-nutrients Wasting rates Frequency of nutritionally related diseases	As above.	
Storage	Wastage rates Other post harvest losses		Look for estimates
Preparation	Rates of loss and waste in food preparation		Look for estimates
Eating habits	Number of meals per day Frequency of overweight Variety of diet		
Land tenure	No indicator identified.		Look for information in Ministry of Lands

5. Social and Economic Infrastructure

Malawians desire safe, efficient and affordable transportation services; including air, rail, water and road network in both rural and urban areas. Rural areas will be accessible.

They also aspire to have safe, clean and sustainable forms of energy for household, agricultural and industrial use. More specifically, they wish to have access to electricity for lighting and other essential services.

Housing, sanitation, disposal services and safe drinking water will be accessible to all Malawians. There will be clean cities and townships.

Basic infrastructure for Irrigation and dam construction will have been promoted as a gateway to economic development and Malawians will have access to improved telecommunications and information services.

Vision	Indicator	Possible Comments	Source/Other
Transport services	Passenger Km for all modes Km of roads and rail Percent of all weather roads	Transport Bulletin	
Energy for industrial and household use	Rate of electricity connections Km travelled to collect wood Use of alternatives to wood for energy.	Energy and Mining	
Housing	Percent of permanent houses	NSO	
Sanitation	Frequency of water borne diseases Access to sewerage systems	Access to Sanitation	
Safe drinking water	Access to safe water Km travelled to collect water		
Irrigation	Hectares irrigated Number of pumps Number of dams	MOA	

Telecommunications	Average km to Post Office Telephones per 1000 Access to radio and newsletters Number of telephone, radio, television, etc. service providers Access to television	MPTC; Also use newspaper circulation.
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6. Social Sector Development (Population, Health, Education)

Rapid population growth rates and high incidence of HIV/AIDS continue to exert pressure on the government's provision of social services. Malawians aspire to have reduced fertility and infant, child and maternal mortality rates and reduced incidence of the HIV/AIDS epidemic. There will be adequate highly skilled medical personnel. Hospitals and Dispensaries will be within easy reach and will have enough drugs, and equipment.

Malawi will have adequate and accessible high quality social services. People wish to see high literacy levels and a public sense of obligation to education, in general, and also to continuing education. Schools will be within easy reach, and there will be adequate and high quality educational materials and teaching staff.

Malawians wish to retain professionals within the country and attract those who are abroad. They also wish to see effective and efficient utilisation of the available human resources. Merit will be emphasised in all appointments and recruitment. In all of the above, decisions will be made in a way that gives opportunities to all, including persons with disabilities.

Further, they would like to have more equitable and fair distribution of income. Essentially, they would like the income disparities between the rich and the poor, urban and rural, women and men, people with and without disabilities reduced.

Vision	Indicator	Possible Comments	Source/Other
Reduced fertility	Total Fertility Rate	OK	
Reduced infant, child and maternal mortality rates	Under 1, Under 5, and Maternal mortality rates	OK	
Reduced HIV/AIDS incidence	HIV infection rate AIDS death rates	OK	
High literacy levels	Adult literacy rate	OK	

Obligation to education	to School enrolment rates	Percent of total Government expenditures to education	OK
Schools within easy reach	Average km to school		MOE
Adequate and high quality educational materials and teachers	Students/classroom Books/student Students/teacher		MOE
Adequate skilled personnel	highly medical	Doctors/1000 Nurses/1000 Hospitals/1000	OK
Dispensaries in easy reach	Average km to dispensary		Check with UNICEF or WHO
Adequate drugs	Decline in frequency with which dispensaries are unable to meet prescriptions		Difficult and debatable.
Adequate equipment	medical	Number of beds Number of x-ray machines Number of equipped theatres	OK
Retain professionals	skilled	Number of professionals	OK
Attract professionals abroad	Malawian from	Number of returning professionals	Difficult
Merit emphasised in appointments		No indicator identified.	NA
Opportunities to all including persons with disabilities		No indicator identified.	NA

7. Equitable Distribution of Income

Malawians aspire to have equal opportunities for all in all areas of socio-economic activities, including education, employment, and business opportunities. They aspire for reduced unemployment rates and promotion of small and medium-scale enterprises.

Vision	Indicator	Possible Comments	Source/Other
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Fair income distribution	Gini Coefficient	Percent of Agricultural production by smallholders	Check with World Bank
Promotion of small and medium scale enterprises	Percent of GDP from small and medium scale enterprises		OK

8. Science and Technology

There will be improved science and technology education, training, popularisation and skills training; high levels of science and technology research and development including its commercialisation and increased transfer of appropriate-advanced technologies. In addition, there will be increased use of environmentally-sound technologies and effective science and technology.

Vision	Indicator	Possible Comments	Source/Other
Improved science and technology education	Number of science teachers and students	OK	
Popularisation	Number of science fairs	OK	
Skills training	Number of Vocational Training Centres (VTCs) Number of graduates from VTCs	Ministry of Labour	
Transfer of appropriate advanced technologies	Range of technologies available Number of Malawians trained abroad Number of foreign investors	Civil servants trained abroad.	
Environmentally sound technologies	Levels of emissions		

9. Environmental Management and Sustainable Development

Malawians aspire to have their environment and natural resources managed and utilised in a sustainable manner. They aspire to see a reduction in land degradation and a halt to deforestation, adequate water resources which will be free of pollutants and readily available for various uses.

Further, they aspire to have a rich bio-diversity having balanced and conserved

ecosystems and a sustainable human habitat development.

Vision	Indicator	Possible Comments	Source/Other
Environment and natural resources managed sustainably	Sustainable yields in fishing, forestry, land and water	May take work to calculate.	Check with Research Council
Reduced land degradation	Yields Nutrients in soil Desertification and erosion rates		MOA and Research Council.
Halt to deforestation	Rate of new planting and regeneration vs. harvest rate.		Forestry Department
Adequate water resources	Availability (in dry season)		Rainfall data and KM to nearest water source
Pollutant-free water	Incidence of water-borne disease Pollution levels		Research Council
Rich biodiversity	Number of species on endangered list		Wildlife and Fisheries.

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