Bjørn K. Wold, Mercy Kanyuka, Estrellita Rauan, Malawi Yute, Medson Mkwemba, Stein Opdahl and Randi Johannessen

Tracking Resource and Policy Impact in Malawi
Incorporating Malawi Poverty Reduction Strategy Paper Indicators, Millennium Development Goals & Poverty Monitoring Across Sectors

Rapporter   I denne serien publiseres statistiske analyser, metode- og modellbeskrivelser fra de enkelte forsknings- og statistikkområder. Også resultater av ulike enkeltundersøkelser publiseres her, oftest med utfyllende kommentarer og analyser.

Reports   This series contains statistical analyses and method and model descriptions from the various research and statistics areas. Results of various single surveys are also published here, usually with supplementary comments and analyses.

Standardtegn i tabeller	Symbols in tables	Symbol
Tall kan ikke forekomme	Category not applicable	.
Oppgave mangler	Data not available	..
Oppgave mangler foreløpig	Data not yet available	...
Tall kan ikke offentliggjøres	Not for publication	:
Null	Nil	-
Mindre enn 0,5 av den brukte enheten	Less than 0.5 of unit employed	0
Mindre enn 0,05 av den brukte enheten	Less than 0.05 of unit employed	0,0
Foreløpig tall	Provisional or preliminary figure	*
Brudd i den loddrette serien	Break in the homogeneity of a vertical series	—
Brudd i den vannrette serien	Break in the homogeneity of a horizontal series	I
Desimalskilletegn	Decimal punctuation mark	,(.)

Abstract

Bjørn K. Wold, Mercy Kanyuka, Estrellita Rauan, Malawi Yute, Medson Mkwemba, Stein Opdahl, and Randi Johannessen

Tracking Resource and Policy Impact in Malawi
Incorporating Malawi Poverty Reduction Strategy Paper Indicators, Millennium Development Goals & Poverty Monitoring Across Sectors

This report is prepared jointly by National Statistical Office in Malawi and Statistics Norway. The objective has been to establish a system for statistical information to follow the potential effects of resources related to poverty and/or allocated to social sectors and through all steps from available public service towards the final outcome and end goals. This has included overall national policies affecting resource allocation for social sectors; allocation and distribution of resources between and within sectors; access to and use of social service; outcome and achievements; poverty reduction and other end goals; and feed back to economic, human and social development. The information presented aims at allowing the reader to follow resource allocation from policy decisions towards human welfare and quality of life, and the feed back towards economic and social development. Data presented are selected to provide information for indicators of the Malawi Poverty Reduction Strategy Paper and the Millennium Development Goal indicators and resources which potentially might affect these indicators.

The data presented shows that resources allocated for the health sector resulted in increased output and outcome. The Southern Region got a larger allocation from the central government per capita, while the Northern Region lost out in the health budget allocation process. Villages in the southern region produced more outputs i.e. better immunisation coverage but surprisingly, villages in the northern region still managed to ensure equal outcomes. The ambitious policy change in the education sector by the new government in 1994 is well reflected in the statistics. There was an increase in budget allocation allowing for abolished government fees and hence opening up for education even for the poor. A dramatic increase in net enrolment followed. Despite the decrease in the percentage of certified teachers there was an increase in outcomes. Recurrent expenditures for primary schools show a huge variation and double 7-fold from Chikwawa and Mangochi to Rumphi and Chitipa. The larger budget allocation to districts in the Northern Region, is followed by a larger share passing the JCE in this region. Resources for the water sector come from a variety of sources and only a fraction is picked up in the statistics presented here. However serious attention should be given to the increase in the incidence of diarrhoea in the country. Comparison of selected figures for Malawi and Sub Sahara Africa showed that though Malawi's input was consistently below that of SSA and output (immunisation rate) is higher than the average for SSA, mortality rates are still higher for Malawi, but with the currents trends it will fall below in few years. In the education sector, Malawi invested more and got more output and outcome compared to the rest of the continent. Malawi also had better access to improved sanitation facilities compared to Sub Sahara, but access to improved water is better in average Sub Sahara Africa.

Contents

1. Summary and outline of the document

1.1. Summary

This report is prepared jointly by National Statistical Office in Malawi and Statistics Norway. The objective has been to establish a system for basic and summary information to follow the potential effects of resources related to poverty and/or allocated to social sectors through all steps towards the final outcome and end goals. This has included overall national policies affecting resource allocation for social sectors; allocation and distribution of resources between and within sectors; access to and use of social service; outcome and achievements; poverty reduction and other end goals; and feed back to economic, human and social development. The information presented aims at allowing the reader to follow resource allocation from policy decisions towards human welfare and quality of life, and the feed back towards economic and social development. Data presented are selected to provide information for indicators of the Malawi Poverty Reduction Strategy Paper and the Millennium Development Goal indicators and resources which potentially might affect these indicators. The report is based upon the approach in a general report for Norwegian development cooperation main partner countries aimed to provide information for Norwegian development cooperation. It was however realized that the only way to ensure timely and reliable statistics for Norwegian development cooperation is through not only national cooperation but also national ownership combined with institutional cooperation between South and North. This report is one of the two pilot reports being presented in cooperation with a national statistical office.

The data presented shows that resources allocated for the health sector resulted in increased output and outcome. Input to the health sector fluctuated only slightly and remained basically at the same level. This input did not really produce the desired output i.e. increase in immunisation rate. Output and outcome data are few and tables on the effects from output to outcome present a mixed picture. There is a clear trend that increased output leads to increased outcome, just as expected.

Assessing the trends and relationships at the national level gives an overview of the status of the sector and can give important warning signals. When the relationship between input and output is lower than expected, it might be due to the lack of proper administrative reporting procedures (such as expenditures paid by NGOs not being included), that the resources allocated do not reach the planned recipient and activity, or that the effects and impact are not as strong as expected.

The latest health data from the district level shows that the southern region got a larger allocation from the central government per capita, while the northern region lost out in the health budget allocation process. Villages in the southern region produced more outputs i.e. better immunisation coverage but surprisingly, villages in the northern region still managed to ensure equal outcomes. Even more surprising is the fact that the outcome indicator chosen (mortality rates) was best in the Northern region. This might either reflect a higher effectiveness of investments in the Northern region or that there is a higher share of non-public health sector investments and recurrent expenditures.

More data were available for the education sector, and allowed for capturing key development trends. The ambitious policy change by the new government in 1994 is well reflected in the statistics. There was an increase in budget allocation allowing for abolished government fees and hence opening up for education even for the poor. You would then expect a large increase in outputs and you got a drastic increase in net enrolment. The girl/boy ratio increased slowly, but neither the number of pupils per teacher nor the percentage of certified teachers increased. Yet despite the decrease in the percentage of certified teachers there was an increase in outcomes presented. This might also be due to lower requirements for passing the Junior Certificate of Secondary Education (JCE) examination but even the percentage of students continuing to the literacy level defined as enrolled in fourth grade increased.

Data on input in the education sector does not reflect all the investment from the private sector, thus linking

the data to output and outcome did not really tell the whole story. The approach shows however the clear relationship of the changes from 1996 with an increase in net enrolment followed by a larger share reaching fourth grade and passing the JCE examinations. With the lack of poverty trends, we focused on the impact on economic growth. There is no clear relationship between education outcome and impact on economic growth, but given the long time lag it will still be some time before we should expect the changes in 1996 to be reflected in increased economic growth.

In addition to follow the trends over time we have presented the distribution to the various district. As the reader will learn, some of the survey data are only available for the larger district and for the other variables we only have data for an average of the smaller districts. As for the health sector the budget allocation for the three main cities sometimes include central functions and sometimes not, hence a careful interpretation is needed[1].

Recurrent expenditures for primary schools show a huge variation and double 7-fold from Chikwawa and Mangochi to Rumphi and Chitipa. In order to give more or less all children access to primary school within a reasonable distance, more schools and classes are needed in the Northern region and other district with low population density. Output indicators in the districts show that the Northern Region have the largest share of certified teachers at primary level while the Southern Region has the highest pupil-teacher ratio. Outcome indicators show that the Northern Region has a larger share passing JCE, the national examination taken after two years in secondary school.

Resources for the water sector come from a variety of sources and only a fraction is picked up in the statistics presented here, hence the figures are low. There is therefore no reason to expect a close relationship between resource allocation and output i.e. access to improved water and sanitation facilities and outcome i.e. incidence of diarrhoea.

We would however expect a closer statistical relationship between output-outcome for the water and sanitation sector. However, the fact that available data shows an increase in incidence of diarrhoea should be a cause for concern. The first issues would be to check whether the increase just reflects a better registration and if not, a serious follow up is required.

There are large variations in access to improved water and even a minimum of sanitation at district level. Unfortunately the majority of districts are facing widespread lack of access to improved water and

proper sanitation. In all but 6 districts less than 60 per cent have access to improved water within 500 meters. In the majority of districts, the incidence of diarrhoea is worrying. But for these data further work is needed to document the data collection procedures.

Comparison of selected figures for Malawi and Sub Sahara Africa (SSA) showed that despite higher input to the health sector for Malawi. Mortality rates are still higher for Malawi, but with the currents trends it will fall below in few years. Malawi invested more in the education sector compared to SSA and reaped more output and outcome compared to the rest of the continent. Malawi also had better access to improved sanitation facilities compared to Sub Sahara improved water but access to improved water is much better in Sub Sahara Africa. However growth in GDP per capita was volatile falling below and above the rate of Sub Sahara but the economy had a hard time recovering after that.

1.2. Outline of the document

The document comprises three parts and seven chapters as follows:

- **Summary and background information**, *Chapters 1-3* present a summary of the report, an introduction to Malawi's geography, population, politics and economy and gives background information in the three sectors presented i.e. health, education and water and sanitation sector.
- **Statistical presentation**, *Chapters 4* and *5* present national and district level statistics for Malawi and *chapter 6* compares selected Malawi national level indictors with Sub Sahara Africa. For the statistical presentation chapters, figures and tables are presented first and the discussion is done by sector afterwards. *Chapter 4* first presents selected indicators for each of the monitoring steps from input to output to outcome and impact indicators for 10 years (1990-2000). Second, chapter 4 presents statistics for each sector where we are following how a change at one level might or might not be followed by a change at the next level, such as whether an change at output level (e.g. access to health service: vaccination) is followed by an improvement at outcome level (such as better health status: lower child mortality). The report looked into the relationship across the following levels; input-output, input-outcome, output-outcome, and outcome-impact indicators. The feedback loop was not presented due to lack of time series poverty data in Malawi. Line graphs and tables were used to present selected indicators in this chapter. *Chapter 5* presents district level statistics for Malawi. For district level statistics, only the latest data were included. District indicators by sector were presented using bar graphs and maps. For the statistical relationships at district level, a

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[1] We hope to be able to get adjusted figures from the Government Account figures from Ministry of Finance for future reports.

combination of bar and line graph was chosen. The first monitoring step utilises a line graph and the second monitoring step utilises bar graphs. The desired impact of all inputs (investment in the different sectors) is poverty reduction and with the goal of spreading the effects of these investment. For this link the original purpose intended to show how poverty change is distributed amongst the population. However, due to lack of poverty data at country level, it is not possible to look at this link. *Chapter 6* compares selected indicators of Malawi with Sub Sahara Africa. In this section, line graphs were chosen to trace the development of indicators for Malawi and Sub Sahara Africa. Similar to the other chapters, figures and tables were presented first and discussion was done by sector.

- **Conclusions and recommendations**. *Chapter 7* outlines empirical findings and based on these findings, recommendations are outlined.

2. Malawi, geography, population, political system

2.1. Geography and population

Malawi is a small landlocked country situated between Zambia (on the northwest), Tanzania (north and northeast) and Mozambique (on the east, south and southwest). Republic of Malawi has an area of 118,484 square kilometres of which 94,276 square kilometres is land (Magombo, 2001). Population estimate is 11.6 million (2003 figures). The country is known for its 400 species of orchids and has more fish species than any other inland water countries in the world, more than 500 are found in Lake Malawi[2]. The country can be divided into three regions, northern, central and southern region (NSO, 2002). The Northern region has 6 districts and one urban area, Mzuzu. Districts in the north are Chitipa, Karonga, Likoma Mzimba, Nkhata bay, and Rumphi. In the central area there are 9 districts and one urban area, Lilongwe, the capital. Central region is comprised of Dedza, Dowa, Kasungu, Lilongwe, Mchinji, Nkhotakota, Ntcheu, Ntchisi, and Salima. The southern region has 12 districts with 2 urban centres, Blantyre and Zomba. Southern region has Balaka, Blantyre, Chikwawa, Chiradzulu, Machinga, Mangochi, Mwanza, Mulanje, Nsanje, Phalombe, Thyolo, and Zomba. The Southern area is the most densely populated followed by the central areas (See figure 2.1).

The country is often called the "warm heart of Africa" because of the friendliness and warmth of the people[3]. The main ethnic groups are the *Chewa*, dominant in the central and southern parts of the country; the *Yao* are found in the south; and the *Tumbuka* in the north[4]. The *Chewa* speak the *Chichewa* language which belongs to the Bantu language family and traces it's origin to a group of people known as the *Maravi* who migrated from the Congo in Central Africa[5]. Other

Figure 2.1. Population Density of Malawi, 1998
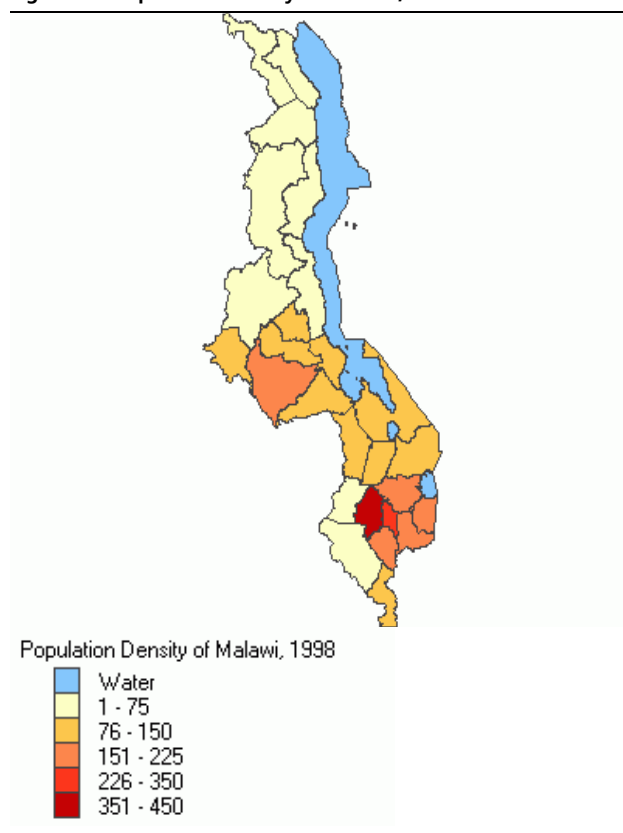
Bantu groups such as *Tumbaka*, *Tonga*, *Yao*, *Lomwe* and *Ngoni* moved into Malawi afterwards. The *Yao* word for 'lake' or 'seas' or 'a large expanse of water' is 'nyasa'. A story of how the name *Nyasaland* came about can be traced to an account of a British adventurer who arrived at a predominately *Yao* speaking part of the country. He inquired into the name of the lake and asked "What do you call that?" and the response was 'nyasa'. That is how the Lake Nyasa got its name. The British protectorate was later called *Nyasaland*. The country got the name Malawi, the modern pronunciation of *Maravi* after independence in 1964, and Lake Nyasa became Lake Malawi.

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[2] Malawi Ministry of Tourism (2004), http://www.Guide2Malawi.com [2004].

[3] World Vision (2004): Who are the people?, http:///www.worldvison.org/worldvision/projects.nsf/ [2004].

[4] Malawi Ministry of Tourism (2004), http://www.Malawi.

[5] University of California (2004), Background on Chichewa and related languages, http://www.humnet.ucla.edu/humnet/aflang/chichewa/background.html [2004].

2.2. Politics

After several bids for independence, Dr. Hastings Kamuzu Banda, the head of the Malawi Congress Party, became Prime Minister when Malawi gained independence in 1964. Banda declared himself president for life in 1971 and under his 30 years single party rule, freedom of the press and speech was curtailed (Chipeta and Mkandawire, 2002). Opposition to Banda's totalitarian one-party rule grew. In 1992, the Catholic bishops condemned Banda causing demonstrations throughout the country and there was a cut off of all non-humanitarian aid. After consequent unrest, the first party elections were finally held in May 1994 and afterwards a new constitution was made in 1995 (Fozzard and Simwaka, 2002).

Dr. Bakili Muluzi, from the United Democratic Front, was elected President in 1994 when the nation held its first multiparty elections after independence. Muluzi won over 50% of the vote in the 1999 presidential elections. In 2002, a proposal to change the constitution to allow for additional terms for the president was turned down by the Parliament. Fozzard and Simwaka (2002) present the differences of the leading parties in Malawi as follows:

- United Democratic Front (UDF) has a liberal manifesto, balancing interests of government, people and private sector;
- Alliance for Democracy (AFORD) places emphasis on workers' rights; and
- Malawi Congress Party (MCP) is conservative, stressing the importance of clean and efficient administration, peace and stability.

There are reports of ethnic rivalries made worse by politicians strengthening local power-bases through patron-client relationship (Chirwa, 1998). This practice is said to be inherited from Banda's time where distribution of government budgetary resources has been influenced by politics (Chipeta and Mkandawire, 2002). The problem is still present as the Malawi PRSP (2002) mentions that Malawian politics is characterised by patronage and regional relations rather than ideological or political commitment. The Malawi PRSP sees the dominance of patronage politics as a result of historical experience, lack of education and short-term focus of the poor. The *Afrobarometer* survey shows that Malawians are aware of democracy and are generally positive regarding benefits but there seems to be nostalgia for authoritarian rule (Bratton and Mattes, 2001). This view is strongest in Banda's heartland, the central region.

Dr. Bingu wa Mutharika who won the latest presidential elections belongs to the UDF and hails from the southern district of Thyolo (NCA, 2004).

2.3. Economy
2.3.1. Reforms, expenditure planning and decentralisation (revised)

After Banda's regime, the goal of development policy shifted to poverty reduction and in the process, policies and programs to reduce poverty were introduced i.e. MTEF in 1994, Policy framework for Poverty Reduction (PAP) in 1995 and the Poverty Reduction Strategy Paper (PRSP).

Malawi's fiscal policy has been characterised by periods of fiscal expansion, with deficits financed by internal borrowing and expansion of the money supply, fuelling inflation which was followed by periods of fiscal restraint (Fozzard and Simwaka, 2002). In the same paper, three important points came out:

- In theory, a budget based on the bottom up activity approach such as used in Malawi can provide a straightforward means to prioritise the budget when resources are reduced. However, in decentralised sectors, budget bids have proved difficult to aggregate, revise, and summarise in a way that gives a clear picture as to how resources are allocated in terms of strategic priorities.
- In practice, Malawian budgets are not actually allocated and controlled on an activity basis, but is allocated geographically, by line item (e.g. stationary, fuel), and by spending unit (e.g. a specific district health authority).
- Lastly, the accountability runs toward external donors rather than domestic civil society and Parliament

In addition, the Finance department has not provided clear guidance on how priorities should shift between sectors, or within sectors (Foster *et al.* 2002).

Government decision-making in Malawi was gradually centralised in Banda's time (Kaunda, 1999). A decentralisation policy was approved in late 1998 and the following were some of the key plans[6]:

- Definition of broad functional responsibilities including education, health and water sector.
- Service delivery functions are to be transferred to local authorities with the support of the central government.
- Implementation has been seen as a ten-year programme with priority been given to training of local councillor, design and implementation of financial management systems, including supporting software development.
- Sectoral ministries are preparing strategies for transfer of service delivery functions.

Currently a basic problem related to the decentralisation process is the lack of coherence in terms of reporting and accountability, causing confusion amongst public officials. However decentralisation in Malawi cannot be addressed as a technical issue

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[6] Fozzard and Simwaka (2002).

because it is a highly political process, as political parties are associated with particular regions[7].

2.3.2. Economic conditions

The economic performance of Malawi during the 70s and the 80s was one of the best in Africa (UNDP, 1995). However the country's growth was heavily based on exports of tobacco and tea from the estate sector (NRI, 1996). After 1980, growth slowed down, but has increased again since 1990 with GDP annual average growth around 2.5% in 1980-1990 and 4% in 1990-99 (World Bank, 1997 and 2001).

During the first years of the new century, Malawi was hit by massive droughts and consequently poor crops and declining terms of trade for its key export products threaten the vulnerable economy. Devereux (2002) explains the 2002 food crisis in Malawi in two ways, a 'technical' and a 'political' view. The 'technical' view attributes the food crisis to bad weather, limited information and import bottlenecks. The 'political' view puts the blame on the IMF, profiteering traders or complacent government and donor officials. National Economic Council (NEC) of Malawi (2002) described the economic outlook as unfavourable and attributed the low agricultural production to dry spells and a short rainy season.

During the very last years the climatic conditions have again been more stable and favourable to agricultural production. With the new President and Government from 2004, there is an optimistic economic mood in the country and the very next years will be crucial for the country.

Various authors have addressed factors which may hinder development in Malawi, such as the following ones.

- *Transport and communication challenges*: Aside from being landlocked, the nation has poor communication system and there are poor roads and railways infrastructure. This scenario hinders domestic and international linkages i.e. forward and backward links which is vital to any nation.
- *Infant industry*: The nation has not managed to develop its industries due to a number of factors i.e. capital constraints, lack of demand, and local products are not internationally competitive due to high production costs. High production costs can also be attributed to imported inputs and high transportation costs. Another limiting factor to private sector industrial growth is the lack of adequate water and disposal system, especially in dry season (Kaluwa, Mtambo and Fachi, 1997).

The underdeveloped water system also contributes to environmental damages in Malawi (NRI, 1996).

- *Land constraint*: The majority of the population still lives in rural areas and farmers landholding sizes are *small, e*specially in the south (55% in 1988 had less than 1 hectare with an average size of 0.55 hectare) and *female headed* (70% in 1977), who were less likely to receive extension advice and credit than men (NRI, 1996).
- *Agricultural trade and markets*: A major change done in the agricultural sector was the restructuring of the parastatal ADMARC. In the past the parastatal controlled marketing and with policy change, came the liberalisation move. However the restructure created vacuum in areas where private traders do not find profitable to operate, thus ADMARC had to re-open in unprofitable markets but cash flow problems hindered the purchase of excess products in 1999 (MAI, 1999).
- *Economic structure of the country*: A narrow economic base, concentrated ownership of assets, limited foreign and domestic investment, meagre mineral resource and poor employment opportunities impedes development in Malawi (USAID, 1997). Land reform is a key issue yet to be addressed.

The international community is monitoring the situation in Malawi closely today. According to donor organisations there is increasing hunger and malnutrition in the country. Norwegian Church Aid sent 1.4 million Norwegian kroner to church partners in Malawi (NCA, 2004). Various programmes targeting the poor are being carried out and planned by both local and international organisations for Malawi.

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[7] United Democratic Front (UDF) has it supporters from the South, Malawi Congress Party (MCP) associated with Banda, has its power base in the center and Alliance for Democracy (AFORD) largely represent constituencies in the North. (Fozzard and Simwaka, 2002).

3. Background information of the different sectors

3.1. Health

3.1.1. Ministry of Health and Population Goals

The current overall policy goal of the Malawi Ministry of Health and Population (MOHP) is to reduce the incidence of illness and occurrence of death in the population through the development of the health delivery system. The National health plan 1999-2004 of the MOHP (2004a) identified the following as important challenges: high child and maternal mortality and morbidity, high HIV zeroprevalence and death due to HIV/AIDS related illness and limited access to effective health care. Reasons for limited access to effective health care are attributed by the Ministry of Health to geographical access, lack of finances for health services, essential drugs, disintegrated service and shortage and maldistribution of trained personnel. UNICEF (2004) reports that Malawi has a high prevalence of HIV/AIDS, which affects 16.4% of people from 15-49 and accounts for 70% of hospitals deaths.

In recognition of the high infant mortality rates, a program of full immunisation of children at their first birthday was launched way back in 1976. In 2000, Global Alliance for Vaccines and Immunisations (GAVI) promised 5 years support for Malawi's immunisation programme. The Malawi Poverty Reduction Strategy papers (MPRSP) identified health as a key sector and in relation; the Essential Health Package (EHP) plan has been defined and is supposed to provide integrated essential services (including immunisation) to the poor masses. The Government of Malawi received HIPC funds that were partly channelled to the health sector and helped increase annual government health expenditures from 1995 to 2001 (MOHP, 2004b).

3.1.2. Health sector infrastructure

The Malawi government owns and runs around 60% of health facilities, 37% are provided by Christian Hospital Association of Malawi (CHAM) and other private institutions operate the rest (MOPH, 2003a). All these facilities provide immunisations. The government has central hospitals in the three regions, 5 district hospitals in the north, 8 in the centre and 11 in the south[8]. The southern region tops the number of heath centres with 135, followed by the central region with 125 and the northern region has 68. Doctors in government hospitals are mostly located in the south where most people are located, followed by the centre and last is the north (MOPH, 2004c).

3.1.3. Insights into the health sector

Health indicators are important to monitor because they reflect the state of the nation's health and physical well being of the nation. The amount of money allotted for a sector by the government, on the other hand, shows how much importance is given to the sector. A concern raised for health sector data is that information from private sector and NGO's, which may be substantial, are not accounted for in the official figures reported.

The international ideal goal is that health and education expense together should be at least 20% of government budget. Fozzard and Simwaka (2002) study gives interesting insight in relation to health sector expenditures. It was noted that health spending skewed towards the provision of tertiary care and in urban areas. Lower level corruption and fraud is a problem, with about 60% of the drugs diverted from the public health system (MFEP, 2001). In the same study, it was reported that health share of spending increased from 7% in 1991/92 to 11% in 1995/96, then 12% in 2001/02 and averaged at 9 % from 1994/95 to 2001/02. The MPRSP (2002) notes that physical access to health centres remained poor, with only 3% of the population living in a village with a health centre. However, existing health centres are in poor condition, and there is inadequate supply of drugs and medical supplies. A study by Malawi Economic Justice Network (2003) reports that the average distance to the nearest government health centre is high at around 10 kilometres.

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[8] Ministry of Health and Population (2004c): A List of government hospitals and health institutions, http://www.Malawi.gov.mw/health/hilist.htm [2004].

GAVI, UNICEF, DFID, KFW and NORAD/SIDA financed the vaccine and safe injections requirements in 2002, with UNICEF coordinating a pool fund that is made available on request in line (MOPH, 2003). In Jan 2002 a new vaccine (DPT-HepB+Hib) was introduced targeting all children under one year old, using autodisposable syringes (ADs). DPT-HepB+Hib stands for hepatitis B and haemophilus influenza type B (Hib) (MOPH, 2003). The same report made projections of resource requirements for 2003-2006 with a plan to administer a new vaccine. However, MOPH (2003) reports that should partners fail to meet requirements, the programme will revert to the use of DPT and re-usable syringes and needles.

3.2. Education sector

3.2.1 Ministry of Education, Science and Technology Goals

Universal primary education in all countries by 2015 is the second goal under the social development sector in the Millennium Development Goals. Education indicators like enrolment and pupil-teacher ratio gives an idea regarding progress in the education sector. Based on country data, Malawi has made enormous progress in this sector. National long-term perspective study identified the main challenges facing Malawi's education system and one of these is to improve access, quality and equity in primary, secondary and tertiary education (MEST, 2004a). In all levels of the education system there are problems of poor attendance, enrolment, repetition and drop out, and the problem is acute at the primary level. Thus the government decided to invest in basic education.

3.2.2. Education sector infrastructure

In Malawi, a student goes through 8 years of primary schooling, 4 years in the secondary and an average of 4 years of university education (MEST, 2004b). Basic education comprise of primary education, pre-school education. Non-formal education section has initiatives such as adult literacy. Pupils who complete 8 years of schooling take the Primary School Leaving Certificate Examinations (PSLCE), which makes them eligible for the secondary level. In the secondary level, students take two national examinations. After two years in the secondary level, students take the Junior Certificate of Secondary Education (JCE) and the Malawi School Certificate Examination after four years of secondary school. In addition to the Ministry of Education, there are 4 important institutions in the Malawi education system. The Malawi Institute of Education (MIE) is responsible for the development and evaluation of the school curriculum and in addition coordinates the service teacher training. Administration of national examinations and the development of examination syllabus is done be the Malawi Examination Board (MANEB). The Malawi National Commission for UNESCO on the other hand serves as a link for government ministries and other groups with UNESCO and has a library for UNESCO publications. The last institution is the National Library Service (NLS) which promotes, establishes, equips and manages national libraries.

External donors contribute towards purchase of teaching materials, equipment and furniture, building, maintenance and renovation of education institutions but the government has the main responsibility for funding the education sector. Other NGOs support the education sector through construction of school buildings. It should be noted that multilateral loans were included in the 1996 - 1998 government budget but the bilateral grants were not included (MEST, 2004b). Unpaid labour through local communities and parent's labour helped in keeping construction costs down, especially at the primary level. It is interesting that 75% of Malawi's primary schools were built with the support of local communities and that maintenance has remained their responsibility.

3.2.3. Insights into the education sector

Malawi has been late in launching the free primary education programme. Under Banda's time, primary education's share of recurrent spending was 64%. From 1994/95 to 2001/02, the share increased to 73%, peaking at 77% in 1997/98. This increase in budget was made possible by decreasing administration spending and the increase in budget was used for upgrading secondary education and teacher training. Data based on the 1990-91 Household Expenditure and Small-scale Economic Activities (HESSEA) survey and the National Sample Survey of Agriculture (NSSA) in 1993 showed that gross primary enrolments in primary school for the two poorest quintiles are about double the net enrolment rates for the same groups (World Bank, 1995). This information confirms that late entry and repetition that occur particularly among lower-income groups. Gross enrolment rates indicate that girls aged 13 or older are more likely to drop out of primary school. Gender disparities in gross enrolment rates for primary education are reportedly higher in the Southern than in the Northern or the Central regions. In 1990/91 a secondary level student in Malawi is seven times as expensive as a primary-level students, a tertiary level student was 97 times as expensive and a university student was 165 times as expensive. In 1995 the cost of one secondary-level student was 71 times more than the cost of one primary-level student, university student is 103 times more costly than a primary school student. All these high costs are related to the fact that there are fewer students at the higher level. Though a higher share of public money is being spent per student at early levels of education, students receive low quality services[9].

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[9] Quality indicators that points to low quality services are: ratio of student/teacher has increased; inadequate school facilities like classrooms, chairs and desks; and increase in repetition rates.

Quality indicators that points to low quality services are: ratio of student/teacher has increased; inadequate school facilities like classrooms, chairs and desks; and increase in repetition rates. On a positive note, a study done by Al-Samarrai and Zaman (2002) concluded that education reform undertaken in 1994 have been pro-poor although it was also noted that despite increased access it is unlikely that gains to these groups in terms of primary school completion will be as great. What needs to be done is to cut back informal fees and contributions widely prevalent in primary schools (Rose, 2002).

It was only in June 1994 when there was a change in government that primary school fees were abolished. The new government's commitment to education placed extreme pressure on an already weak system with a high pupil-teacher ratio of 70:1, with 13% of teaching force unqualified and an average of 100 pupils per classroom (Ministry of Foreign Affairs of Japan, 2004). It was the positive response of the international community that helped the new government pursue its programs.

Currently the important challenges faced by the education sector in Malawi are as follows:
Budget and finance:

- Corruption in the distribution of school materials is a problem (MFEP, 2001).
- The high dependence on external donors (in 1999, credits and grants accounted for nearly 90% of the education sector's recurrent expenditure) affects national ownership and sustainability (MEST, 2004c).
- Budgeting system in the education sector is a challenge because investment from donors and other funds are not reflected in the national accounting system, hence sector planning is difficult to coordinate and plan (MEST, 2004d).
- Education spending was skewed towards the provision of heavily subsidised secondary and tertiary education, which provides skilled manpower and opportunities for the elite (Fozzard and Simwaka, 2002).
- Free primary education policy means only free tuition costs. The extra other non-tuition costs mean a choice between educating boys or girls. Since women's rights are traditionally subordinate, boys are usually given preference (IRIN, 2004).

Infrastructure:

- Around 23,3000 of 47,800 primary school teachers lack qualifications and adequate training[10];
- There is poor infrastructure (e.g. High teacher to pupil ratio[11], overcrowded classrooms, inadequate

furniture and textbooks, shortage of teacher's houses, poor delivery systems of teaching and learning materials and lack of sanitation facilities) (MEST, 2004e and Tsoba, 2000).

3.3. Water and sanitation sector

3.3.1. Ministry of Water Development Goals
One of the goals of the Ministry of Water Development in Malawi is to ensure that a large number of the population have access to portable water and related sanitation services of sufficient qualities and acceptable quality (Ministry of Water Development, 2004a).

3.3.2. Water sector infrastructure
Malawi has an extensive network of rivers and lakes, with water bodies covering more than 21% of the country and there are renewable freshwater resources of about 3,000 cubic meters per capita per year but the distribution across the country is irregular and varies (Ferguson and Mulwafu, 2004). It is estimated that 90% of the run offs in rivers and streams occurs between December and June and only 0.1% of this estimate is captured for later use. In the same study the following were noted: there is little water related infrastructure in Malawi; Malawi is heavily dependent on run-of-the-river schemes; and there are no major storage dams despite existing potential and need. It was also noted that since the 1980's Malawi has been engaged in community - based management, training people in water maintenance and sanitation. A new strategy expands the rights and responsibilities of communities and the focus is not mainly on provision of water and sanitation services but in educating people to consider water as a multi-purpose productive resource and recognising increasing competition among users and calling for equitable allocation to all sectors.

A current estimate shows that around 58% have access to water in rural areas (18% have Gravity fed piped water schemes, 31% have boreholes and 9% have shallow wells) (Ministry of Water Development, 2004a). Hand dug wells are still common in rural communities and it is interesting that the Ministry of Health is active in the provision of these types of wells rather than the Ministry of Water Development (WaterAid, 2004). In the early nineties, there were International NGOs[12] who came in the during the Mozambique refugee crisis, resulting in a very good system of water supply, but when the donor money decreased for WATSAN projects, activities decreased (WaterAid, 2004). In the future, with an estimated population increase of 3.4%, a district with 250,000

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[10] Profile of Demand and Supply for Primary Teachers, Malawi 2000-2012, http://www-unix-oit.umass.educ/[2004].

[11] In primary schools, the ratio of qualified teachers was 120:1 (MOE, 1997).

[12] Save the Children (UK), Concern Universal, Oxfam UK, Plan International, ActionAid and CPAR.

would need 34 new water facilities per year just to maintain the same level of service, and unless major investment is poured into the sector, there will be an increase in the number of people without access to improved water (WaterAid, 2004).

3.3.3. Sanitation sector infrastructure

There is no ministry that takes the lead in latrine building and use even though many projects encourage communities to build latrines as part of their health education process (WaterAid, 2004). The Ministry of Health has a district Environmental Health Officer (EHO) who is trained to given health messages (including sanitation issues), but in theory there is only one EHO per 2000 Malawians and some districts do not even have extension staff.

Only 9% have connecting septic tanks or improved latrines, with 90% in urban and 30% in rural areas having some form of sanitation facilities (Ministry of Water Development, 2004a). Only three of Malawi's cities - Blantyre, Lilongwe and Zomba have central sewage systems but the capacity has long been reached. Thus untreated household sewage, and industrial waste runs directly into rivers and streams, and is a major cause of water pollution in Malawi (Ferguson and Mulwafu, 2004). Traditional pit latrines were still common to 79 % of the population in 2000 (NSO, 2001).

3.3.4. Insights into the water and sanitation sector

Malawi has been identified as one of the South African countries likely to experience absolute water scarcity by 2025 (Ohlsson, 1995). But this estimation is based on infrastructure and distributional problems rather than actual water scarcity (Ferguson and Mulwafu, 2004). A huge proportion of boreholes are non-operational, many of them breaking down within a few months of construction and the rates are 30% according to Ministry and District officials but some with districts report breakdown as high as 70% as reported by DeGabriele (2002). The same study cited several problems connected to the establishment of boreholes. First, in some villages people are so divided and cannot work together. Differences arise out of disputes over land or witchcraft accusations. Second, traditional leaders can refuse boreholes to be drilled in the village and of village headmen who expect a bribe (reportedly K10,000). Third, owners of land don't want boreholes because crops growing in the area might be destroyed. These factors are important due to the need for social cohesion in the day-to-day management, operation and maintenance of a borehole e.g. contribution to replacement costs of parts in case of breakdown. A point raised in the same study was the poor maintenance after the establishment of boreholes. The poor performance of the sector was related to the problems mentioned above i.e. lack of information,

lack of commitment and fear of upsetting powerful interest groups.

Rural water supply has been the most important area of expenditure accounting for 18% of the total development expenditure from 1994/95 to 2001/02. During pre-elections periods, there were budget increases, 22% in 1994/95 and 24% in 1998/99 (to be documented). According to the Ministry of Water Development (2004), all urban water schemes are now decentralised under the management of commercial Regional Water Boards, established by the *1995 Water Works Act* [13]. The government just started financing water supply projects from its own revenue in 1998 (Ministry of Water Development, 2004).

Decentralisation moves spurred by the 1998 Local Government Act also affected the water and sanitation sector in Malawi. As in any decentralisation moves, the intention is directly to empower communities and user groups. The Local Government Act calls for reorganisation of the operation of line ministries with many of their powers devolved to districts. However though the water policy and act were drafted at approximately the same time as the act, the act did not take the transfer of authority into account, thus the institutional, policy and legal uncertainty and confusion (Ferguson and Mulwafu, 2004).

Some of the administrative issues regarding water and sanitation budgets are:
- sector budget is not just significantly less than the amount referred to in the PRSP but is poorly defined;
- there is weak local government position i.e. ministries compete for funds at the central administration level and then each sector ministry channels resources to their own district authorities;
- budget allocations are primarily allocated for physical infrastructures (e.g. boreholes); and
- there is no provision for management efforts and lastly sanitation is accorded a significantly lower priority than water supply ODI (2004).

Other important issues related to planning in the sector on the other hand are:
- lack of coherent sectoral planning which results in uneven distribution and coverage of systems and duplication of efforts;
- poorly co-ordinated projects resulting to increased administrative costs and sectoral inefficiencies;
- lack of sufficient data on existing water supply installations or support for rehabilitations causing certain areas to continually receive new

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[13] The new Water Resources Development Policy and Strategies was approved by Parliament in 2000, replaced the Water Act of 1994 (which replaced the 1969 Water Resources Act) is still under review (Ferguson and Mulwafu, 2004).

installations while other less influential areas will receive no services; and

• lack of joint water and sanitation sector review.

A serious incident mentioned by Ferguson and Mulwafu (2004) in their study in the Zomba district needs to be taken seriously. In 2002, a Ministry of Water development team reported high fecal coloform counts (too high for safer human consumption) in 12 of 13 water sources tested. However district officials sought to suppress publicity about the findings. This incident illustrates that overall there are many administrative challenges faced from planning, budgeting, coordination and prioritisation by the water and sanitation sector in Malawi. There is a lot of work that needs to be done especially in relation to reconciliation of the decentralisation process to the new water act to clear confusion, addressing environmental problems, and prioritisation issues. Equally important to address are the societal issues related to the establishment of boreholes addressed by DeGabriele (2002) such as difficulty in working together, challenges with village leaders and maintenance of boreholes.

4. Presentation of national level statistics for Malawi

4.1. Review of available data at the national level

Data presented are from the following surveys: Malawi Demographic and health survey (DHS) (1992, 2000), Centre for Social Research (CSR) 2001, Malawi Population and Housing Census (PHC) 1998, Integrated Household Survey (HIS) 1998, National Aids Control Program (NACP) 1996-1999, Malawi Social Indicator Survey (MSIS) 1995. Malawi Knowledge, Attitudes and Practice in Health Survey (MKAPHS) 1996 and National Statistics Office (NSO) 2000 in Zomba. Data source for Sub Sahara Africa is World Development Indicators (WDI), 2002.

The general impression of available data at the national level in Malawi is characterised as follows:

- *For health sector:* There are missing data for the health sector data on service standards and use and for outcome and status. Data is available for 1992, 1995, 1996, 1998 and 2000.
- *For education sector:* Literacy rate data is available for only 1998. The Ministry of Education and The Malawi National Commission for UNESCO (2004)

noted the following regarding input into the sector: multilateral and bilateral donor support to Malawi are reflected in recurrent expenditure but since the money goes into a consolidated fund, it is difficult to track how much of the funds goes into the different sectors; donors also contribute to the budgetary support for capital expenditure; and lastly there are some external funding that Malawi receives which are not reflected in the budget documents.

- *For water and sanitation sector:* There is lack of data on recurrent expenditures (especially after 1994). Data on access for improved water and improved/ safe sanitation is available for four years only (1992, 1995, 1996 and 2000).
- *Poverty data:* Poverty data is available only for 1997/98. Information on GDP per capita are from NSO, but are deflated by PPP international dollar rates presented by World Development Indicators 2002 from the World Bank.

The frequency of available data in the different sectors coincides with the different census years.

4.2. The monitoring steps for the health sector

4.2.1. Sector & internal sector allocation

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
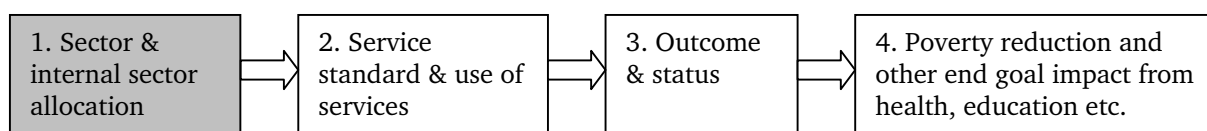
For the first monitoring step we are presenting two indicators, as follows:

- *Public health expenditures as percent of government consumption expenditures.* This indicator shows the commitment of the government to the health sector. There is unfortunately the problem that public health expenditures include investments and donor contributions while government consumption expenditures do not. Hence you should expect quite high levels for these percentages.

- *Health expenditure per capita* in PPP$. This is an indicator of real resource allocation and tells you what to expect of output. The previous indicator does not show the resources allocated and hence is not well designed for comparisons with the output. For that purpose you need an indicator of real resources, such as this one.

Figure 4.0. **Grand total government health expenditures and recurrent expenditures, as percent of total government expenditures, Malawi, 1990-2000**

GTEXP AS % - Grand total government health expenditures as percent of total government expenditures	Year	GTEXP AS %	RECEX AS %
	1990	11.94	9.17
	1991	13.75	10.27
	1992	11.10	8.89
	1993	17.03	8.95
◆	1994	5.91	4.62
RECEX AS % - Recurrent health expenditures as percent of total government expenditures	1995	9.86	6.02
	1996	8.64	7.23
	1997	10.70	8.47
	1998	12.91	11.03
	1999	12.41	7.47
■	2000	7.47	7.12
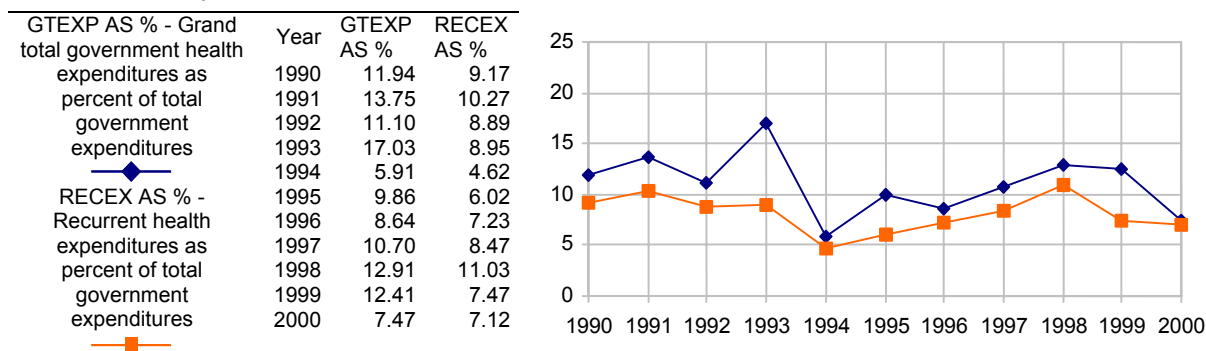
Figure 4.1. **Grand total government health expenditures, per capita, PPP$, Malawi, 1990-2000**

	Year	EXP/Cap
	1990	8
	1991	8
	1992	7
	1993	11
Health expenditure per capita, PPP$	1994	9
	1995	10
◆	1996	6
	1997	8
	1998	10
	1999	9
	2000	9

4.2.2. Service standard & use of services

1. Sector & internal sectorallocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.
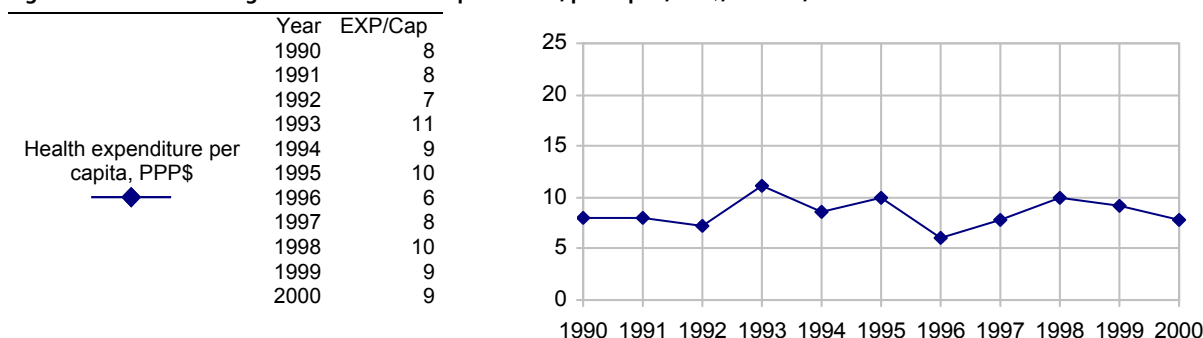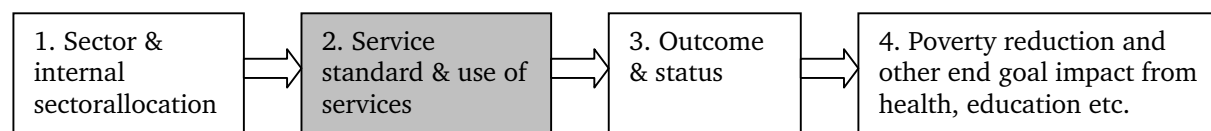
For the second monitoring step, there were two variables presented: *immunisation rate for children under 12 months (DPT[14])* and *per cent of births attended by skilled personnel*. Vaccination or immunisation especially DPT is a high priority area in preventive health and at the same time data are available on a regular basis, thus it was chosen as an indicator for health service standard and use of services. Birth attended by skilled personnel is another important indicator included in the International Development Goals and Paris21.

Figure 4.2. Output in health sector, Malawi, 1990-2000

	Year	IMMUN	BIRTH ATT
IMMUN - Immunisation, DPT (% of children under 12 months)	1990	..	..
	1991	..	..
	1992	89	55
	1993	..	..
◆	1994	..	..
	1995	76	49
BIRTH ATT -Birth attended by skilled personnel (%)	1996	81	
	1997	..	..
	1998	..	..
■	1999	..	..
	2000	84	56

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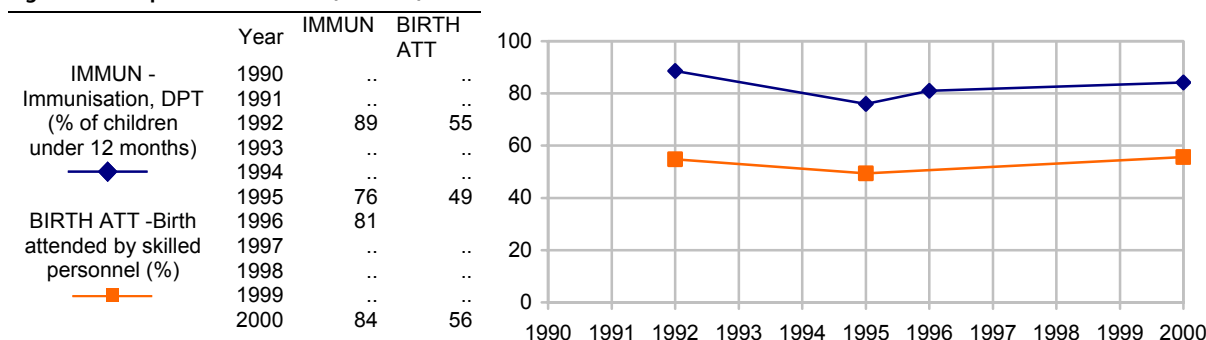
[14] DPT immunisation stands for diphteria, pertusis (whopping cough) and tetanus vaccination.

4.2.3. Sector outcome and status

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
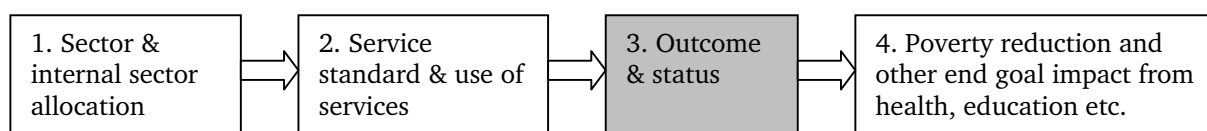
There were also two variables presented for outcome status data: *mortality rates for infants* and *child mortality rates*. With an aim to follow the effects of resources we have focused upon mortality for children excluding the infants, i.e. children from 12 to 59 months. Another important indicator presented here is infant mortality rates. An important point that was brought up Wold *et al.* (2004) was that ideally outcome in health status should be affected by interventions and improvements in health services. On the other hand, we should also bear in mind that outcomes may also be realised due to improvements in other sectors and not necessarily to changes in the health sector per se.

Figure 4.3. Outcome in health sector, Malawi, 1990-2000

	Year	Mort <5	Mort Inf
MORT <5- Mortality rate (per 1,000 children) ◆	1990	..	..
	1991	..	..
	1992	240	136
	1993	..	..
MORT Inf - Mortality rate, children under 12 months, (per 1,000 children) ■	1994	..	..
	1995	211	133
	1996	..	..
	1997	..	..
	1998	..	121
	1999	..	..
	2000	203	133
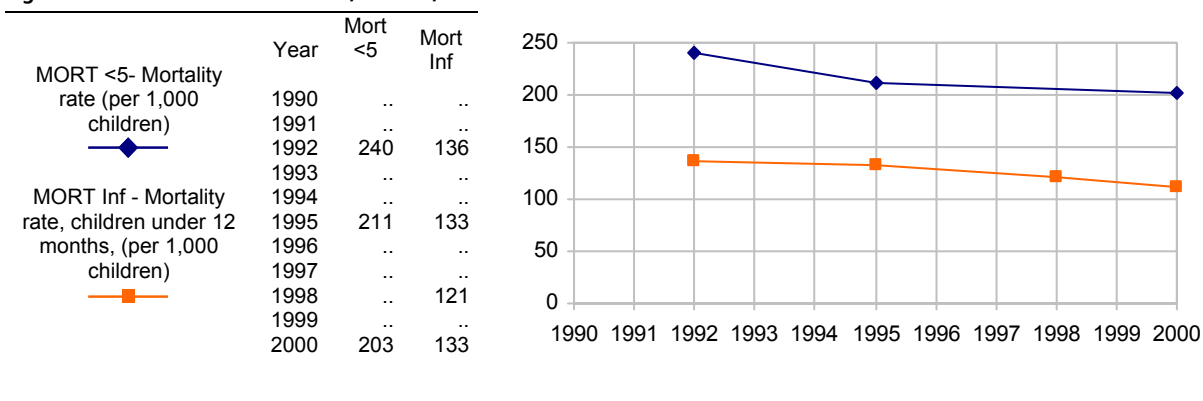
4.2.4. The health sector chain in Malawi

Malawi's grand total government health expenditures as per cent of total government expenditures averaged 11% from 1990-2000, with the highest percentage budget of 17% in 1993 and the lowest 6% in 1994 (Figure 4.0). The big decrease from 1993 to 1994 could have been a reflection of the change in priorities of the incumbent government. Recurrent health expenditure as percent of total government expenditure decreased from 9.17% to a low 4.62%. After the change in government in 1994, recurrent health expenditures increased until 1998 and decreased towards 2000, but not as low as the 1994 level. Based on figure 4.1 grand total health expenditures per capita in Malawi (measured in PPP$) from 1990 to 2000 fluctuated, with higher points in 1993, 1995, and 1998.

There is limited data available for the variable output in the health sector. Based on available data we see that both output figures i.e. immunisation rate (DPT) and births attended by skilled personnel decreased from 1992-1995. (See Figure 4.2). Immunisation rates increased from 1996-2000 but still lower than the 1992 level. The low immunisation rate can be attributed to the following:
- the global shortage of Poli, BCG and DPT vaccines due to manufacturers problems, and
- the cancellation of immunisation services in outreach clines due to transport and cold chain problems (i.e. vaccines must be kept cold and

spoilage affects vaccination schedules) (MOPH, 2003).

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The per cent of births attended by skilled personnel of 56% in 2000 is just a slight improvement 55% in 1995. The world average for births attended by skilled personnel is 61.1%, less developed countries averaging 57.5%, the least developed at 31.9% and the southern African average is 82.9% (WHO, 2004). Outcome data on mortality rates on the other hand decreased for both infants and for children 12-59 months (Figure 4.3).

Output of investment in the health sector i.e. DPT immunisation (for children under 12 months) is expected to produce a desired outcome such as lower mortality rates. The expected outcome was seen for Malawi with a decrease of mortality rates for children 12-59 years months old from 1992 to 2000 (Figure 3.4). Infant mortality rate also showed the same decreasing trend but increased from 1998 to 2000. However, there are other relevant factors that should be considered when looking at mortality rates like nutrition, epidemics, wars, etc. HIV prevalence rate increased from 8.6% in 1998 to 19.5% in 2000 for Malawi[15]. It would be interesting to look into mortality rates and HIV/AIDs in a future study.

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[15]Malawi Ministry of health and Population (2003b:19) notes that AIDS cases vary from district to district and the national average is 181.

4.3. The monitoring steps for the education sector

4.3.1. Sector & internal sector allocation

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
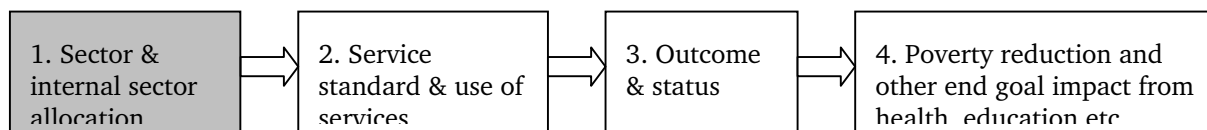
As for the education sector we are presenting two indicators, as follows:

- *Public education expenditures as percent of government consumption expenditures*. This indicator shows the commitment of government. There is unfortunately the problem that public education expenditures include donor contribution while government consumption expenditures do not. Hence you should expect quite high levels for these percentages
- *Education expenditure per child in school age*, PPP$. The previous indicator does not show the resources allocated and hence is not well designed for comparisons with the output. This indicator shows how much is the real resource allocation in the sector.

Figure 4.4. Input to education sector, Malawi, 1990-2000

	Year	EXP/Child	Exp % Gov
EXP/Child - Gov rec. expenditure per child in school age, PPP$	1990	2.15	6.62
	1991	2.04	7.39
	1992	2.03	6.81
	1993	3.13	10.66
	1994	3.11	4.91
EXP % Gov recurrent expenditure as per cent of total government expenditure, per cent.	1995	1.54	3.59
	1996	3.54	12.14
	1997	3.94	13.52
	1998	4.80	15.72
	1999	4.99	17.40
	2000	4.79	12.53

4.3.2. Service standard & use of services

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |

For the education sector, school enrolment is not only an indicator but also the most important part of service provision in education. Hence we have chosen *net enrolment* as the indicator even if there are some data gaps. Net enrolment, varies by definition from 0 to 100 per cent, and indicates the proportion of children at school age (6-13) really enrolled in school (NSO, 2002). But some pupils do not know their real age because their mothers might be illiterate and have no records of birth, thus children who are over-aged might well be included. This could theoretically press the indicator above 100. Other interesting indicators presented are *certified teachers in the primary level*, *pupil-teacher ratio* and *ratio of girls to boys*.

Figure 4.5. Output in education sector, Malawi, 1990-2000

OUTPUT	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NET ENR	81.8	64	60	55.9	71.4	95.7	..	..	98.7	76	..
CERT TEACHER	..	88	84	82.2	83.9	58	66.9	61.9	51.3	..	..
P/T RATIO	..	88	84	82	84	58	67	62	51	..	..
RATIO G/B	80	81	84	89	93	89	89	91	94	93	94

4.3.3. Sector outcome and status

| 1. Sector & internal sector allocation | 2. Service standard & use of services | 3. Outcome & status | 4. Poverty reduction and other end goal impact from health, education etc. |
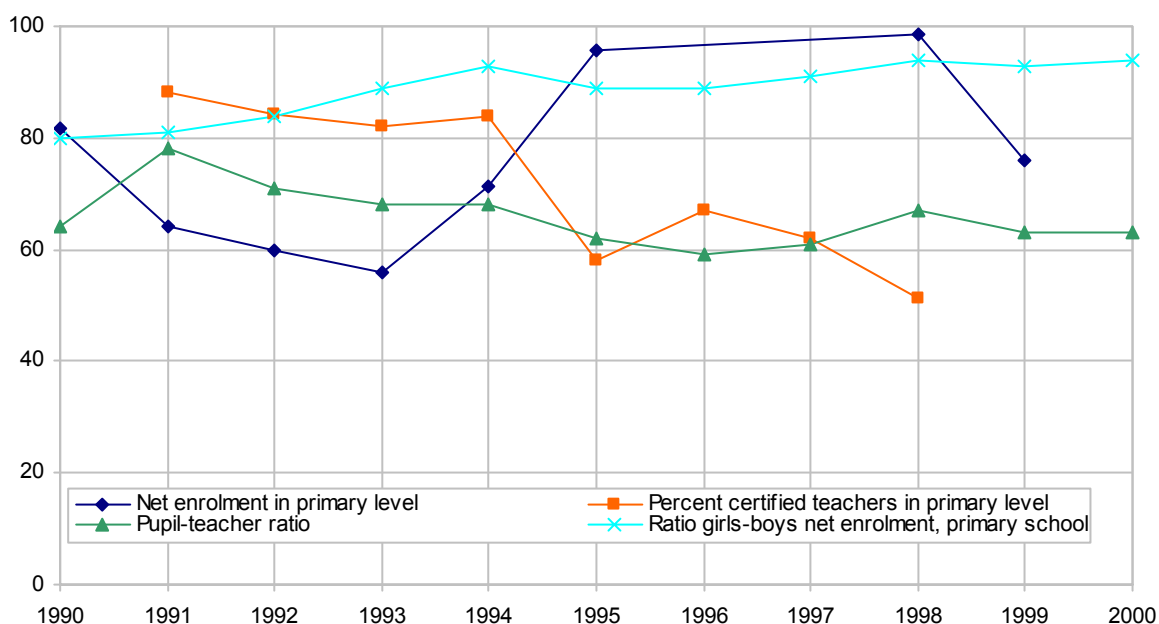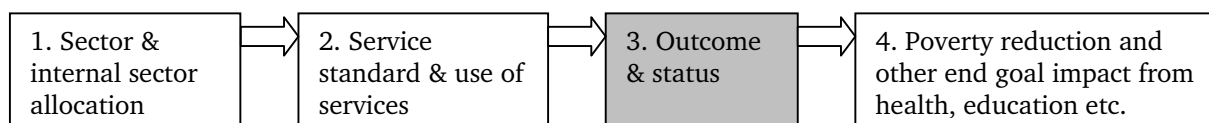
The main impact of school enrolment is a long-term reduction in illiteracy. However there is little data on illiteracy so we have chosen to present two related indicators, *percentages enrolled in the fourth grade* and *percentage that passed the Junior Certification of Secondary Education (JCE) examinations.*

Figure 4.6. Outcome in education sector, Malawi, 1990-2000

% ENR 4 GRD- Percentage enrolled in 4th grade % Pass JCE - Percent of students passing JCE, average each of 6-13 years	Year	% ENR 4GRD	%PASS JCE
	1990	61	3
	1991	63	3
	1992	68	3
	1993	71	4
	1994	71	4
	1995	101	4
	1996	99	4
	1997	95	20
	1998	91	17
	1999	94	19
	2000	93	10
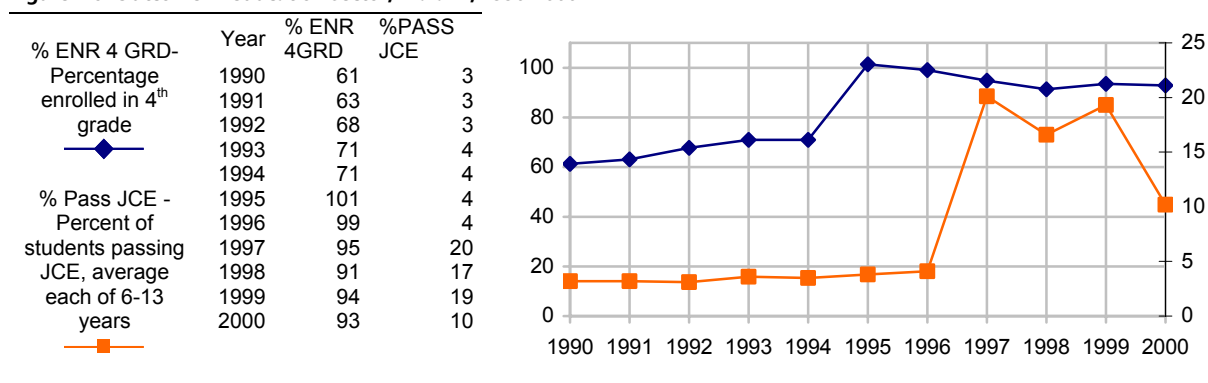
4.3.4. The education sector chain in Malawi

On the input side, Malawi increased considerably its education expenses as percent of government expenditures, jumping from 3.6% in 1995, reaching its peak in 1999 at 17.4% and down again to 12.5% in 2000 (figure 4.4). This drastic increase can be attributed to

the new government's move to invest in the education sector.[16] On a per child basis, the expenditure generally

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[16] The new government eliminated school fees for primary education and increased sharply public spending on education (World Bank, 1995).

increased in the 10 years span but with the lowest recorded budget of 1.5% in 1995. This low budget on a per child basis can be attributed to 25.4% increase in enrolment in 1995 and a decrease in government's expenditures towards the sector. We see that in 1994 the government spent 4.9% of its budget for education but despite the drastic increase in student enrolment, the government even decreased its budget (figure 4.4).

Output indicators presented in figure 4.5.6 show different patterns. Net enrolment rate in the primary level increased drastically from 1993 to 1995, maintained until 1998 but dropped drastically in 1999 (but the level was still above the 1993 level). There was an improvement seen in the ratio of boy and girls in school. Pupil-teacher ratio dropped considerably after 1994. World Bank (1995) reports that in 1994 and 1995, the increase in spending in the education sector has been used to finance salaries of newly recruited teachers. However, it should be pointed out that though the pupil-teacher ratio remained satisfactory due to a massive employment of new teachers for primary schools, many were not qualified. There was an alarming reduction in the share of teaches who

were certified, from 84% in 1994 to a low 51% in 1998.

On the outcome measurement, it is interesting to note that though the number of qualified teachers decreased after 1996, the number of students passing the JCE (Junior Certification of Secondary Education) for children from 6-13 years old still managed to jump from 4.1% in 1996 to 20.1% in 1997 (Figure 4.6). There are speculations regarding this phenomenon and concerns of security of examination was raised by Ministry of Education and Malawi National Commission for UNESCO (2004) and Chakwera *et al.* (2004). However also the share of children to remained in school long enough to reach 4th grade increased to above 90%. This was of course possible since there now was free access to education, but the fact that the parents did not choose to take their children home for farm work and household chores was also a reflection of the parents finding it worthwhile to retain their children at school and hence a positive indicator of the effectiveness of investment and output in the Malawi education sector.

4.4. The monitoring steps for the water and sanitation sector

4.4.1. Sector & internal sector allocation

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
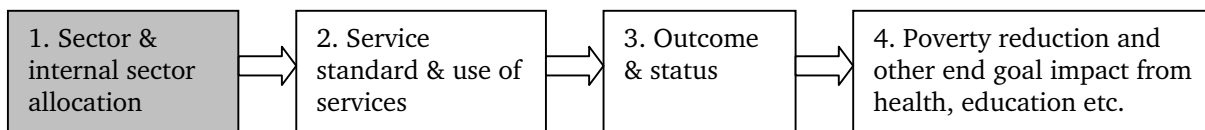
For the first monitoring step we are presenting two indicators, as follows:
- Water and sanitation recurrent government expenditures as percent of government consumption expenditures. This indicator shows the commitment of the government to the water and sanitation sector. There are unfortunately two large problems with these data. The government account does not present one figure for this expenditure and this is only the main budget line. Several other types of water and sanitation expenditures are missing. On the other hand, as for health and education the sector allocation includes investments and donor contributions while government consumption expenditures do not. Hence you should expect quite high levels for these percentages.
- Water and sanitation recurrent government expenditure per capita in PPP$. Ideally per capita data is a better indicator and well designed for comparisons of real resource allocation.

Figure 4.7. Input to water and sanitation sector, Malawi, 1990-2000

	Year	EXP per capita	EXP AS %
EXP per capita- Water supply recurrent gov. exp. per capita, PPP$	1990	0,23	0,35
	1991	0,22	0,38
	1992	0,72	1,11
	1993	0,78	1,18
EXP as % - Water supply recurrent gov. expense as % of government expenditures	1994	0,62	0,42
	1995	..	..
	1996	..	..
	1997	0,06	0,08
	1998	0,07	0,09
	1999	..	..
	2000	..	..

.

4.4.2. Service standard & use of services

1. Sector & internal sector allocation	⟹	2. Service standard & use of services	⟹	3. Outcome & status	⟹	4. Poverty reduction and other end goal impact from health, education etc.
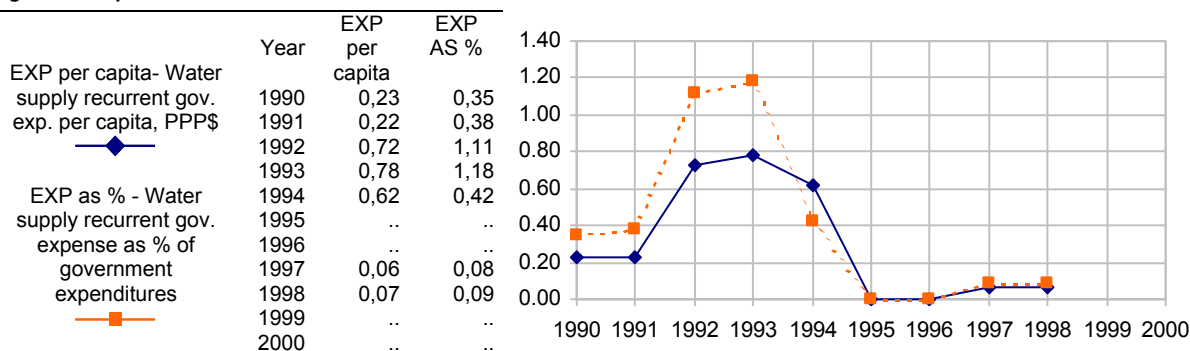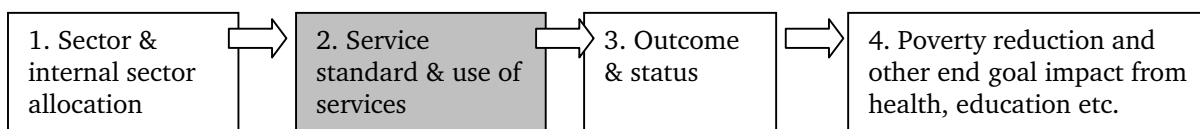
For water and sanitation sector the indicator chosen is *access to improved/safe water and sanitation facilities*. Standard population censuses, health surveys and general household surveys usually collect information on the main source of water of household. We should also note that in reality there is no difference in statistics gathered for the terms "improved" and "safe". The figures below show the percentage of the population with access to improved/safe water and sanitation in Malawi.

Figure 4.8. Output in water and sanitation sector, Malawi, 1990-2000

	Year	% Acc water	% Acc sanit
% Acc water- Share of population with access to improved (/ safe) water	1990	..	..
	1991	..	..
	1992	48	72
	1993	..	..
	1994	..	..
% Acc sanit- Share of population with access to improved (/safe) sanitation	1995	48	72
	1996	47	70
	1997	..	..
	1998	..	..
	1999	..	..
	2000	66	82

4.4.3. Sector outcome and status

1. Sector & internal sector allocation	⟹	2. Service standard & use of services	⟹	3. Outcome & status	⟹	4. Poverty reduction and other end goal impact from health, education etc.
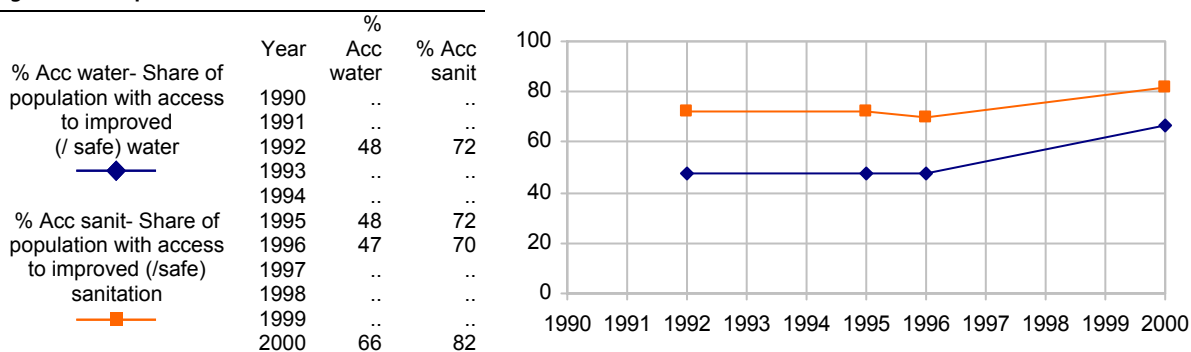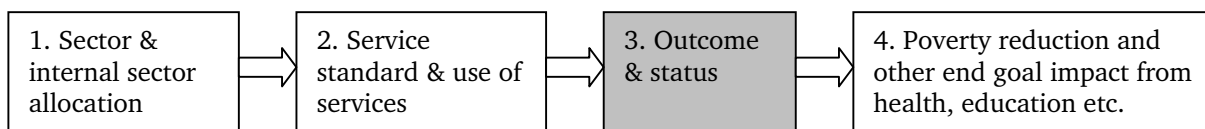
An improvement in water and sanitation service is expected to affect the outcome in the health sector, that is improved health and especially by avoiding diarrhoea. Science has paved way to the development in the understanding of the relationships between water and human health. The importance of water in the transmission of pathogens from human and animal faeces including water has been recognized (WHO, 2003). Based on research findings, the indicator chosen that can both measure the outcome for both water and sanitation improvement is the *incidence of diarrhoea for children below 5 years of age*.

Figure 4.9. Outcome in water and sanitation sector, Malawi, 1990-2000

YEAR	Diarrhoea, incidence
1990	..
1991	..
1992	12
1993	13
1994	13
1995	13
1996	14
1997	14
1998	14
1999	15
2000	15
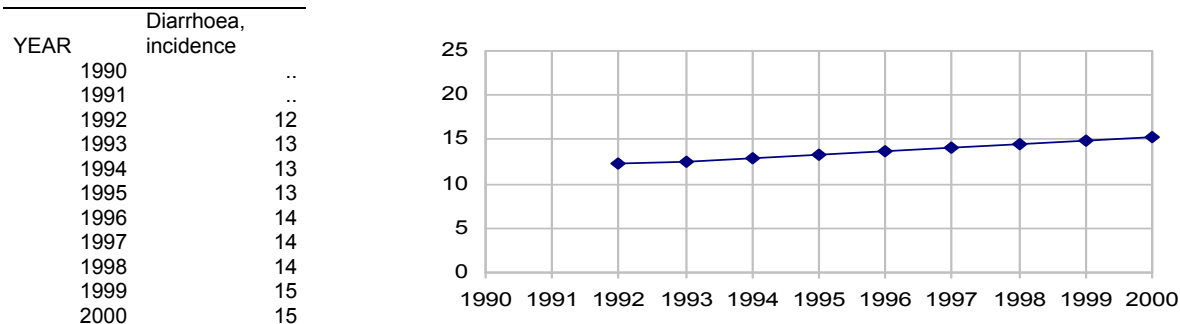
4.4.4. The water and sanitation sector chain in Malawi

Input to water and sanitation sector per capita is below the dollar with a highest per capita expense of PPP$ 0.78 recorded in 1993. It is interesting that expense before 1995 were a lot higher, with 1992 and 1993 as exceptionally high. De Gabrielle (2002) mentions the pattern of boreholes being used by political parties as vote winners. Thus higher figures before 1994 can be part of the pre-election campaigns of the government.

Based on the few data available, output in the sector showed that 48% of Malawians had access to water, increasing steadily to 66% in 2000. Access to sanitation facilities was around 72% in Malawi in 1992 and increased to 82% in 2000. But there is need for more improvement in access to sanitation facilities in Malawi.

Though there was a decrease in the investment to the water and sanitation sector as seen through the percentage of government budget and also on a per capita basis, access to improved water and sanitation still increased. This can point to an increase in private investments (domestic and international) towards the sector or an increase in private initiatives. Overall investment in water and sanitation sector in Malawi did not seem to have an impact on the outcome (measured through incidence of diarrhoea). We saw a steady increase of incidence of diarrhoea of children <5 years of age from 1992 to 2000 (Figure 4.9) despite the increases in government budget and per capita expense for the sector.

4.5. The final monitoring step, end goals, human welfare and poverty reduction

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
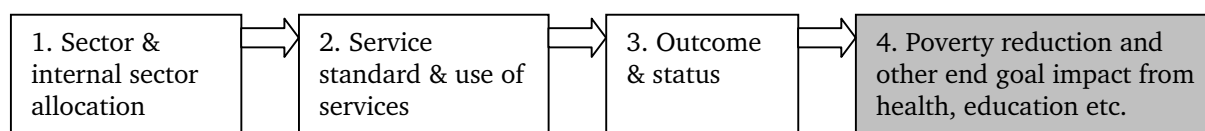
Before presenting statistics for two and two steps jointly, we address the common goal, measured by the poverty indicators. It should be stressed that this is not an attempt to test any causal relationships but just focuses on the relationship between reduced poverty and economic development.

It is a challenge to monitor whether investments in the different sectors are followed by reduced poverty. Needless to say, aside from the fact that there is not one factor that can measure change in a society's poverty situation, poverty data at the country level for most countries is yet to be developed. For this presentation poverty indicator, the original choice was one PPP$ per person per day, but data is available only for 1998 at the national level. Other possible indicators have been considered like life expectancy; however, life expectancy at birth figures can be affected by HIV/AIDS epidemic. Poverty indicators like poverty headcount and poverty gap on the other hand is also available only for 1998 in Malawi. GDP figures can easily fluctuate especially in a small landlocked country like Malawi. The country is predominantly agriculture and transportation accessibility can be easily stopped as history shows with regional instability. Thus *Gross Domestic Product per capita*, PPP (current international $) is chosen for this report.

Figure 4.10. GDP per capita, PPP (current international $), Malawi, 1990-2000

YEAR	GDP per capita
1990	488
1991	461
1992	506
1993	463
1994	547
1995	569
1996	575
1997	581
1998	602
1999	615
2000	
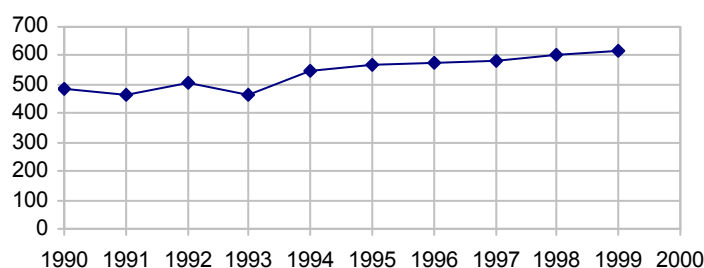
4.6. Are changes in the health sector at one level followed by changes at the next level?

4.6.1. Are changes in health sector resource allocation followed by changes in service standard?

1. Sector & internal sector allocation	2. Service standard & use of services	3. Outcome & status	4. Poverty reduction and other end goal impact from health, education etc.
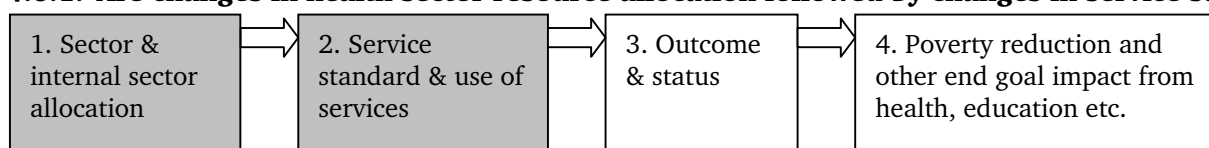
The first monitoring step is to investigate relationships between input and service standard and use. For this relationship, it is expected that the higher the *health expenditures per capita,* then the more health services should be delivered to the public. An indicator for service standard used is *immunisation coverage (DPT for children under 12 months).*

Figure 4.11. Input-output in Health Sector Malawi, 1990-2000

EXP - Health expenditure per capita, PPP (current international $)

IMMUN - Immunisation, DPT (% of children under 12 months)

Year	HEXP	IMMUN
1990	8	..
1991	8	..
1992	7	89
1993	11	..
1994	9	..
1995	10	76
1996	6	81
1997	8	..
1998	10	..
1999	9	..
2000	8	84

4.6.2. Are changes in health sector service standard & use of services followed by changes in the outcome and health status?

1. Sector & internal sector allocation	2. Service standard & use of services	3. Outcome & status	4. Poverty reduction and other end goal impact from health, education etc.

For this monitoring step, the expectation is that output should have an impact on the outcome. The output chosen for this relationship is *immunisation rate* and the outcome indicator is *mortality rate*. It is expected that the higher the output (immunisation rate, DPT for children under 12 months) the lower the outcome (mortality rate per 1,000 of children from 12-59 months). The usual recorded data for outcome is infant mortality (deaths per 1,000 children below one year old) and mortality for children under 5 years of age (deaths per 1,000 children below five years old). However infant mortality rate does not reflect the effect of vaccination. This report aims to follow the effects of invested resources in the health sector, thus we focused upon *mortality rate for children excluding the infants*, i.e. from passing one year to reaching five years. But it should be noted that there could also be other variables affecting drastically the mortality rate such as epidemics, natural catastrophes and wars.

Figure 4.12. Output-outcome Health sector Malawi, 1990-2000
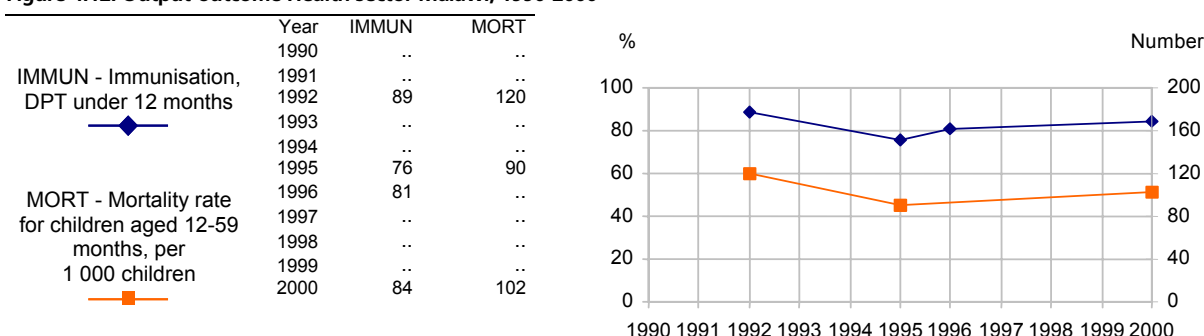
IMMUN - Immunisation, DPT under 12 months

MORT - Mortality rate for children aged 12-59 months, per 1 000 children

Year	IMMUN	MORT
1990	..	..
1991	..	..
1992	89	120
1993	..	..
1994	..	..
1995	76	90
1996	81	..
1997	..	..
1998	..	..
1999	..	..
2000	84	102

4.6.3. Are changes in health sector resource allocation followed by changes in the outcome and health status?

1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.
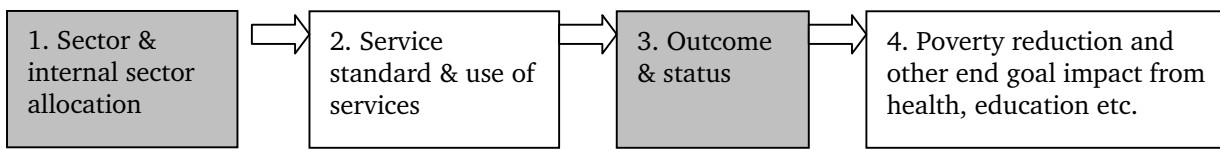
Relationship between input and output is presented here because input can give an indication of total service availability and a closer relationship is expected. For the indicator chosen, it is expected that the input (measured through *health expenditures per capita PPP $*) have a negative relationship with the outcome (measured through *mortality rate for children for 12 to 59 months*). As pointed out in the output-outcome relationship, it is important to note that there are also other variables affecting child mortality rates.

Figure 4.13. Input-outcome Health sector Malawi, 1990-2000.
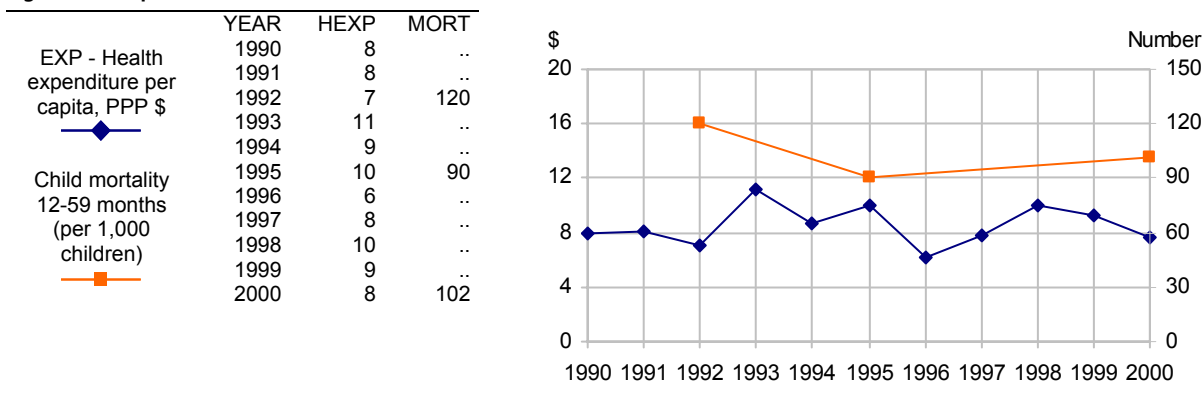
YEAR	HEXP	MORT
1990	8	..
1991	8	..
1992	7	120
1993	11	..
1994	9	..
1995	10	90
1996	6	..
1997	8	..
1998	10	..
1999	9	..
2000	8	102

EXP - Health expenditure per capita, PPP $

Child mortality 12-59 months (per 1,000 children)

4.6.4. Are changes in health sector outcome and health status followed by changes of end goal achievements

1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.
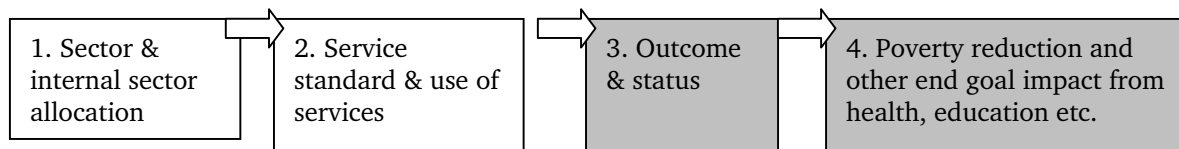
We would expect that improved health (measured by lower *mortality rates of children from 12-59 months*) reduce poverty for two reasons. First, the main resource of most poor people is their own labour and improved health can improve their working capacity and hence contribute to reducing poverty. Second, any decline in health (personal or other family members) can affect resources thus increasing their poverty.

Unfortunately as of 2004, statistical information on poverty is only available for one point in time i.e. for 1998, and hence we are not able to present any trends for the development of poverty. That will change when new data will be available in late 2005, but in the meantime, we have to rely on a proxy indicator for poverty reduction. Unfortunately consistent trend data for child malnutrition is not available and we have then chosen *GDP per capita* as the proxy indicator. We can then miss information of changes in the distribution of income and growth, but GDP per capita is a well-suited indicator of the average level of income.

Figure 4.14. Outcome-impact Health Sector Malawi, 1990-2000

Year	MORT	GDP per ca.
1990	..	488
1991	..	461
1992	120	506
1993	..	463
1994	..	547
1995	80	569
1996	..	575
1997	..	581
1998	..	602
1999	..	615
2000	102	..

Child mortality 12-59 months (per 1,000 children)

GDP per capita PPP $
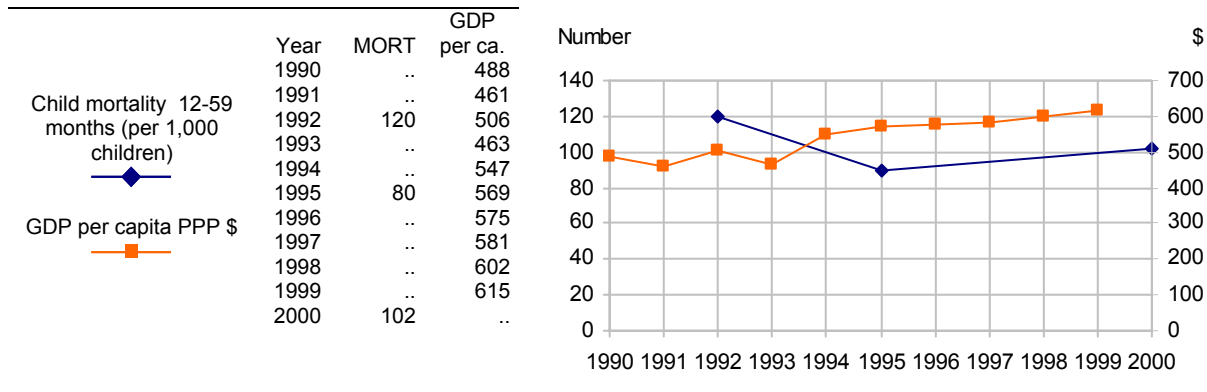
4.6.5. Assessment of whether changes at one level is followed by changes at the next level for the health sector in Malawi.

Figures 4.11-4.14 monitor the process in the health sector from sector resource allocation to services rendered then outcome of the services rendered and lastly to the relationship of health sector investment and consequent improvement on the end goal being poverty reduction.

Input-output
Higher inputs ideally should yield higher outputs, but this was not the case. Fluctuations in health expenditures did not affect the vaccination coverage during this period. This can be attributed to the fact that not all donor contributions are included or reported in the government health budget.

Output-outcome
We would expect that higher output i.e. higher immunisation rate indicated by completed DPT vaccination for children under 12 months, would be followed by better outcome i.e. lower mortality rate of children from 12 to 59 months. But considering that a number of other factors also may heavily affect the mortality rate such as epidemics, natural catastrophes and wars, we do not expect a strong effect. The real

uncertainty is however the time lag. From immunization at 0-1 years to being exposed to potential sickness etc. in the period 12-59 months, it takes an average of 2 ½ years. Hence the increased vaccination from 1995 to 1996 pays off in reduced mortality, but the further increase up to 2000 is not followed by a similar decrease in child mortality.

Input-outcome
We expected that increased public resources allocated for the health sector input, measured as public health expenditures per capita, would reduce mortality rate for children from 12 to end of 59 months. However as mentioned other factors might also affect mortality rates. Hence when there is an overall albeit a weak relationship between input and the outcome, that is a valid indication that resources to the health sector *may pay* off in reduced child mortality, but no real verification.

Outcome-impact
The ultimate goal of investing in the health sector is for improvement of the physical well being of the population. We see that improved health conditions as represented by decrease in mortality rate of 12-59 months had positive relationship with GDP per capita.
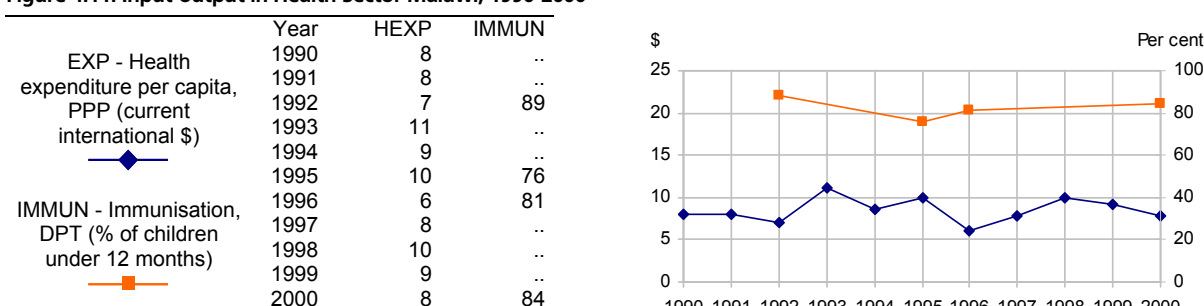
4.7. Are changes in the education sector at one level followed by changes at the next level?

4.7.1. Are changes in education sector resource allocation followed by changes in service standard?
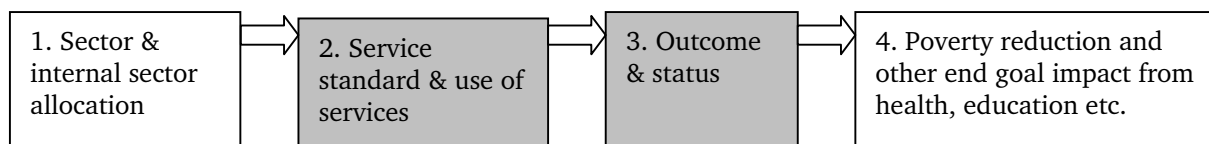
1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.
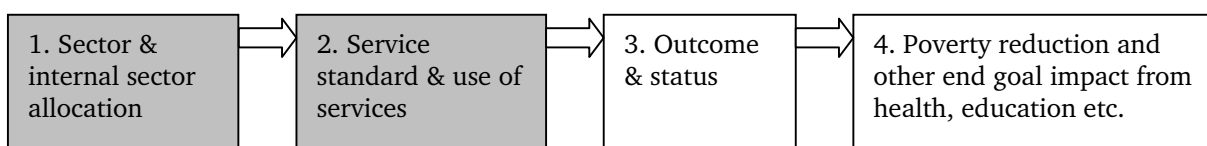
In this relationship it is expected that resources allocated to the education sector should affect the scope and quality of services offered. The indicators presented in figure 3.16 for service standard are *net enrolment in the primary education sector* and *pupil-teacher ratio*. The expectation is that investment in the education sector will correspond to increase in net enrolment and lower pupil-teacher ratio.

Figure 4.15. Input-Output in the Education Sector, Malawi, 1990-2000
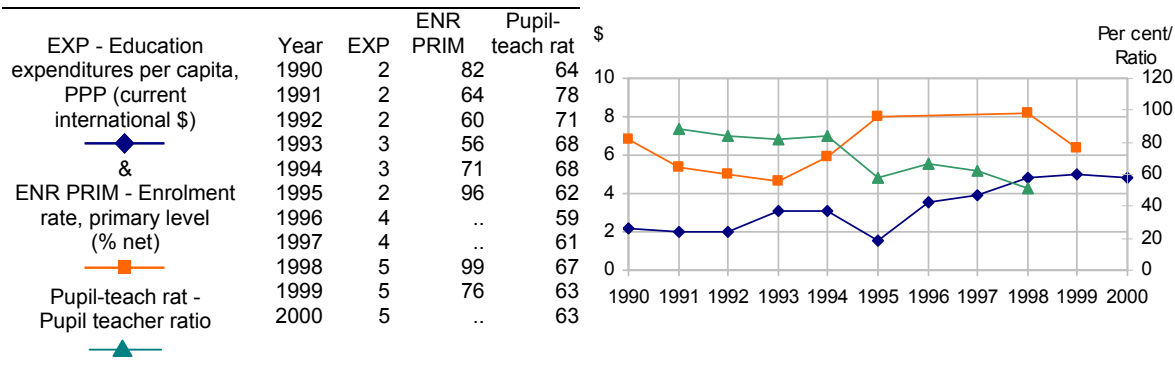
	Year	EXP	ENR PRIM	Pupil-teach rat
EXP - Education expenditures per capita, PPP (current international $)	1990	2	82	64
	1991	2	64	78
	1992	2	60	71
◆	1993	3	56	68
&	1994	3	71	68
ENR PRIM - Enrolment rate, primary level (% net)	1995	2	96	62
	1996	4	..	59
	1997	4	..	61
■	1998	5	99	67
Pupil-teach rat - Pupil teacher ratio	1999	5	76	63
	2000	5	..	63
▲				

4.7.2 Are changes in education sector service standard and use of services followed by changes in outcome and education status?

1. Sector & internal sector allocation	→	**2. Service standard & use of services**	→	**3. Outcome & status**	→	4. Poverty reduction and other end goal impact from health, education etc.

For this relationship, services offered by the education system are expected to affect the output. Thus it is expected that high rates of enrolment in the primary school will correspond to low illiteracy rates for 15-24 years old. Literacy rate data was recorded only for one year thus *percentages passing JCE* and *percentage of children enrolled in 4th grade excluding dropouts* were chosen amongst available indicators. *Net enrolment at the primary level* was chosen as an output indicator.

Figure 4.16. Output-Outcome in the Education Sector, Malawi, 1990-2000

	Year	ENR PRIM	PASS JCE	Child ENR 4
ENR PRIM - Enrolment rate, primary level (% net)	1990	82	3	61
	1991	64	3	63
◆	1992	60	3	68
Pass JCE - Ave of 6-13 passing JCE (%)	1993	56	4	71
	1994	71	4	71
■	1995	96	4	101
Child ENR 4- Percent of children enrolled in 4th grade excluding drop outs (%)	1996	..	4	99
	1997	..	20	95
	1998	99	17	91
	1999	76	19	94
▲	2000	..	10	93
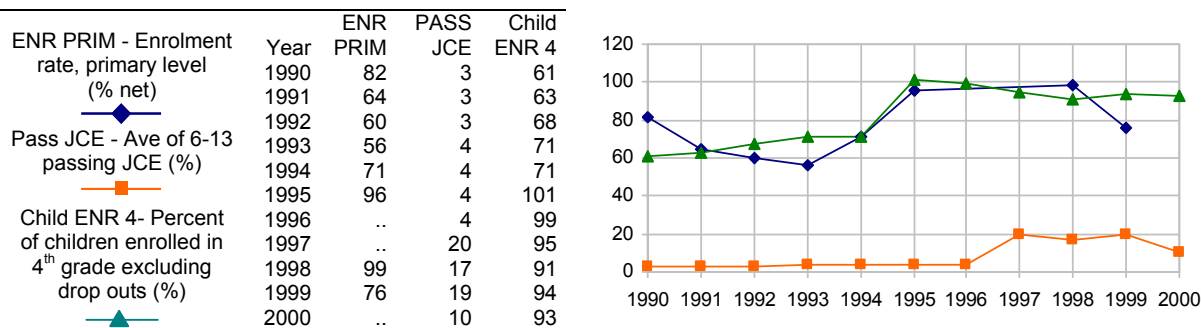
4.7.3 Are changes in education sector resource allocation followed by changes in final educational status?

1. Sector & internal sector allocation	→	2. Service standard & use of services	→	**3. Outcome & status**	→	4. Poverty reduction and other end goal impact from health, education etc.
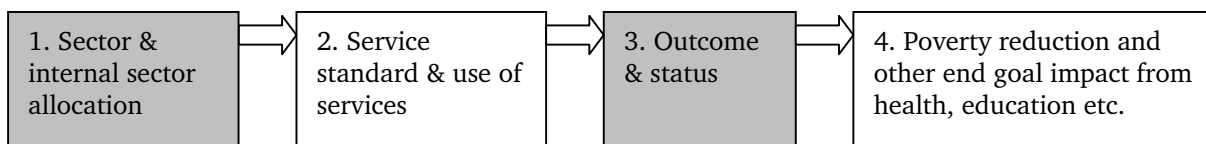
For this relationship, the expectation is that an increase in resource allocation for the education sector will have the corresponding positive impact in the outcome, that is an increase in the *percentage of children passing the JCE* and an *increase in the number of children enrolled in the 4th grade*.

Figure 4.17. Input-outcome in the Education Sector, Malawi, 1990-2000
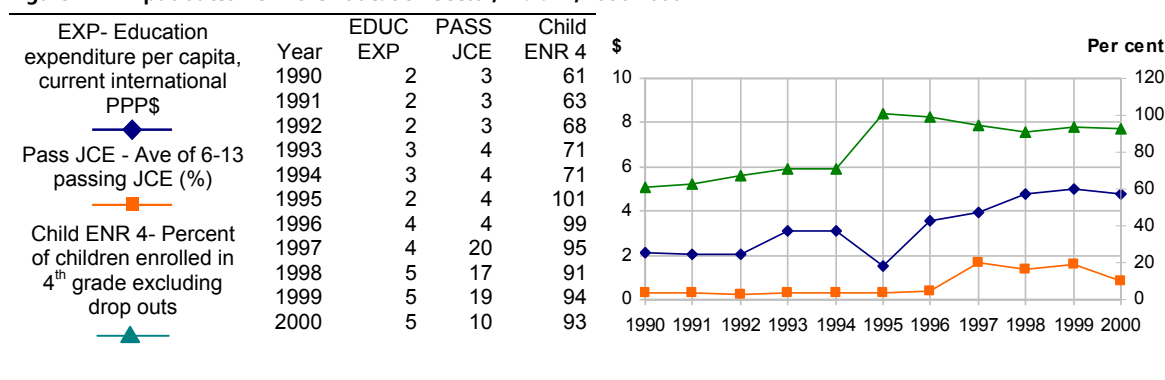
EXP- Education expenditure per capita, current international PPP$ ◆	Year	EDUC EXP	PASS JCE	Child ENR 4
	1990	2	3	61
	1991	2	3	63
	1992	2	3	68
Pass JCE - Ave of 6-13 passing JCE (%) ■	1993	3	4	71
	1994	3	4	71
	1995	2	4	101
	1996	4	4	99
Child ENR 4- Percent of children enrolled in 4th grade excluding drop outs ▲	1997	4	20	95
	1998	5	17	91
	1999	5	19	94
	2000	5	10	93

4.7.4. Are changes in education sector outcome and educational status followed by changes of end goal achievements?

1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.
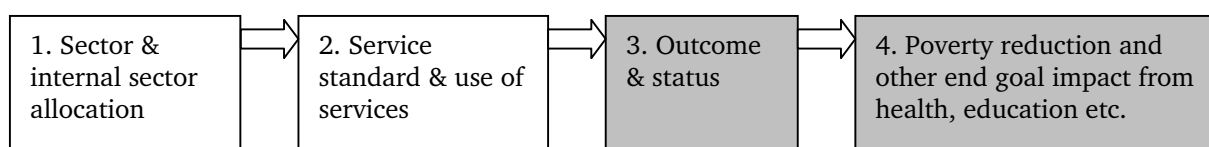
For this relationship, the outcome measured is expected to have a direct relationship with impact (measured by *GDP per capita*). The expectation is that low illiteracy rates correspond to low poverty incidence or a positive relationship. However literacy rate is available only for 1998, thus we used passing of *Junior Certificate Examinations* (JCE) which is regularly monitored.

Figure 4.18. Outcome-Impact in the Education Sector, Malawi, 1990-2000

Pass JCE - Ave of 6-13 passing JCE (%) ◆	Year	PASS JCE	ENR in 4th	GDP per ca.
	1990	3	61	488
	1991	3	63	461
ENR in 4th- Percent of children enrolled in 4th grade excluding drop outs ■	1992	3	68	506
	1993	4	71	463
	1994	4	71	547
	1995	4	101	569
	1996	4	99	575
GDP per ca - Gross Domestic Produce per capita, PPP (current international $) ▲	1997	20	95	581
	1998	17	91	602
	1999	19	94	615
	2000	10	93	
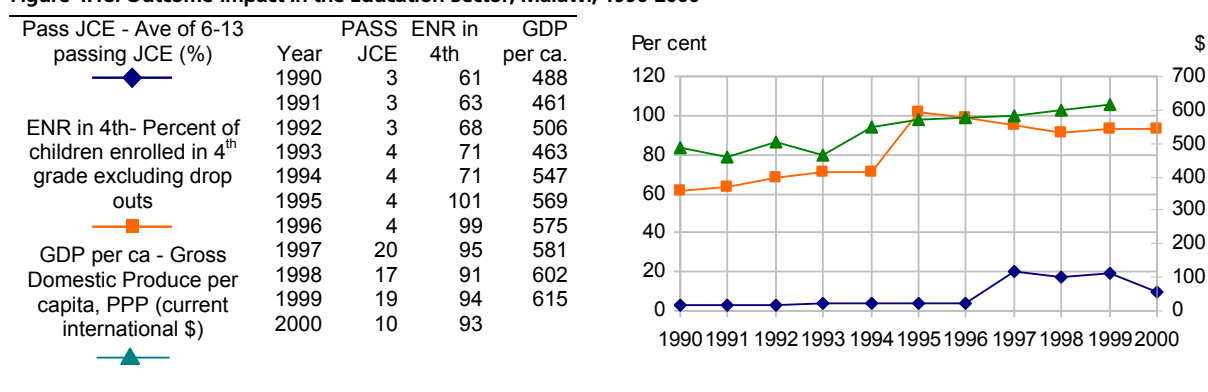
4.7.5. Assessment of whether changes at one level is followed by changes at the next level for the education sector in Malawi

For the education sector, Figures 4.15 - 4.18 tried to monitor the process in the education sector from sector allocation to services rendered then outcome of the services rendered and lastly to the goal impact of the education sector. Input was measured through educational expenditure per child in school age (PPP$) and output was measured through net school enrolment. Outcome is measured through percentage passing the JCE (average each of 6-13 years) and the impact indicator used is GDP per capita.

Input-output

Ideally higher inputs should reflect higher output. For the education sector, educational expenditures per child in school age increased slowly but steadily from 1990 to 2000 while output measured through net enrolment at the primary level, fluctuated with a big jump from 1994 to 1995 (figure 4.15). The big jump in enrolment from 1994 to 1995 can be attributed to the strong education program of the new government. Other output indicators like ratio of pupil-teacher in the primary level can also reflect the effect of input in the education sector. Data shows that the ratio of pupil-teacher remained stable despite the big fluctuation from 1994-1996. However there is no clear relationship seen between input and output in Malawi.

Output-outcome
For this relationship, output (net enrolment) is expected to produce an outcome (e.g. improvement of the literacy rate, increase of students passing qualifying exams). Based on the available data, percentage passing the JCE exams (an average for 6-13 years children) was chosen as an indicator. If the main focus had been at long term effect, literacy rate for 15-24 years old as for the Millennium Development Goal might be another good indicator. Figure 4.16 showed that in the education sector there is no clear relationship between output and outcome in Malawi.

Input-outcome
It is expected that an increase in resource allocation for the education sector will have the corresponding effect on the outcome measured by percentage passing the JCE exams (average each of 6-13 years). Figure 4.17 showed that there is no clear relationship in input and outcome for the education sector in Malawi. Outcome (% passing JCE) followed its own pattern, showing a

clear jump between1996-1997 (from 4% to 20%), fluctuated and decreased considerably towards 2000. As mentioned earlier, the Ministry of Education raised concern regarding examination security.

Outcome-impact education sector
The ultimate goal of investing in the education sector is for social development of the Malawians. For this step, the expectation is that outcome measured by percentage passing JCE has a direct relationship with the impact indicator chosen (GDP per capita, PPP current international $). Figure 4.18 however showed mixed results. Percentage passing JCE slowly increased from 1990 to 1997 and jumped considerably from 1996 to 1997 and fluctuated towards 2000, but at a much higher level. GDP per capita on the other hand fluctuated from 1990 to 1994 and increased steadily towards 2000. Thus we can say that outcome to the education sector behaved independently in relation to the overall national economic growth.

4.8. Are changes in the water and sanitation sector at one level followed by changes at the next level?

4.8.1. Are changes in water and sanitation sector resource allocation followed by changes in service standard?
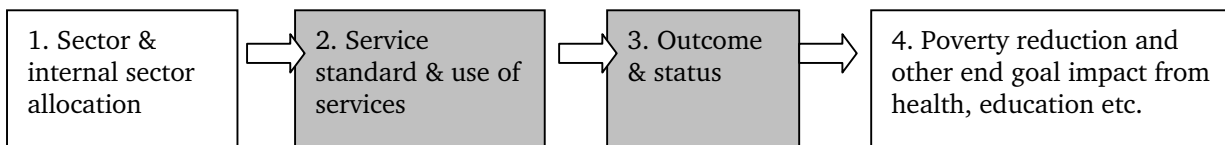
| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
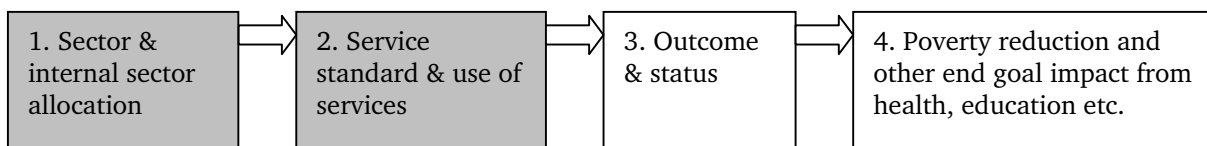
For the water and sanitation sector, the expectation is that investment in the sector will produce more output. Output in the water and sanitation sector is measured by *access to improved or safe* water source and sanitation facilities. It should be reiterated that in reality there is no difference in statistics gathered for the terms "improved" and "safe".

Figure 4.19. Input-output in water sector, Malawi, 1990-2000
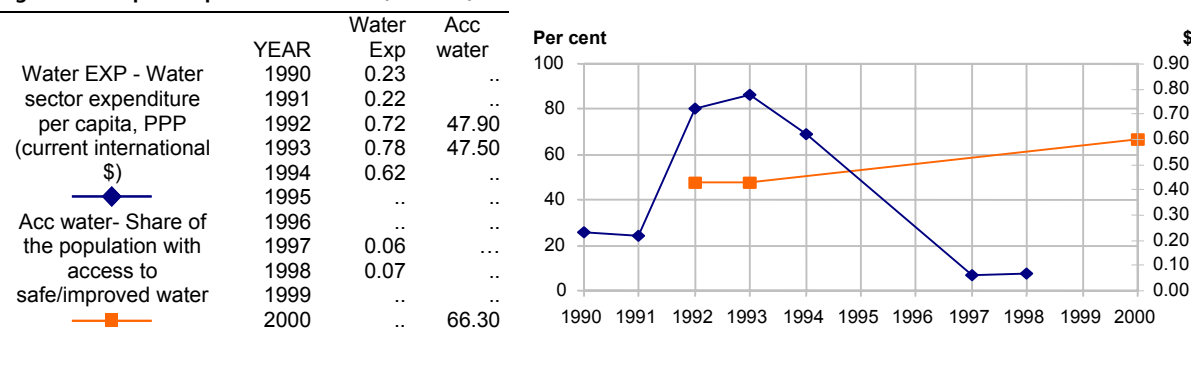
	YEAR	Water Exp	Acc water
Water EXP - Water sector expenditure per capita, PPP (current international $)	1990	0.23	..
	1991	0.22	..
	1992	0.72	47.90
	1993	0.78	47.50
	1994	0.62	..
	1995	..	..
	1996	..	..
Acc water- Share of the population with access to safe/improved water	1997	0.06	…
	1998	0.07	..
	1999	..	..
	2000	..	66.30

4.8.2. Are changes in water and sanitation service standard and use of services followed by changes in outcome and status?

1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.
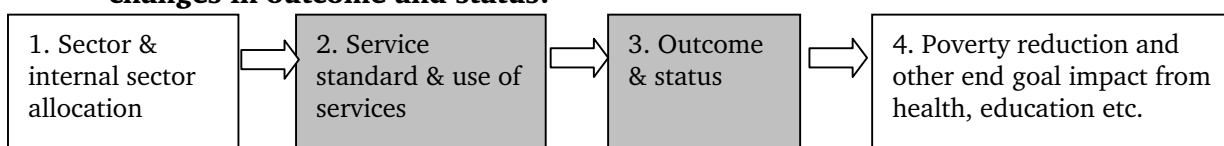
Output in the health sector, *access to water and sanitation facilities* (defined as "improved" or "safe") is expected to affect the outcome i.e. decrease in the incidence of diarrhoea.

Figure 4.20. Output-outcome in water sector, Malawi, 1990-2000
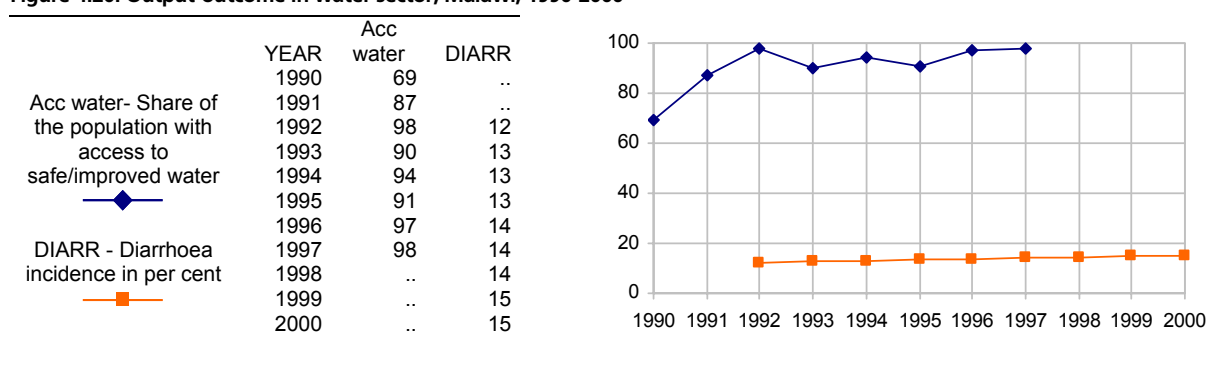
	YEAR	Acc water	DIARR
	1990	69	..
Acc water- Share of	1991	87	..
the population with	1992	98	12
access to	1993	90	13
safe/improved water	1994	94	13
	1995	91	13
	1996	97	14
DIARR - Diarrhoea	1997	98	14
incidence in per cent	1998	..	14
	1999	..	15
	2000	..	15

4.8.3. Are changes in water and sanitation sector resource allocation followed by changes in outcome and status?

1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.
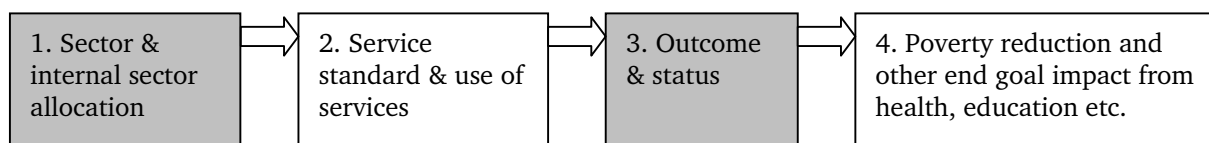
For water and sanitation sector, it is expected that investment in the sector will affect the main outcome i.e. decrease the *incidence of diarrhoea of children <5 years of age*.

Figure 4.21. Input-outcome in water and sanitation sector, Malawi, 1990-2000

	YEAR	Water Exp	DIARR
Water Exp-	1990	0.23	..
Education	1991	0.22	..
expenditure per	1992	0.72	12.20
capita, PPP	1993	0.78	12.60
(current	1994	0.62	12.90
international $)	1995	..	13.30
	1996	..	13.70
DIARR-Diarrhoea	1997	0.06	14.00
incidence, children	1998	0.07	14.40
<5 years of age,	1999	..	14.90
per cent	2000	..	15.30
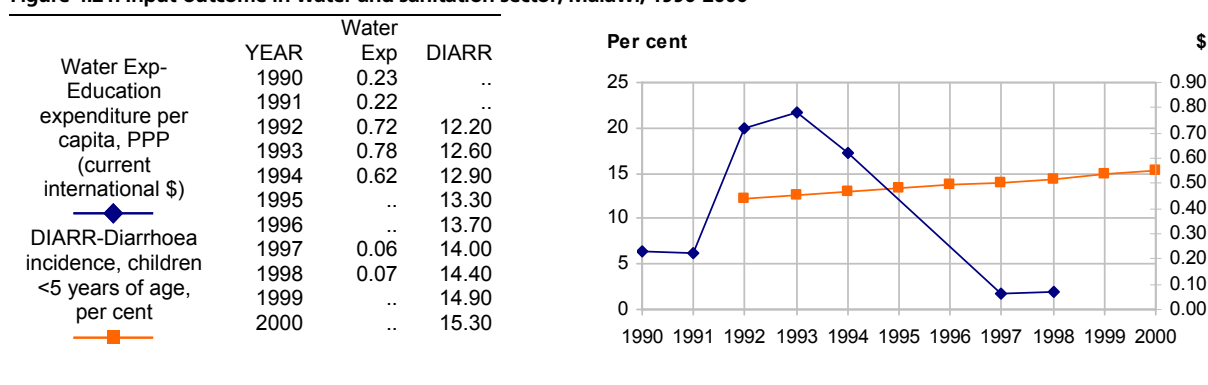
8.4. Are changes in water and sanitation sector outcome and status followed by changes of end goal achievements?

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
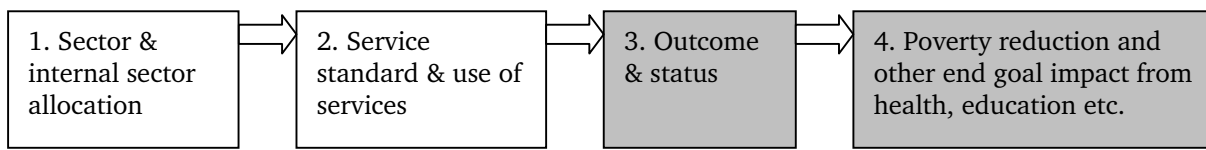
Figure 4.22. Outcome-impact water sector, Malawi, 1990-2000

YEAR	DIARR	GDP per ca.
1990	..	488
1991	..	461
1992	12.20	506
1993	12.60	463
1994	12.90	547
1995	13.30	569
1996	13.70	575
1997	14.00	581
1998	14.40	602
1999	14.90	615
2000	15.30	..

DIARR-Diarrhoea incidence, per cent

GDP per ca- Gross Domestic Product per capita PPP, (current international $)
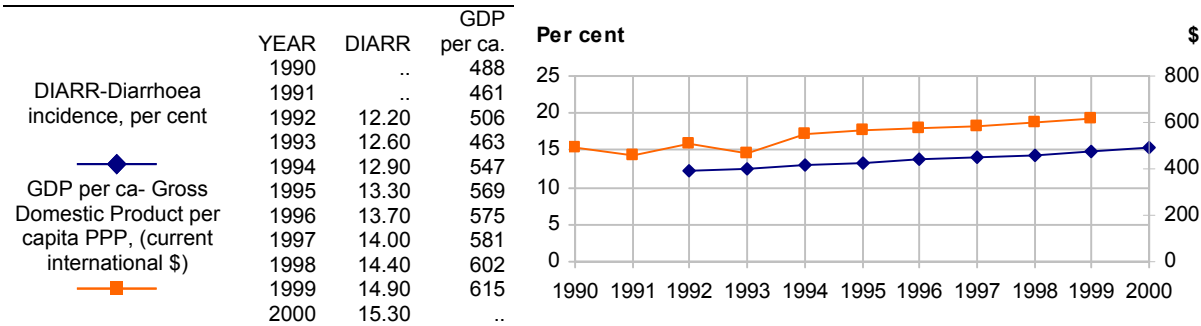
For this section, achievements in the water and sanitation sector are checked as to whether these are followed by reduced poverty indicators. As for the other sector, with only one measurement of poverty we use GDP per capita as the indicator. The GDP does not tell anything about the distribution between poor and better off, but is a good indicator of the average growth. Since we use GDP as a poverty indicator, we should choose to adjust the value over time according to purchasing power of the Kwacha and hence we use *GDP per capita PPP, current international $*. The outcome indicator chosen is the incidence of diarrhoea for children < 5 years.

4.8.5. Assessment of whether changes at one level is followed by changes at the next level for the water and sanitation sector in Malawi.

There are data gaps in input data for water and sanitation sector. Based on available data shown in figures 4.19-4.22, there is no strong relationship between input and output for water. Outcome i.e. incidence of diarrhoea for children <5 years behaved independently of output in the sector (measured in access to improved water and access to improved sanitation) and also moved independently of poverty indicator GDP per capita. The lack of relationships can be an indication that investment and efforts to improve the water and sanitation sector in Malawi has little or no impact on the sector or that resources are not being used efficiently. As mentioned at the start of the paper, there are also other projects involved in latrine building and sanitation i.e. the Ministry of Health.

Though diarrhoea can be caused by several factors, it is still a good indicator of consumption of clean or infected water. Thus it should cause concern that the rate of diarrhoea is steadily increasing in Malawi. It is also important to recall important points from different studies in the sector mentioned in the first part of the paper i.e. challenges with establishment and maintenance of boreholes, neglect of the sector especially sanitation sector and confusion due to the decentralisation process. Access to improved or some sort of sanitation is neglected in the process of decentralisation. It is important to emphasise that should this continue to be neglected, access to improved water will also be affected, especially in densely populated areas or areas with industrial complexes.

5. Presentation of district level statistics for Malawi

5.1. Review of available data at district level

Most of the data presented at the national level are also available at district level and this has allowed us to follow the same presentation approach to a large degree the same indicators, based upon the same surveys[17] at district level.

There are however some data limitations at district level which the reader should be aware of, as follows:

- *Focus on latest data*: Time series data for the district level are available but the report focuses on the latest data available.

- *Data are missing* for two districts, Phalombe and Likoma. Phalombe was recently a part of Mulanje and separate data are not year available. Balaka was formerly a part of Machinga, but for most of these surveys data were reported separately for Balaka. Likoma was made a separate district some time back, but being a small and distant island towards the Mozambique coast of Lake Malawi it is often deemed too expensive to travel to the island for sample surveys.

- *Grouping of data*: For some surveys the sample is too small to allow for publishing estimates for each district and the National Statistical Office in Malawi has then chosen to present averaged data for some districts (i.e. lumped districts considered small). Thus it is not possible to observe data variations across some districts. In the tables done, these data are presented as for "other districts". However for maps, average figures are presented for each district.

- *Expenditures, i.e. health expenditures*: Accountings of expenditures of national hospitals in two districts, Blantyre and Lilongwe are reported differently. The expenditures of hospitals in Lilongwe are included in health district recurrent expenditures while for hospital in Blantyre they are reported separately and hence not included in the district expenditures presented here.

- *Private expenditures*: Quite a number of health institutions are funded partly by church NGOs and for these only the public contribution is included in the expenditure figures. A number of teachers especially in urban areas offer individual or collective coaching, but again the expenditures are not included.

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[17] Malawi Demographic and health survey (DHS) (1992, 2000), Centre for Social Research (CSR) 2001, Malawi Population and Housing Census (PHC) 1998, Integrated Household Survey (HIS) 1998, National Aids Control Program (NACP) 1996-1999, Malawi Social Indicator Survey (MSIS) 1995, Malawi Knowledge, Attitudes and Practice in Health Survey (MKAPHS) 1996 and National Statistics Office (NSO) 2000, Zomba.

5.2. Monitoring steps for the Health Sector by district

5.2.1. Sector & internal sector allocation by district

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
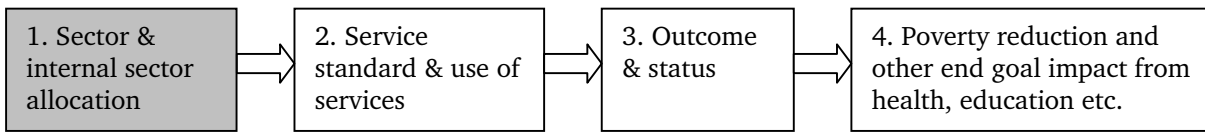
Health recurrent expenditure per capita PPP$ has been chosen for the monitoring step at the district level. This is a good indicator for measuring how much resources can potentially be distributed at the district level.

Figure 5.0. Health recurrent expenses per capita in Malawi by district (PPP$), 2000 [1]
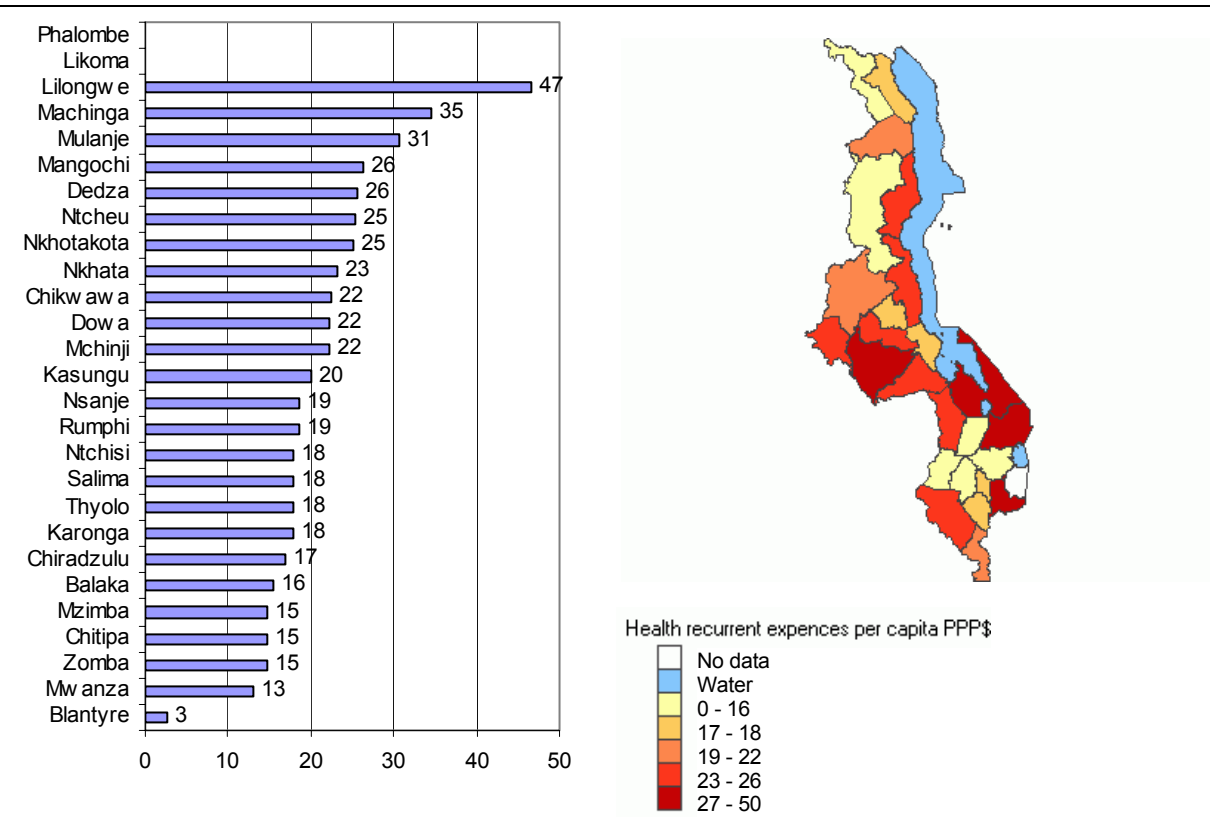
[1] It should be noted that Lilongwe National Hospital's expenditures are included in health recurrent expenditures while Blantyre National hospital's expenditures are not reported.

5.2.2 Service standard and use of services by district

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
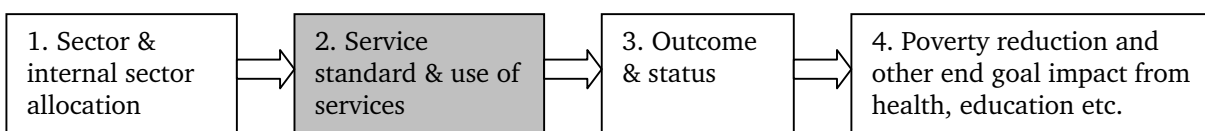
For the second monitoring step at the district level for the health sector, we present two indicators *children fully immunised* and *births attended by skilled personnel*. Children who are fully vaccinated, are those who have received BCG, measles, and three doses of DPT and polio (NSO, 2001)

Figure 5.1. Children fully immunised in Malawi by district (per cent), 2000[3]
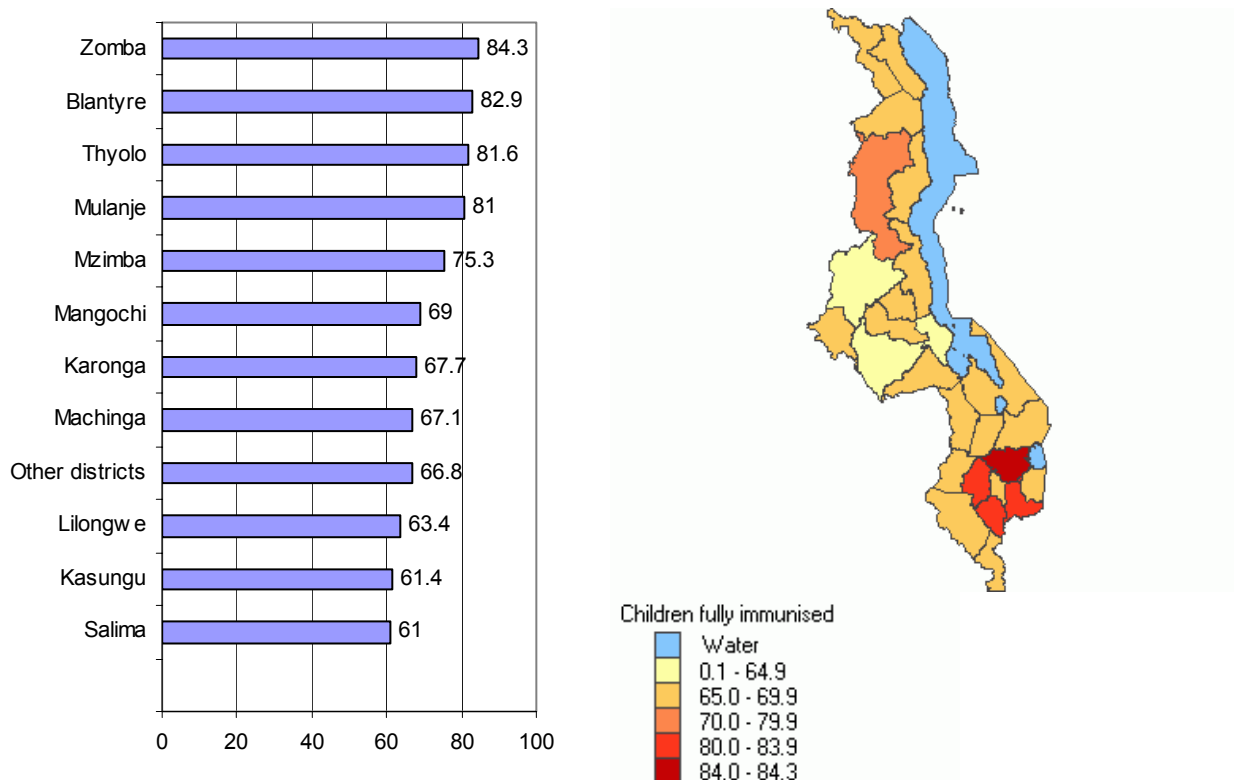
[3] National Statistics Office in Malawi lumped together expenditures of for a number of districts thus we see the same figures for a number of districts. Districts having the same data are Chitipa, Balaka, Chiradzulu, Ntchisi, Rumphi, Nsanje, Mchini, Dowa, Chikwawa, Nkhata Bay, Mhotakota, Ntcheu, Dedza, Likoma and Phalombe.

Figure 5.2.   Births attended by skilled personnel in Malawi by district (per cent), 2000[4]
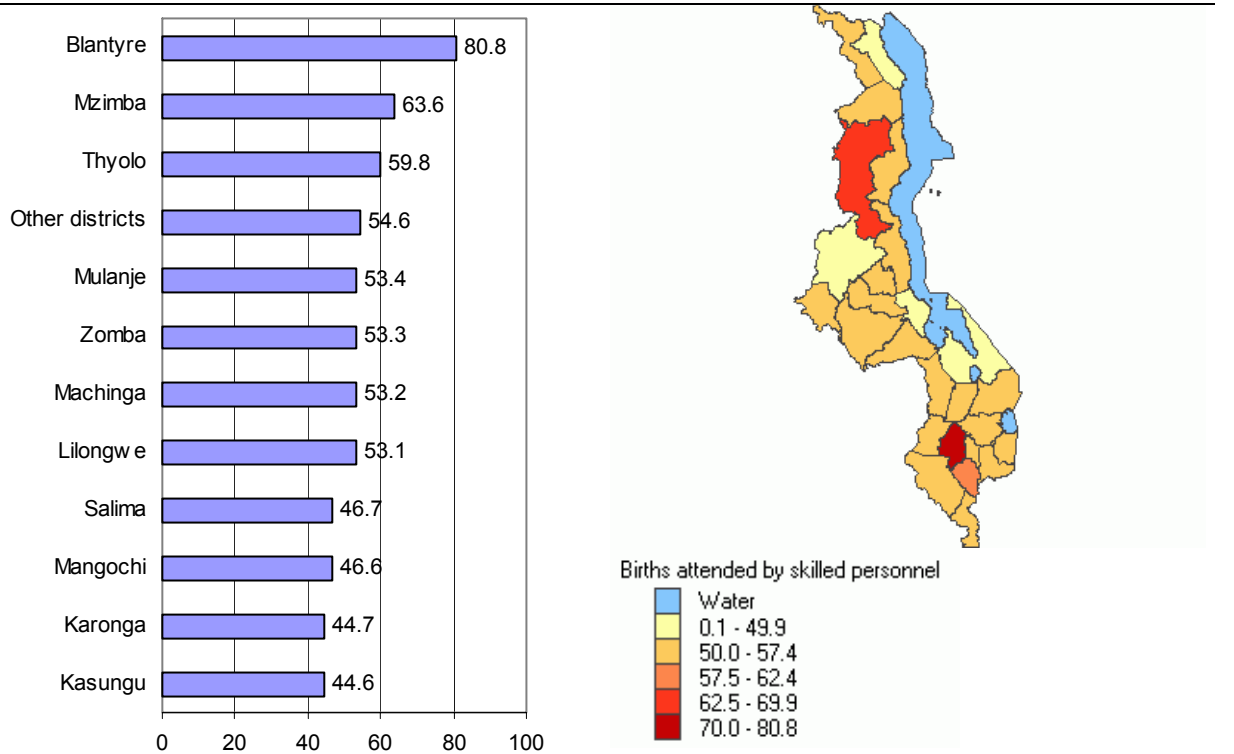
[4] National Statistics Office in Malawi lumped together expenditures of districts considered small thus we see the same figures for a number of districts. Districts having the same data are Mwanza, Chitipa, Balaka, Chiradzulu, Ntchisi, Rumphi, Nsanje, Mchinji, Dowa, Chikwawa, Nkhata Bay, Nkhotakota, Ntcheu, Dedza, Likoma and Phalombe.

5.2.3. Sector outcome and status by district

1. Sector & internal sector allocation	2. Service standard & use of services	3. Outcome & status	4. Poverty reduction and other end goal impact from health, education etc.

For outcome in the health sector, we choose to present 3 indicators, _infant mortality_, mortality 12-59 months and _moderately underweight children_ for the outcome in the health sector.

Figure 5.3 Infant mortality per 1 000 births in Malawi by district, 2000[6]
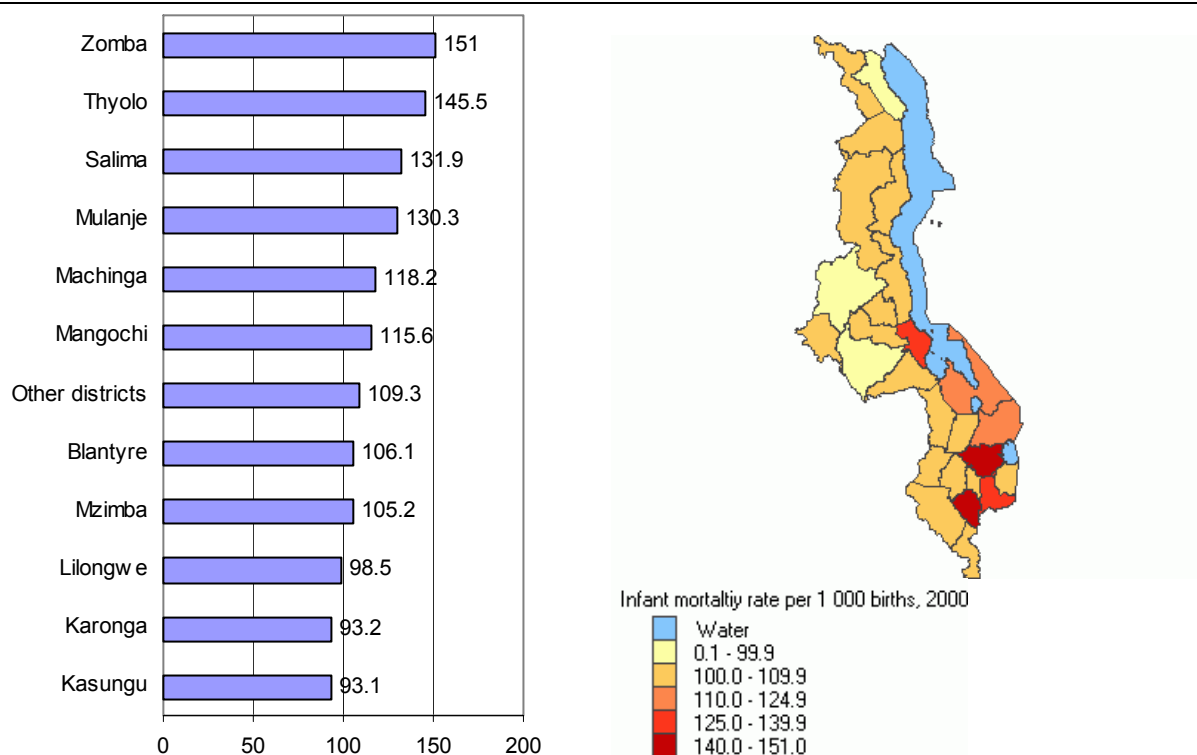
⁶ National Statistics Office in Malawi lumped together expenditures of districts considered small thus we see the same figures for a number of districts. Districts having the same data are Chitipa, Ntchisi, Chiradzulu, Nkhotakota, Mwanza, Dowa, Nkhata Bay, Mchinji, Chikwawa, Rumphi, Ntcheu, Nsanje, Dedza, Likoma and Phalombe.

Figure 5.4 Mortality 12-59 months, per 1 000 children in Malawi by district, 2000[7]

Under 5 mortality per 1 000 children, 2000

- -9 - -1
- 0 - 69
- 70 - 79
- 80 - 89
- 90 - 99
- 100 - 109
- 110 - 119
- 120 - 129
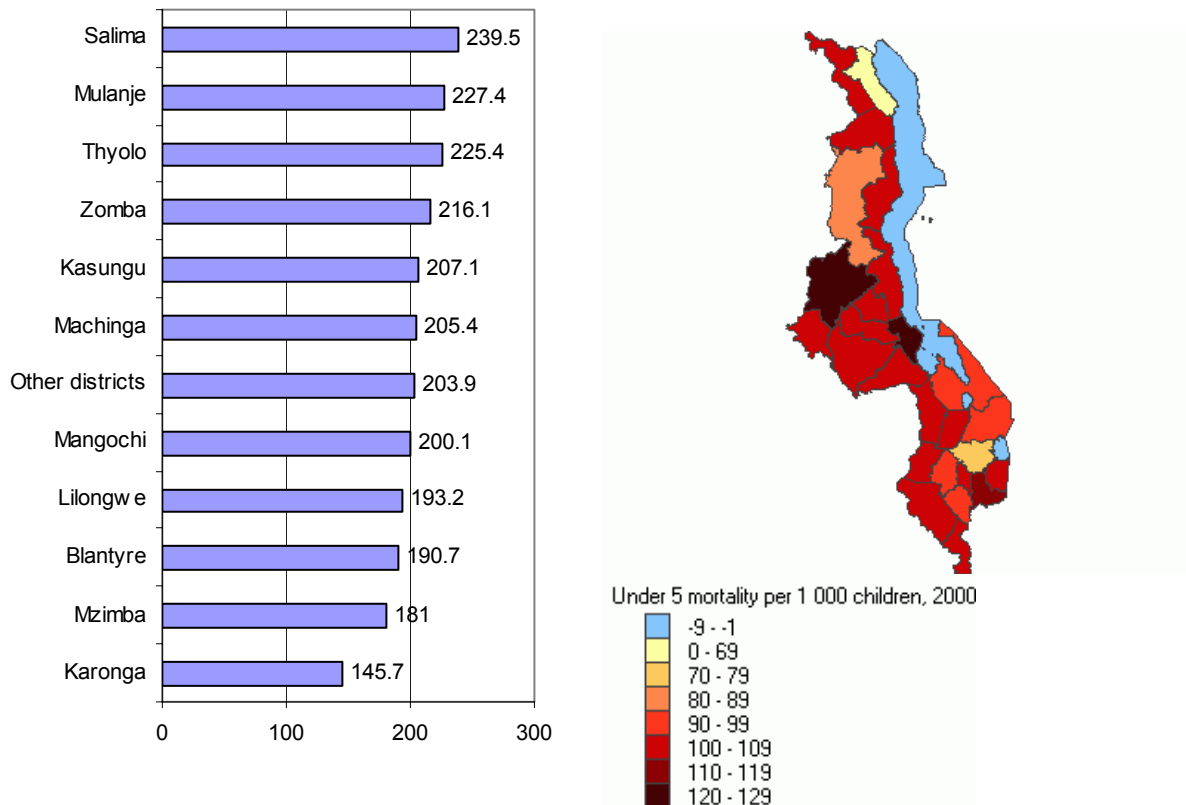
[7] National Statistics Office in Malawi lumped together expenditures of districts considered small thus we see the same figures for a number of districts. Districts with the same data are Chitipa, Ntchisi, Chiradzulu, Balaka, Nkotakota, Mwanza, Dowa, Nkhata Bay, Mchinji, Chikwawa, Rumphi, Ntcheu, Nsanje, Dedza, Likoma and Phalombe.

Figure 5.5 Percentage of moderately underweight children in Malawi by district. [8]

Undereight, moderate (per cent)

- Water
- 0.1 - 22.9
- 23.0 - 25.9
- 26.0 - 27.9
- 28.0 - 29.0
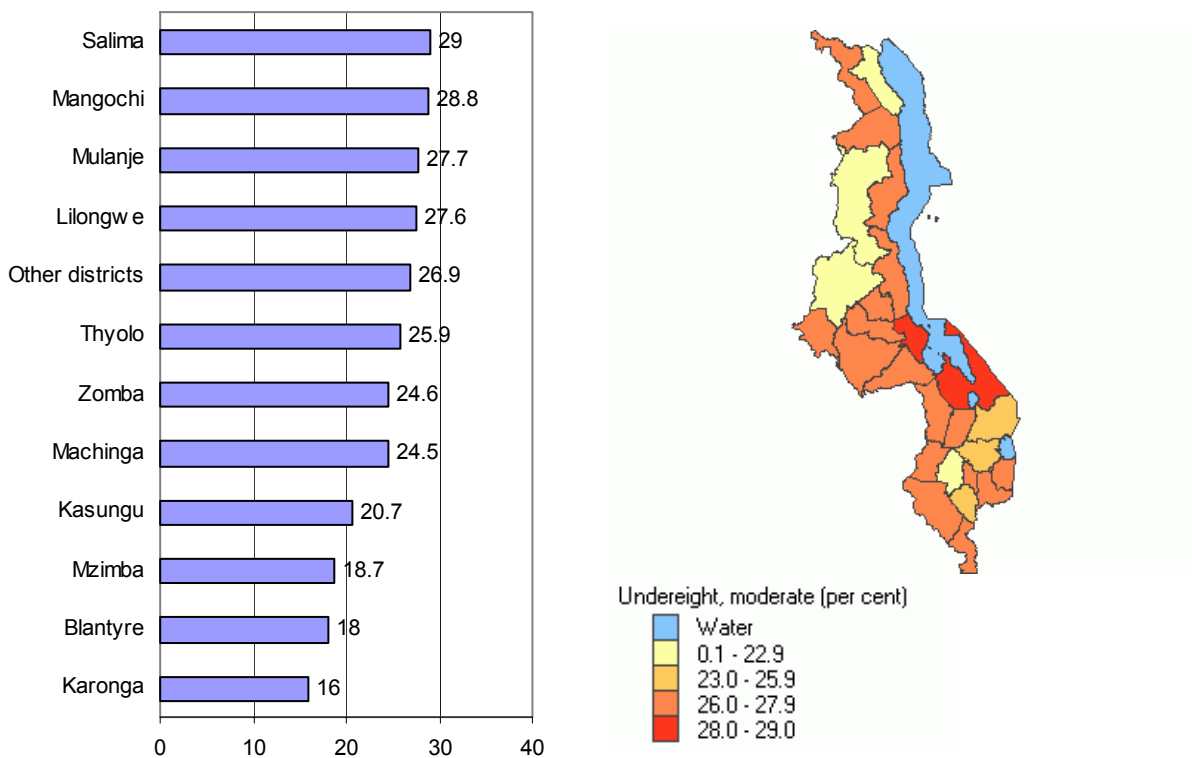
[8] National Statistics Office in Malawi lumped together expenditures of districts considered small thus we see the same figures for a number of districts. Districts who have the same data are Chitipa, Ntchisi, Chiradzulu, Balaka, Nkhotakota, Mwanza, Dowa, Nkhata Bay, Mchinji, Chikwawa, Rumphi, Ntcheu, Nsanje, Dedza, Likoma and Phalombe.

5.2.4. **Malawi health sector chain at district level**

Input at the district level
Before discussing health expenditures at the district level, it should be noted that there are two national hospitals in Lilongwe and Blantyre. In figure 5.0, the largest expenditure level per capita is Lilongwe and the district with the lowest level reported is Blantyre. We should bear in mind that Lilongwe's expenditures have been included in the 2000 data while Blantyre has not been included.

Excluding the two districts mentioned, we see that the southern region invested more per capita as seen in the figures for the districts of Machinga, Mulanje and Mangochi. However we should also bear in mind that this is where most of the population are also located. Looking at the overall district distribution, we can see from the map that on a per capita basis, the government invested more in the central districts and parts of the southern region. It is very clear that the northern districts either lost out in the health budget distribution process or local leaders prioritised other areas in 2000.

Output in health sector:
For output, the report looked at full immunisation for children and births attended by skilled personnel. For full immunisation of children, it is clear that the central region had the lowest coverage (figure 5.1). Southern Malawi registered the highest coverage for full immunisation for children with Zomba (85%), Blantyre (83%), Thyolo (82%) and Mulanje (81%). A northern district Mzimba with 75.3% registered the fourth highest in terms of full immunisation coverage for children. It should be interesting to note that in a study done by MOPH (2003b), immunisation of children (full) was highest in the North (Karonga with 76% and Rumphi with 73%) followed by Mchinji (75%) located in the central region.

For births attended by skilled personnel, again we see the central region trailing behind (figure 5.2). Two southern districts Blantyre and Thyolo (80.8 and 59.8

respectively) and one northern area (Mzimba at 63.6) had the highest figure report for births attended by skilled personnel. A study done by MOPH (2003b) also revealed that the north registered the most number of births attended by trained personnel.

Generally the northern and southern parts registered better output indicators, with the southern region clearly leading.

Outcome in health sector:
For the outcome sector, 3 indicators were presented, infant mortality rate (per 1 000 births), under 5-mortality rates per 1 000 children and percentage of moderately underweight children. The northern region has the lowest infant mortality rates in Malawi while the southern region has the highest rates (Figure 5.3). The two districts in the south with the highest infant mortality rates are Zomba and Thyolo (with 151, 145.5 respectively). Salima located in the central region has the third highest infant mortality rate per 1000 births at 131.9. For mortality rates of children under five, there is no clear pattern but only Karonga, located in the northern region has mortality rates lower that 150 (figure 5.4). The central region has the most number of moderately underweight children (figure 5.5). Again conditions in the northern region seems to be better compared to the rest of the country, registering the lowest rate of moderately underweight children.

Overall the northern region registered the best out-come indicators in the health sector. This is interesting considering that it was the southern region that registered the most output while the northern region was only second in rank. We also have to remember that the northern region lost out in terms of government investment in the health sector and how the bulk of official investments were poured into the central region. This can point to either the effectiveness of investments and output in the northern region or that there other actors (e.g. NGOs) that invested in the northern area.

5.3. **Monitoring steps for the Education Sector by district**

5.3.1. **Sector & internal sector allocation**

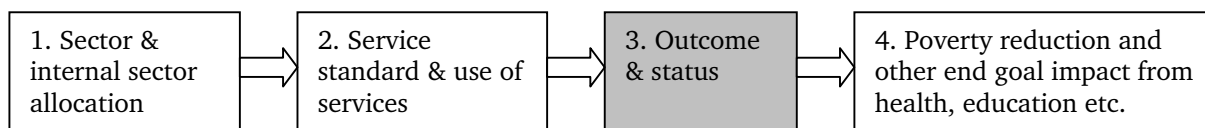| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
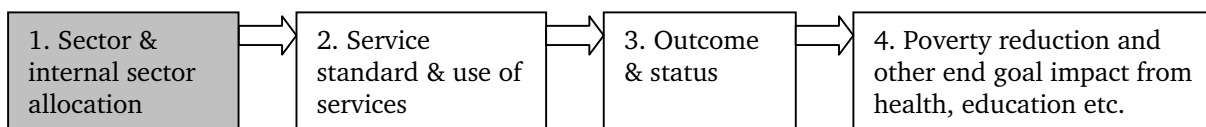
For the education sector, *recurrent expenditure per child* (6-13) at the primary level has been chosen as an indicator of real resource allocation.

Figure 5.6. Primary education recurrent expenditure per child 6-13 years in Malawi by district (PPP$), 2000

Primary education recurrent expenditure per child 6-13 years

- No data
- Water
- 0 - 20
- 21 - 30
- 31 - 60
- 61 - 90
- 91 - 150
- 151 - 200
- 201 - 250

5.3.2. Service standard & use of services

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
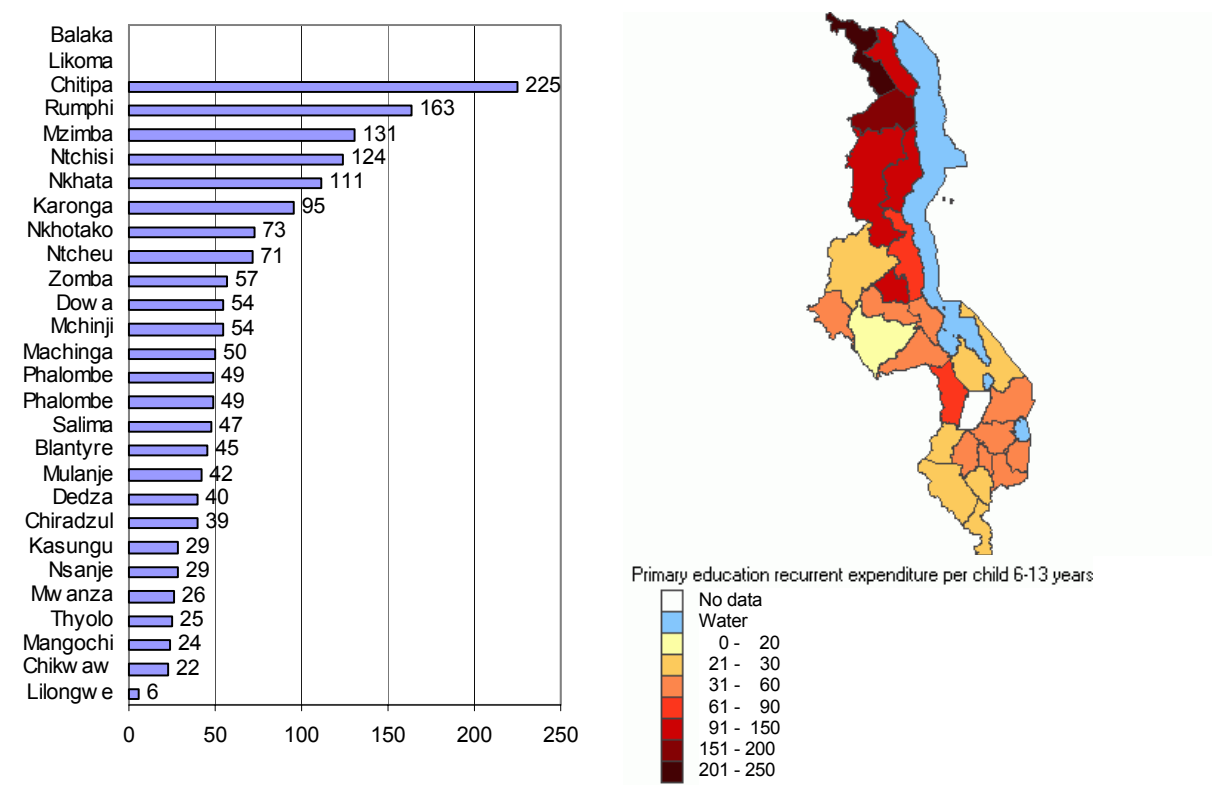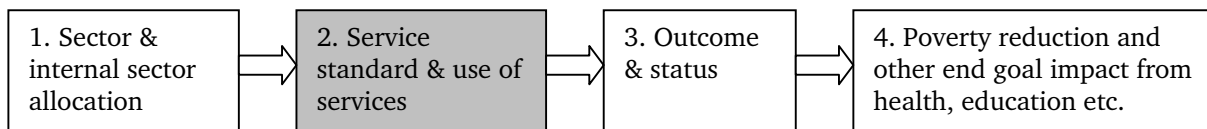
Figure 5.7. Gross enrolment at primary level in Malawi by district, 1999

Gross enrolment at primary level, 1999

- No data
- Water
- 0 - 105
- 106 - 115
- 116 - 130
- 131 - 140
- 141 - 160
- 161-180
- 181-200
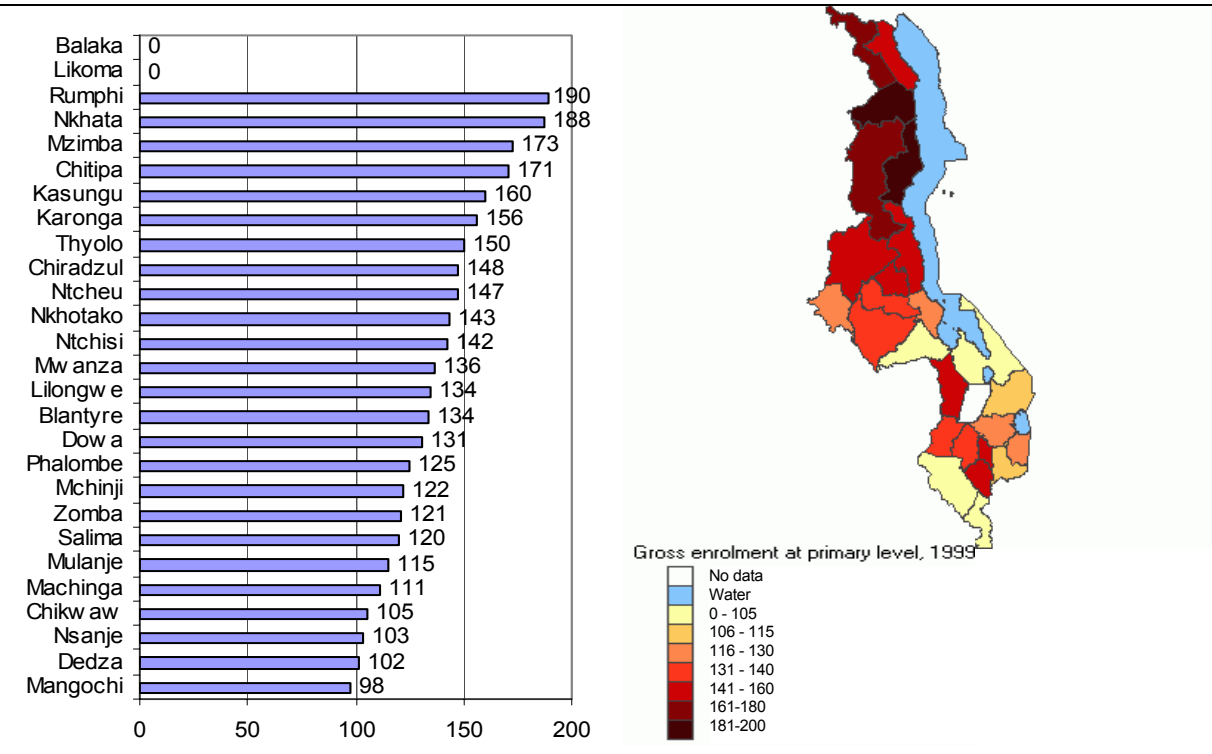
School enrolment is the most important indicator that shows service provision in education. *Gross enrolment* has been chosen as the indicator for output because there is no net enrolment data at the district level. Gross enrolment for primary school is the total number of primary school students, among those of any age, expressed as the percentage of official primary-school-age population (NSO, 2002).

5.3.3. Outcome status

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
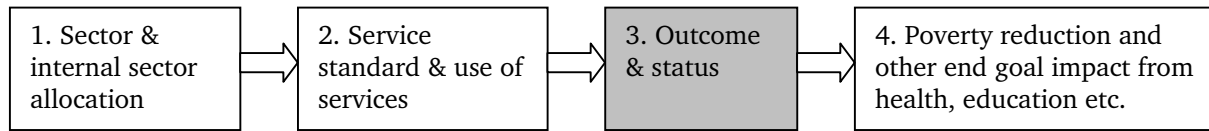
The main outcome expected in the education sector is long-term increase in literacy. However literacy data at the primary level is not available, thus we have chosen other related indicators available. *Percentage passing Junior Certificate of Secondary Education (JCE)*, *examinations* average each of 6-13 years has been chosen due to lack of literacy data.

Figure 5.8. Percentage passing JCE examinations in Malawi by district, 2000
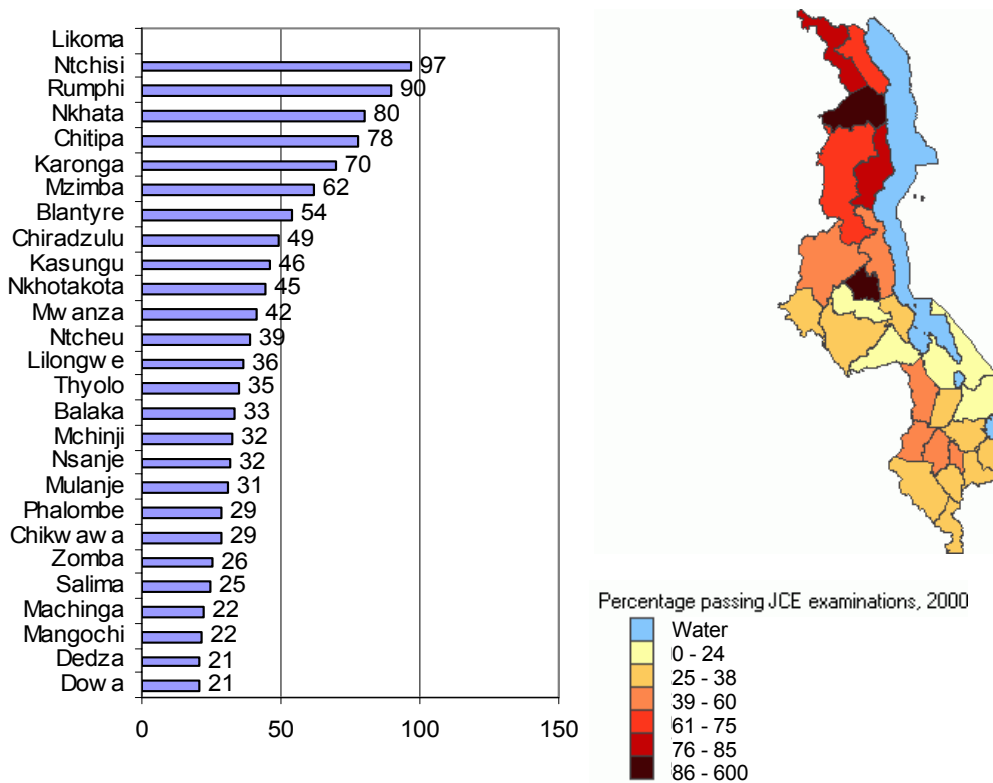
5.3.4. Malawi education sector chain at district level

Input at the district level
Figure 5.6 shows that for the education sector, the northern regions spent more per child (aged 6-13) compared to the rest of the country. In the northern region, Chitipa leads in resource allocation with 225 PPP$ for education followed by Rumphi and Mzimba (163 and 131 respectively). Obviously it is more expensive to run a larger number of smaller schools as in the remote Northern region, but the differences might be larger than justified by remoteness. Lilongwe children clearly are the losers in terms of official government expenditures. As already stated there is more extra coaching in urban areas, and hence the children might on average have an equally good offer of schooling in urban areas, but obviously for a higher private cost for the better off and a worse offer for the poor who may not afford private coaching.

Output at the district level
Based on figure 5.7, top four districts with the most number of certified teachers at the primary level are in the northern area; Nkhata Bay, Karonga, Rumphi, and Chitipa. Districts with high pupil-teacher ratio are in the south with Machinga, Mangochi and Chikwawa topping the list.

Outcome at the district level
Figure 5.8 shows that the northern regions had more students from 6-13 passing the JCE examinations while pupils in the central region clearly are at a disadvantage.

Linking input-output-outcome at the district level
In the education sector, we can see that the Northern region of Malawi invested more in the sector, produced more output (increase in gross enrolment) and more of their students passed the Junior Certificate of Secondary Education (JCE).

5.4. Monitoring steps for the Water and Sanitation Sector by district

5.4.1. Sector & internal sector allocation

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
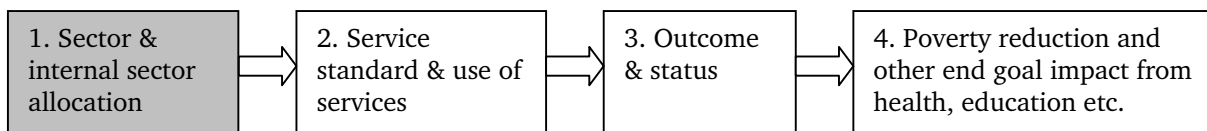
Expenditure data is limited at the district level for water and sanitation sector thus there is no map done for this indicator.

5.4.2. Service standard & use of services

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
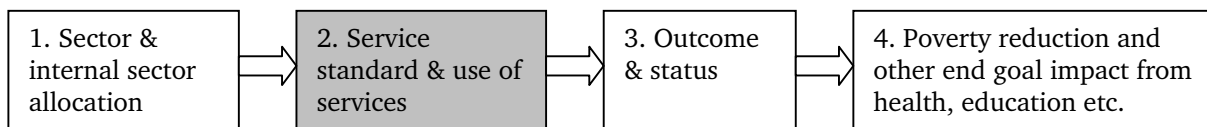
Similar to the national level, the data available that measures service standard and use of services in the water and sanitation sector is *access to improved water* and *access to improved or some sort of sanitation (<500 meters)* at the district level.

Figure 5.9. Access to improved water, <500 meters in Malawi by district, 1998
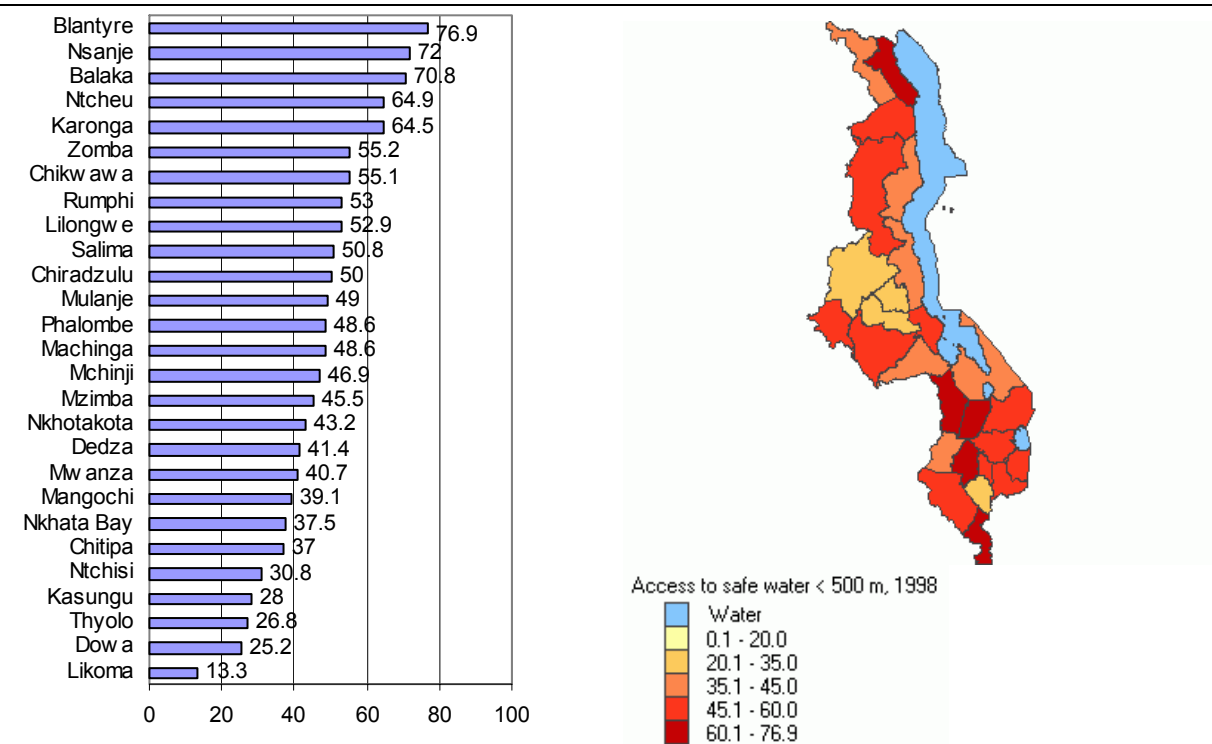
Figure 5.10. Access to improved/ some sort of sanitation in Malawi by district, 1998

5.4.3. Outcome status

1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.
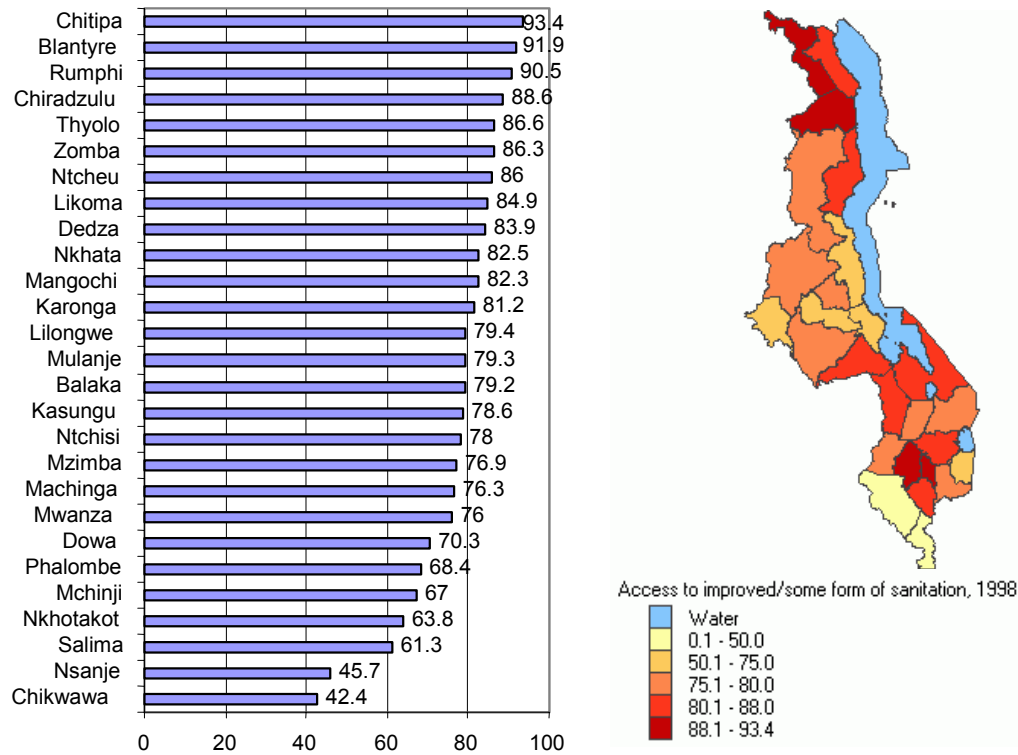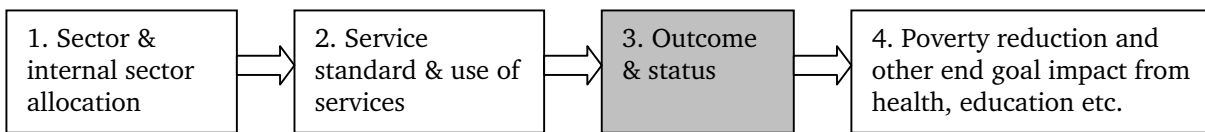
Figure 5.11. Incidence of diarrhoea in Malawi by district, 2002
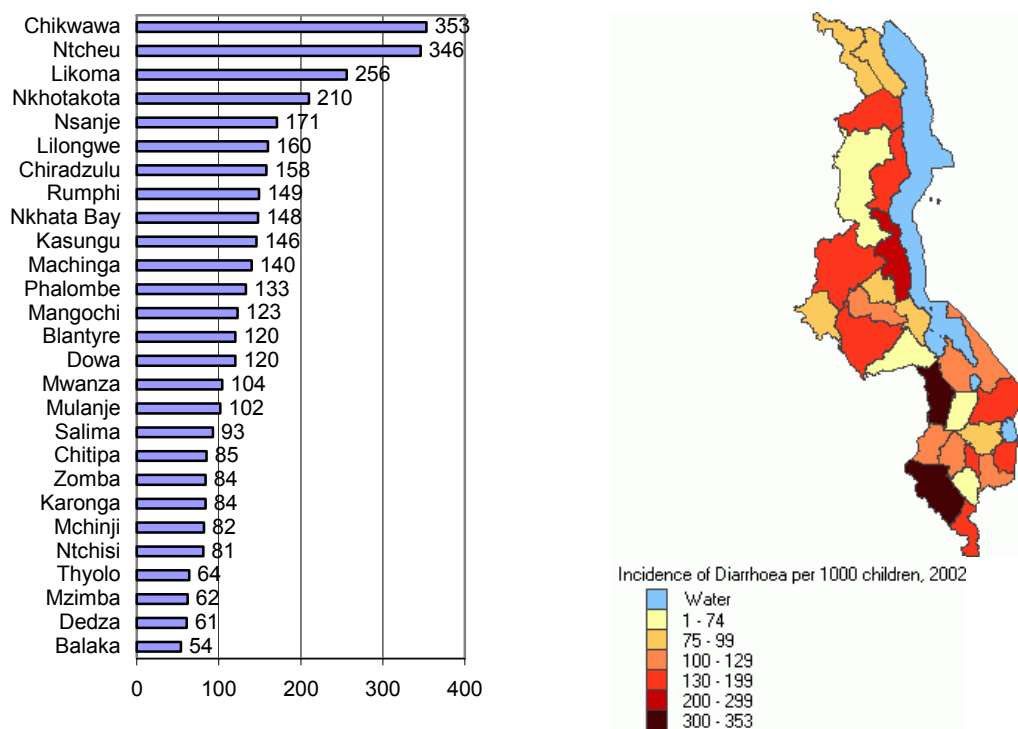
The data for *incidence rate for diarrhoea* from the National Statistics Office in Malawi is similar for all districts at 67 % thus no maps were made. Data on diarrhoea for children under 5 years for 2002 found in MOHP (2002) showed a variation and is shown in figure 5.11.

5.4.4 Malawi Water And Sanitation Sector chain at district level

At the district level, there is limited data for expenditures in water and sanitation sector. Based on figure 5.9 (**1998-kvantil**), residents in the Southern region had more access to improved water, except for Thyolo (26.8%).

In terms of safe /improved sanitation (figure 5.10) based on 1998 data (**kvantil**), the Northern region had better conditions compared to the rest of the country.

For incidence rate of diarrhoea no district information is available from surveys and hence the figures presented are administrative data without proper

documentation of the coverage from district to district. Hence the data should be interpreted with caution, and it seems difficult to talk about any clear pattern, and it is difficult to interpret the data as it is.

We find it necessary to scrutinise the data before drawing any conclusions about how poor sanitation and water supply affect diarrhoea and in the mean time rather recommend case studies for small areas. One of these, a case study in Zomba district (Ferguson and Mulwafu, 2004) reports of the municipal sewage system designed in the 1950s for a population of 35,000 virtually collapsed with the current population of 85,000. The result is the release of untreated sewage directly into the Likangala River, resulting in high levels of faecal contamination in the river, and in boreholes and wells near the river. Rural dwellers living downstream that depend on the river for drinking and bathing have suffered from dysentery, cholera, typhoid and scabies for years.

5.5. The final monitoring step, end goals, human welfare and poverty reduction at district level

| 1. Sector & internal sector allocation | ⇒ | 2. Service standard & use of services | ⇒ | 3. Outcome & status | ⇒ | 4. Poverty reduction and other end goal impact from health, education etc. |
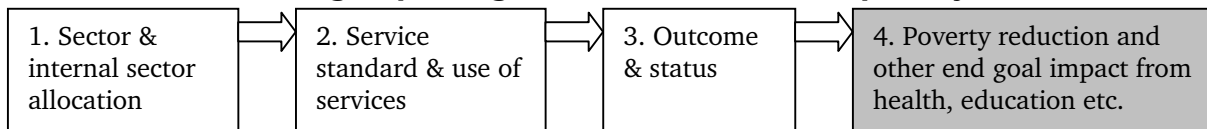
At the district level there are two goal indicators chosen *poverty headcount* and *extreme poverty headcount*. The method used for the poverty analysis of the Malawi HIS is the cost-of-basic-needs method. The poverty line that was set up was based on *food* and *non-food* components (NEC, 2000).
For the *food* component, the recommended daily calorie requirement for the household, established by nutrition researchers was used. What was considered was what it cost the poorer household in Malawi to meet recommended calorie requirements. Households sacrifice nutritionally necessary food to consume certain *non-food* items, and these *non-food* items were considered basic necessities for household welfare. The values of these non-food items were then examined. It should also be noted that in the computation of the

poverty line, non monetary components were included (non-cash food consumption, non-cash non-food consumption, the use value of durable items and the imputed house rental value for household living in houses they own). The ultra-poverty line (or extreme poverty) on the other hand, has been defined as those whose total consumption is less than 60% of the poverty line.

The broken line in figure 5.12 shows poverty headcount line of 64.3% (a line defined by NSO, 2002) while the broken line in figure 5.13 on the other hand shows the extreme poverty line of 36.3% also defined by NSO (2002).

Figure 5.12. Poverty headcount by district in Malawi by district, 1998
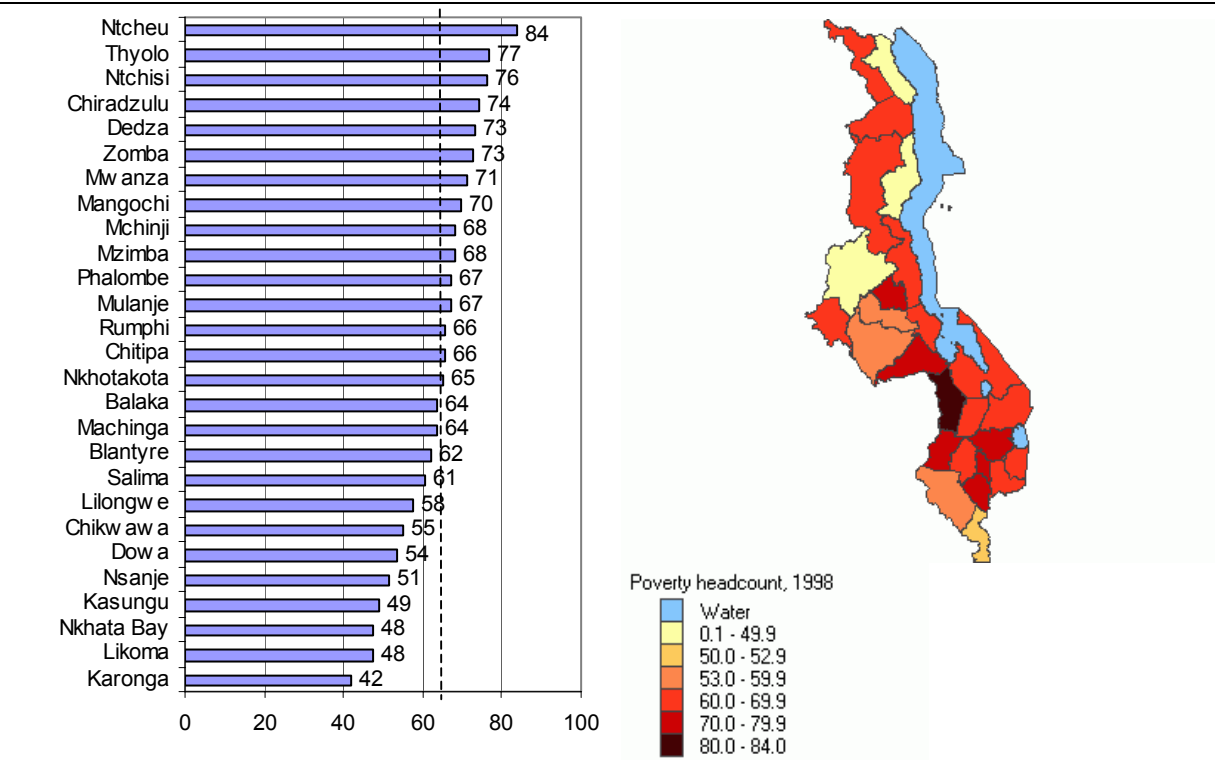
Figure 5.13. Extreme poverty by district in Malawi by district, 1998
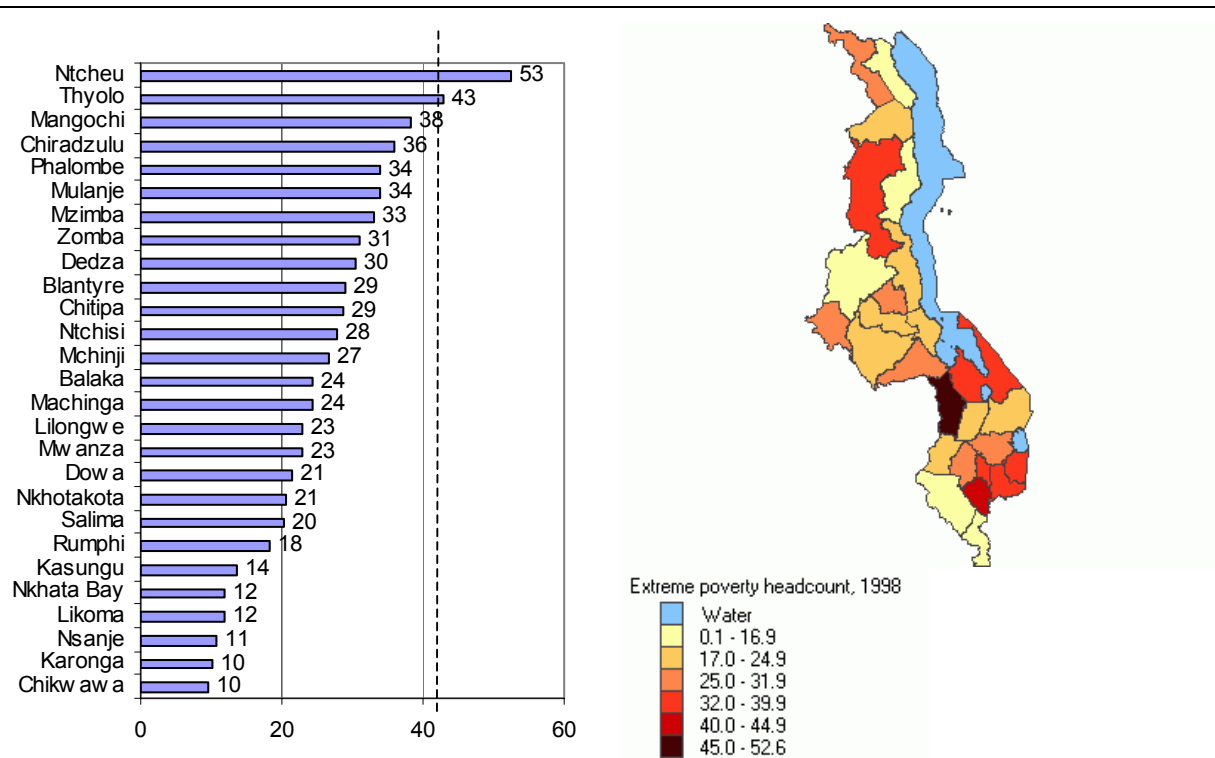
5.4.1. End goals, human welfare and poverty reduction at district level

If we were to rank the 3 regions according both poverty indicators, we can say that conditions in the central region and southern region are worse compared to the northern region (refer to figures 5.12 and 5.13). According to the national average, 65.3% of the population can be classified as poor. In terms of distribution, there are more poor people located in the Southern region (49.2%), followed by the Central region (40.2%) and the Northern region (10.6%).

5.5. Are district differences in the health sector at one level followed by district differences at the next level?

For this section of the report, we present line graphs for the first level and bar graphs for the second level. We first present figures for all monitoring steps in each sector and then a write up of the discussion at end of each sector.

5.5.1. Are district differences in health sector resource allocation followed by district differences in service standard?

| 1. Sector & internal sector allocation | ⟹ | 2. Service standard & use of services | ⟹ | 3. Outcome & status | ⟹ | 4. Poverty reduction and other end goal impact from health, education etc. |
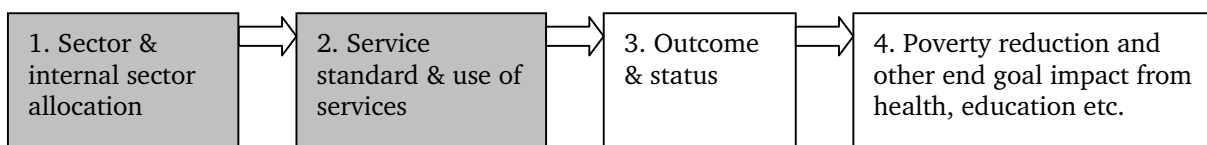
It is expected that higher input, *health expenditure per capita*, is followed by larger output being either *DPT immunisation under 12 months* or *birth attended by skilled personnel*.

Figure 5.14. Input-output in Malawi health sector by district, sorted according to 2000 health expenditure[11]

	HEXP 2000	IMMUN	BIRTH
Blantyre	10	93.4	80.8
Mwanza	15	80.9	54.6
Zomba	15	89.6	53.3
Chitipa	15	71.4	46.7
Mzimba	16	80.9	54.6
Balaka	16	80.9	54.6
Chiradzulu	19	80.9	54.6
Karonga	20	80.9	54.6
Thyolo	20	80.9	54.6
Salima	21	80.9	54.6
Ntchisi	21	80.9	54.6
Rumphi	21	80.9	54.6
Nsanje	21	84.9	44.7
Kasungu	24	80.9	54.6
Mchinji	24	82.3	53.1
Dowa	25	80.9	54.6
Chikwawa	25	81.3	44.6
Nkhata Bay	26	92.6	59.8
Nkhotakota	26	80.9	54.6
Ntcheu	27	80.9	54.6
Dedza	28	80.9	54.6
Mangochi	35	83.3	46.6
Mulanje	39	87.5	53.2
Machinga	42	86.7	63.6
Lilongwe	45	91.7	53.4
Likoma		80.9	54.6
Phalombe		80.9	54.6

[11] Phalombe is a new area and Likoma is not included in surveys because of the high cost of travel to the island thus the missing health expenditures data.

5.5.2. Are district differences in health sector service standard & use of services followed by district differences in the outcome and health status?

| 1. Sector & internal sector allocation | ⟹ | 2. Service standard & use of services | ⟹ | 3. Outcome & status | ⟹ | 4. Poverty reduction and other end goal impact from health, education etc. |
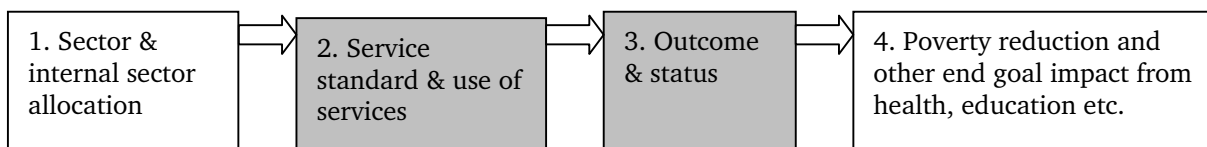
Output should ideally produce desired outcomes. Thus *immunisation (DPT) of children less than 12 months* should result in lower *mortality rates* and lower number of moderately underweight children. Likewise, the output indicator *births attended by skilled personnel* should result in better outcomes i.e. lower mortality rates and a lower number of underweight children.

Figure 5.15. Output (immunisation) -outcome (mortality rates) in Malawi health sector by district, sorted according to DPT immunisation (compressed districts with the same figure)[13]
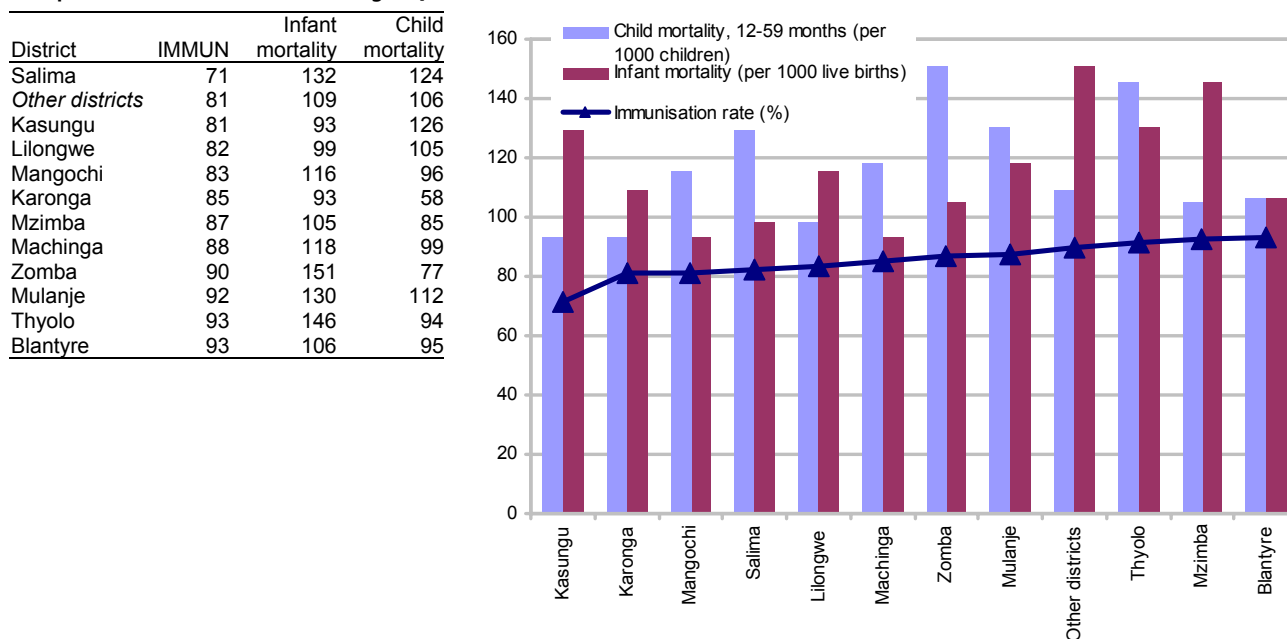
District	IMMUN	Infant mortality	Child mortality
Salima	71	132	124
Other districts	81	109	106
Kasungu	81	93	126
Lilongwe	82	99	105
Mangochi	83	116	96
Karonga	85	93	58
Mzimba	87	105	85
Machinga	88	118	99
Zomba	90	151	77
Mulanje	92	130	112
Thyolo	93	146	94
Blantyre	93	106	95

[13] Districts lumped together are Mwanza, Chitipa, Balaka, Chiradzulu, Ntchisi, Rumphi, Nsnje, Mchinji, Dowa, Chikwawa, Nkhata Bay, Nkhotakota, Ntcheu, Dedza, Likoma and Phalombe.

Figure 5.16. Output (immunisation) -outcome (underweight, moderate) in Malawi health sector by district, sorted according to immunisation (compressed districts with the same figure)[13]
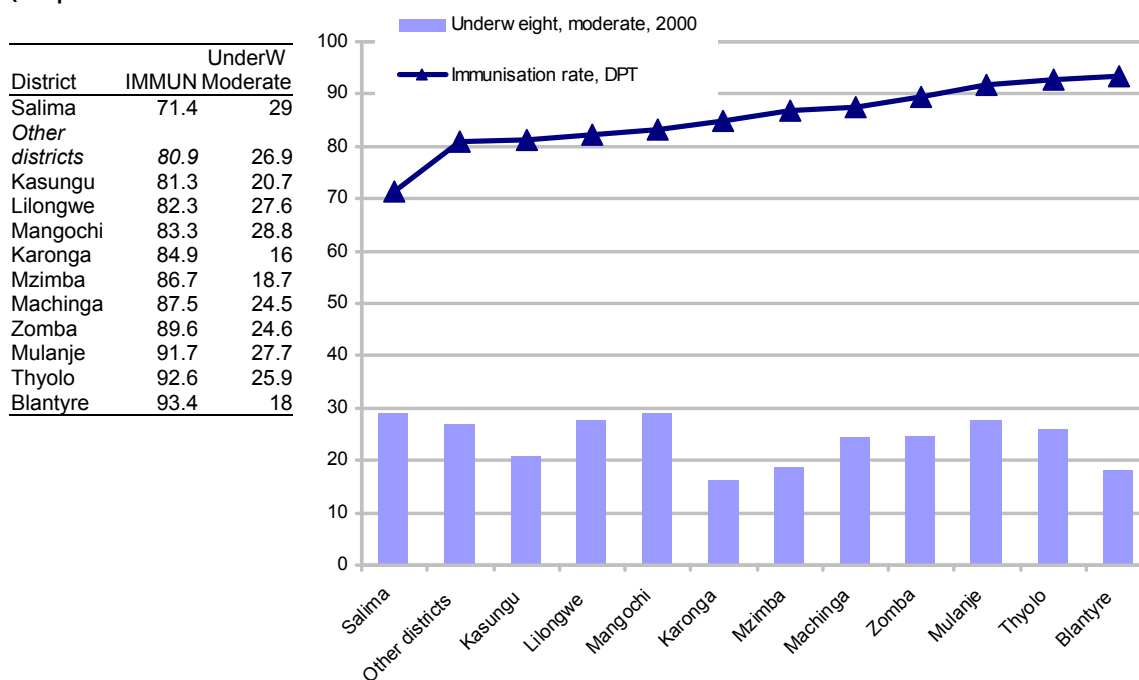
District	IMMUN	UnderW Moderate
Salima	71.4	29
Other districts	*80.9*	26.9
Kasungu	81.3	20.7
Lilongwe	82.3	27.6
Mangochi	83.3	28.8
Karonga	84.9	16
Mzimba	86.7	18.7
Machinga	87.5	24.5
Zomba	89.6	24.6
Mulanje	91.7	27.7
Thyolo	92.6	25.9
Blantyre	93.4	18

[13] Districts lumped together are Mwanza, Chitipa, Balaka, Chiradzulu, Ntchisi, Rumphi, Nsnje, Mchinji, Dowa, Chikwawa, Nkhata Bay, Nkhotakota, Ntcheu, Dedza, Likoma and Phalombe .

Figure 5.17. Ouput (births attended) -outcome (mortality rates) in Malawi health sector by district, sorted according to Births attended (compressed districts with the same figure) [14]

DISTRICT	BIRTHS ATTT.	INF MORT	Mort 12-59 months
Kasungu	44.6	93.1	239.5
Karonga	44.7	93.2	203.9
Mangochi	46.6	115.6	207.1
Salima	46.7	131.9	193.2
Lilongwe	53.1	98.5	200.1
Machinga	53.2	118.2	145.7
Zomba	53.3	151	181
Mulanje	53.4	130.3	205.4
Other districts	*54.6*	*109.3*	216.1
Thyolo	59.8	145.5	227.4
Mzimba	63.6	105.2	225.4
Blantyre	80.8	106.1	190.7
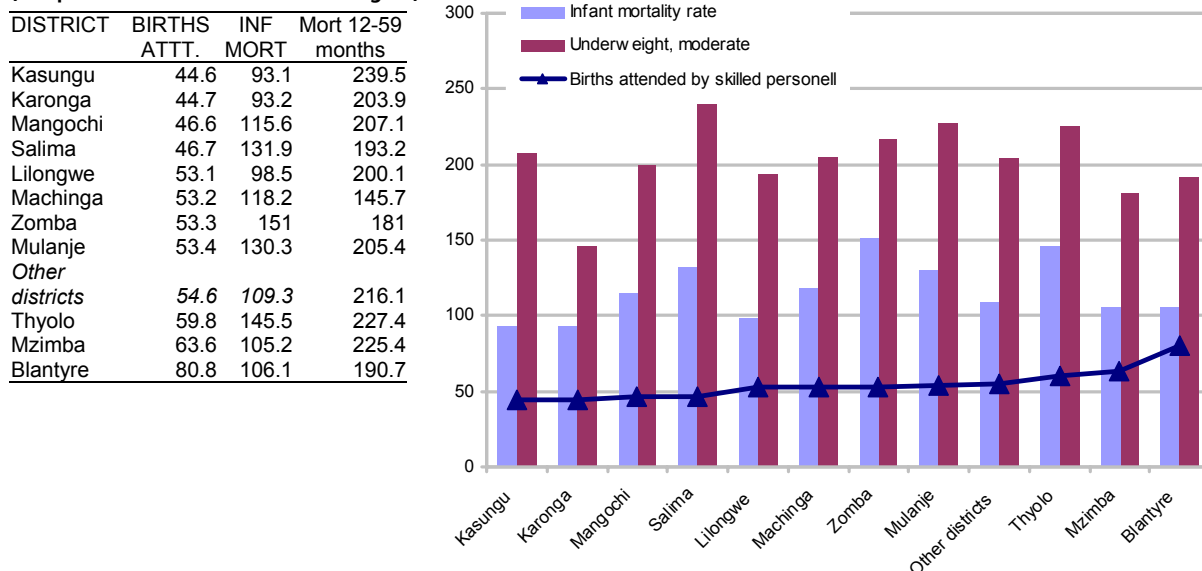
[14] Mwanza, Chitipa, Balaka, Chiradzulu, Ntchisi, Rumphi, Nsanje, Mchinji, Dowa, Chikwawa, Nkhata Bay, Nkhotakota, Ntcheu, Dedza, Likoma are lumped together as other districts.

Figure 5.18. Ouput (births attended) -outcome (underweight, moderate) in Malawi health sector by district, sorted according to Births attended (compressed districts with the same figure) [14]

DISTRICT	Births atten	UnderW Moderate
Kasungu	44.6	29
Karonga	44.7	26.9
Mangochi	46.6	20.7
Salima	46.7	27.6
Lilongwe	53.1	28.8
Machinga	53.2	16
Zomba	53.3	18.7
Mulanje	53.4	24.5
Other districts	*54.6*	*24.6*
Thyolo	59.8	27.7
Mzimba	63.6	25.9
Blantyre	80.8	18
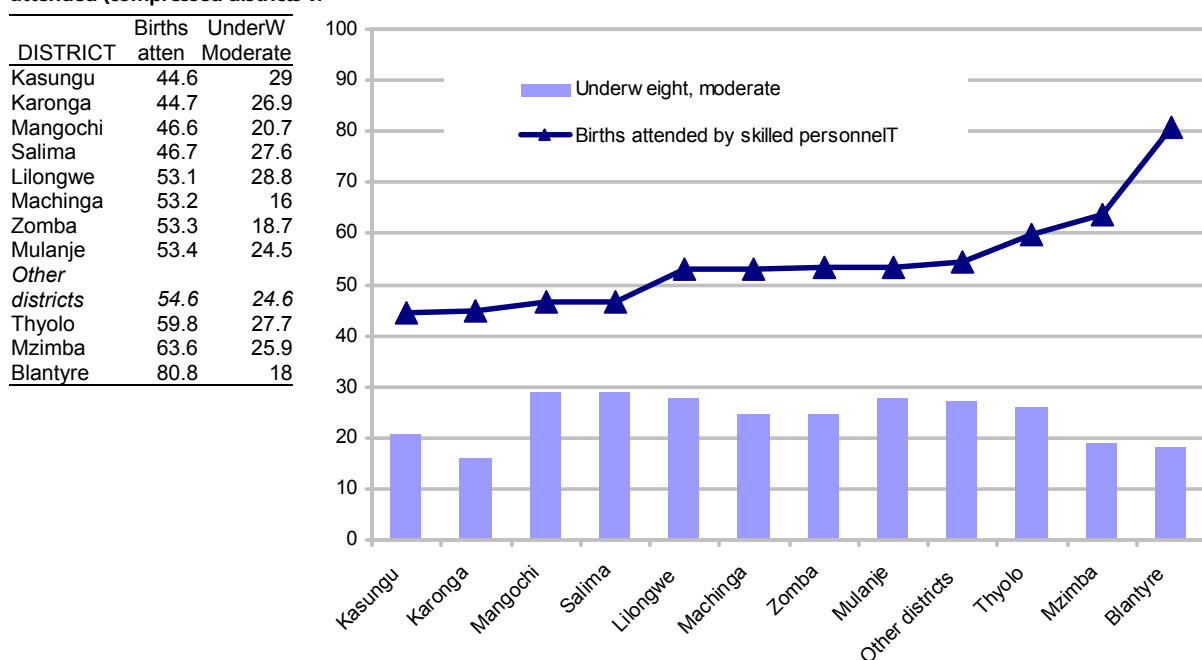
[14] Mwanza, Chitipa, Balaka, Chiradzulu, Ntchisi, Rumphi, Nsanje, Mchinji, Dowa, Chikwawa, Nkhata Bay, Nkhotakota, Ntcheu, Dedza, Likoma are lumped together as other districts.

5.5.3. Are district differences in health sector resource allocation followed by district differences in the outcome and health status?

| 1. Sector & internal sector allocation | → | 2. Service standard & use of services | → | 3. Outcome & status | → | 4. Poverty reduction and other end goal impact from health, education etc. |
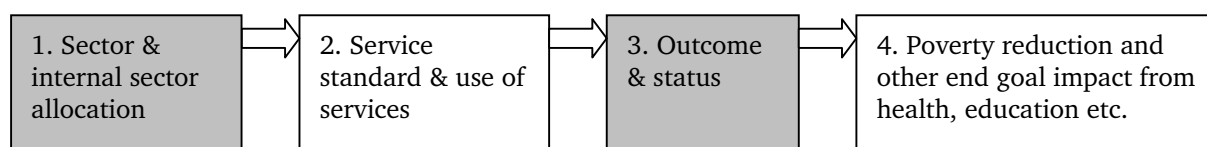
Input in the health sector is expected to produce more outcomes. Figures 5.19 and 5.20 shows the health sector expenditures per capita together with 2 chosen outcomes i.e. *infant mortality* (per 1000 children) and *percentage of moderately underweight children* (those more than 2 standard deviations below the mean)

Figure 5.19. Input - outcome (mortality rates) in Malawi health sector by district, sorted by expenditures per capita 2000.

District	HEXP 2000	Inf Mort	Mort 12-59 months
Blantyre	3	106.1	190.7
Mwanza	13	109.3	203.9
Zomba	15	151	216.1
Chitipa	15	109.3	203.9
Mzimba	15	105.2	181
Balaka	16	109.3	203.9
Chiradzulu	17	109.3	203.9
Karonga	18	93.2	145.7
Thyolo	18	145.5	225.4
Salima	18	131.9	239.5
Ntchisi	18	109.3	203.9
Rumphi	19	109.3	203.9
Nsanje	19	109.3	203.9
Kasungu	20	93.1	207.1
Mchinji	22	109.3	203.9
Dowa	22	109.3	203.9
Chikwawa	22	109.3	203.9
Nkhata Bay	23	109.3	203.9
Nkhotakota	25	109.3	203.9
Ntcheu	25	109.3	203.9
Dedza	26	109.3	203.9
Mangochi	26	115.6	200.1
Mulanje	31	130.3	227.4
Machinga	35	118.2	205.4
Lilongwe	47	98.5	193.2
Likoma		109.3	203.9
Phalombe		109.3	203.9

Figure 5.20. Input - outcome (Underweight, moderate) in Malawi health sector by district, sorted by expenditures per capita 2000

District	HEXP 2000	UnderW moderate
Blantyre	3	190.7
Mwanza	13	203.9
Zomba	15	216.1
Chitipa	15	203.9
Mzimba	15	181
Balaka	16	203.9
Chiradzulu	17	203.9
Karonga	18	145.7
Thyolo	18	225.4
Salima	18	239.5
Ntchisi	18	203.9
Rumphi	19	203.9
Nsanje	19	203.9
Kasungu	20	207.1
Mchinji	22	203.9
Dowa	22	203.9
Chikwawa	22	203.9
Nkhata Bay	23	203.9
Nkhotakota	25	203.9
Ntcheu	25	203.9
Dedza	26	203.9
Mangochi	26	200.1
Mulanje	31	227.4
Machinga	35	205.4
Lilongwe	47	193.2
Likoma		203.9
Phalombe		203.9

5.5.4. Are district differences in health sector outcome and health status followed by district differences of end goal achievements.

1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.

While both mortality and underweight may affect poverty, there is also a possible effect in the other direction and it should be remembered that these statistical data show the relationship in both directions. We expect that a positive status of health outcome being low mortality or low number of moderately underweight children are followed by low poverty rates i.e. poverty headcount or extreme poverty headcount.

Figure 5.21. Outcome (mortality rates) - impact in Malawi health sector by district, sorted by extreme poverty headcount, 2000

District	Infant mortality	Child mortality	Extreme poverty headcount 1998
Chikwawa	109	106	10
Karonga	93	58	10
Nsanje	109	106	11
Nkhata Bay	109	106	12
Likoma	109	106	12
Kasungu	93	126	14
Rumphi	109	106	18
Salima	132	124	20
Nkhotakota	109	106	21
Dowa	109	106	21
Mwanza	109	106	23
Lilongwe	99	105	23
Balaka	109	106	24
Machinga	118	99	24
Mchinji	109	106	27
Ntchisi	109	106	28
Chitipa	109	106	29
Blantyre	106	95	29
Dedza	109	106	30
Zomba	151	77	31
Mzimba	105	85	33
Mulanje	130	112	34
Phalombe	109	106	34
Chiradzulu	109	106	36
Mangochi	116	96	38
Thyolo	146	94	43
Ntcheu	109	106	53

Figure 5.22. Outcome (Underweight) - impact in Malawi health sector by district, sorted by extreme poverty headcount, 2000

District	Extr Pov HeadC 1998	UnderW Moderate 2000
Chikwawa	9.6	26.9
Karonga	10	16
Nsanje	10.8	26.9
Nkhata Bay	11.9	26.9
Likoma	11.9	26.9
Kasungu	13.6	20.7
Rumphi	18.2	26.9
Salima	20.2	29
Nkhotakota	20.5	26.9
Dowa	21.4	26.9
Mwanza	22.8	26.9
Lilongwe	22.9	27.6
Balaka	24.4	26.9
Machinga	24.4	24.5
Mchinji	26.6	26.9
Ntchisi	27.7	26.9
Chitipa	28.8	26.9
Blantyre	29	18
Dedza	30.3	26.9
Zomba	31	24.6
Mzimba	33.1	18.7
Mulanje	33.9	27.7
Phalombe	33.9	26.9
Chiradzulu	36	26.9
Mangochi	38.2	28.8
Thyolo	42.9	25.9
Ntcheu	52.6	26.9

Figure 5.23. Outcome (mortality rates) - impact in Malawi health sector by district, sorted by poverty headcount, 2000

District	Infant mortality	Child mortality	Poverty headcount 1998
Karonga	93	58	42
Nkhata Bay	109	106	48
Likoma	109	106	48
Kasungu	93	126	49
Nsanje	109	106	51
Dowa	109	106	54
Chikwawa	109	106	55
Lilongwe	99	105	58
Salima	132	124	61
Blantyre	106	95	62
Balaka	109	106	64
Machinga	118	99	64
Nkhotakota	109	106	65
Rumphi	109	106	66
Chitipa	109	106	66
Mulanje	130	112	67
Phalombe	109	106	67
Mchinji	109	106	68
Mzimba	105	85	68
Mangochi	116	96	70
Mwanza	109	106	71
Zomba	151	77	73
Dedza	109	106	73
Chiradzulu	109	106	74
Ntchisi	109	106	76
Thyolo	146	94	77
Ntcheu	109	106	84
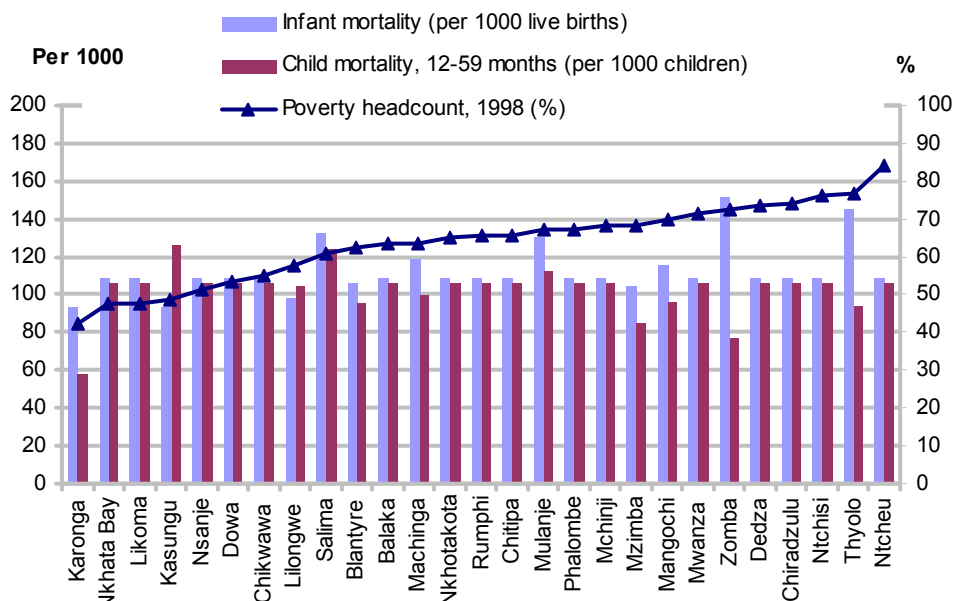
Figure 5.24. Outcome (Underweight) - impact in Malawi health sector by district, sorted by poverty headcount, 2000

District	Poverty HeadC 1998	Underw 2000
Karonga	42.1	16
Nkhata Bay	47.7	26.9
Likoma	47.7	26.9
Kasungu	48.9	20.7
Nsanje	51.3	26.9
Dowa	53.6	26.9
Chikwawa	54.8	26.9
Lilongwe	57.7	27.6
Salima	60.8	29
Blantyre	62.3	18
Balaka	63.5	26.9
Machinga	63.5	24.5
Nkhotakota	65.3	26.9
Rumphi	65.8	26.9
Chitipa	65.8	26.9
Mulanje	67.2	27.7
Phalombe	67.2	26.9
Mchinji	68	26.9
Mzimba	68	18.7
Mangochi	69.8	28.8
Mwanza	71.4	26.9
Zomba	72.6	24.6
Dedza	73.3	26.9
Chiradzulu	74	26.9
Ntchisi	76.3	26.9
Thyolo	76.8	25.9
Ntcheu	84	26.9
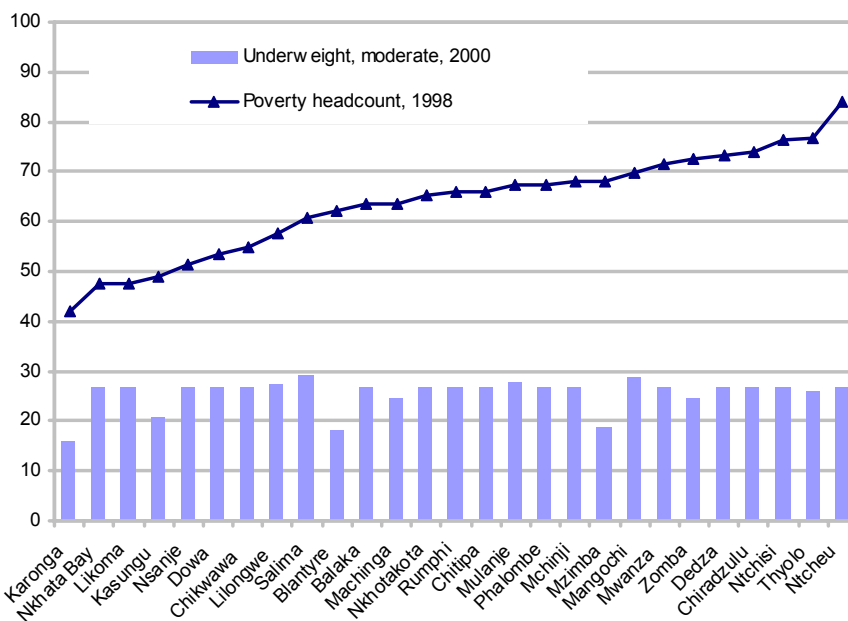
5.5.5. Assessment of whether district differences at one level is followed by district differences at the next level for the health sector in Malawi

Input-output by district
Input and output figures by district did not show the expected relationship (figure 5.14). There is no positive relationship between input to the health sector (on a per capita basis) and output. Blantyre registered the highest output for all three categories despite the lowest budget accorded per capita, but as stated this may reflect the budget practice rather than some effects. Hence we exclude Blantyre, Lilongwe, and Zomba from the further discussion.

The district data allow us to identify some t seemingly efficient districts like Nsanje, and Nkhata Bay, which registered high outputs despite low resource allocations. Zomba and Nsanje are southern regions while Nkhata Bay is located in the north.

Output-outcome by district
Outcomes sorted according to DPT immunisation rates were done to check if it has an effect on mortality rates and moderately underweight figures. Figure 5.15 showed however that outcome behaved rather independently of output (DPT immunisation) and there is no pattern seen across the districts. Zomba and Thyolo, both in the Southern region, had the highest child mortality rates in 2000 even if they had more coverage in immunisation. While Mzimba and the group of other districts had the highest infant mortality rates eith equally high immunisation rates. Kasungu in the Central region and Karonga in the Northern region were effective in producing improved outcomes even though they had lower immunisation coverage. The numbers of moderately underweight children were also not affected by immunisation rates (figure 5.16). Unfortunately we are not able to check data with a proper time lag.

Outcomes sorted according to births attended by skilled personnel were done to show if it has an effect

on mortality rates and moderately underweight figures. Figures 5.17 and 5.18 show that the relationship is not strong. Kasungu and Karonga are the most effective amongst the districts showing desired outcomes despite low number of births attended by skilled personnel. What factors have contributed to low mortality rates and low moderately underweight figures despite the fact that there is a low percentage of births attended by skilled personnel is an issue for follow up!

Overall, we see that Karonga in the Northern region and Kasungu in the Central region produced relatively better outcomes despite low outcome levels**.** Mortality rates of children from 12 to 59 months were a lot higher than infant mortality rates. This should cause concern for national leaders.

Input-outcome by district
Figure 5.19 and figure 5.20 show that input does not have a strong relationship to outcome indicator chosen in the health sector at the districts level. Again we see Karonga is effectiv in producing a high outcome despite the low public resource allocation to the district. Mzimba, also in the North, registered good outcomes despite low official investments.

Outcome- Impact by district
The relationship between outcome and poverty headcount is not very clear (figure 5.21- 5.24). We see moderately underweight figures almost at the same level throughout the country. Infant mortality rates on the other hand did not relate as expected across districts, but there are exceptions. Kasungu and Karonga (both in the Northern region) had low outcomes figures (low mortality rates and low moderate underweight figures) and low poverty headcounts. Zomba, Tyolo and Mulanje (all in the South) had high poverty headcounts and also high outcomes (high mortality rates) figures. Both groups of district need follow up, first to check figures for other years, and then to learn why some districts are doing well and others really are in trouble.

5.6. Are district differences in the education sector at one level followed by district differences at the next level?

5.6.1. Are district differences in education sector resource allocation followed by district differences in service standard?
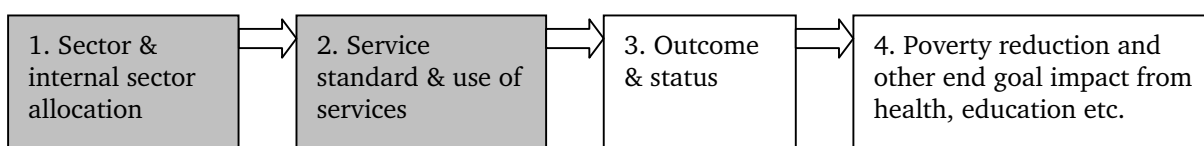
Resources allocated to the education sector are expected to produce higher outputs such as number increase in the number of *certified teachers at the primary level* and increase in *gross enrolment*.

Figure 5.25. Input-output in Malawi education sector by district, sorted according to expenditures

District	EXP/CHILD	GROSS ENR	Cert teac prim
Lilongwe	6	134	46.3
Chikwawa	22	105	49.5
Mangochi	24	98	42.8
Thyolo	25	150	48.7
Mwanza	26	136	56.1
Nsanje	29	103	54.3
Kasungu	29	160	47.5
Chiradzulu	39	148	59.8
Dedza	40	102	52.9
Mulanje	42	115	53.7
Blantyre	45	134	56.8
Salima	47	120	48.5
Phalombe	49	125	40.9
Machinga	50	111	42.4
Mchinji	54	122	47.9
Dowa	54	131	43.9
Zomba	57	121	55.8
Ntcheu	71	147	45.7
Nkhotakota	73	143	49.3
Karonga	95	156	63.9
Nkhata Bay	111	188	64.2
Ntchisi	124	142	56.4
Mzimba	131	173	43.7
Rumphi	163	190	63.6
Chitipa	225	171	63.2
Likoma			
Balaka			46.6

5.6.2. Are district differences in education sector service standard and use of services followed by district differences in outcome and education status?
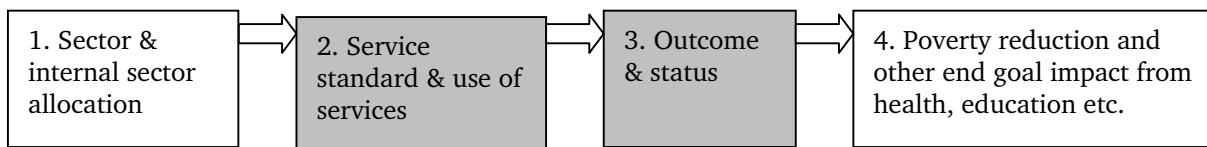
Output is expected to produce a certain outcome. It is expected that increase in *gross enrolment* should affect the outcome both a larger *percentage passing JCE* and a larger *percentage enrolled in 4th grade*.

Figure 5.26. Output-outcome in Malawi education sector by district, sorted by Gross enrolment

District	GROSS ENR	% pass JCE	% Enrol in 4th
Mangochi	98	22	80
Dedza	102	21	64
Nsanje	103	32	80
Chikwawa	105	29	87
Machinga	111	22	91
Mulanje	115	31	90
Salima	120	25	94
Zomba	121	26	104
Mchinji	122	32	99
Phalombe	125	29	97
Dowa	131	21	110
Blantyre	134	54	127
Lilongwe	134	36	105
Mwanza	136	42	109
Ntchisi	142	97	122
Nkhotakota	143	45	123
Ntcheu	147	39	115
Chiradzulu	148	49	133
Thyolo	150	35	125
Karonga	156	70	132
Kasungu	160	46	135
Chitipa	171	78	158
Mzimba	173	62	164
Nkhata Bay	188	80	178
Rumphi	190	90	174
Likoma			
Balaka		33	118

5.6.3. Are district differences in education sector resource allocation followed by district differences in final educational status?

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┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────────┐
│ 1. Sector &  │   │ 2. Service   │   │ 3. Outcome   │   │ 4. Poverty       │
│ internal     │═> │ standard &   │═> │ & status     │═> │ reduction and    │
│ sector       │   │ use of       │   │              │   │ other end goal   │
│ allocation   │   │ services     │   │              │   │ impact from      │
│              │   │              │   │              │   │ health, educ etc.│
└──────────────┘   └──────────────┘   └──────────────┘   └──────────────────┘
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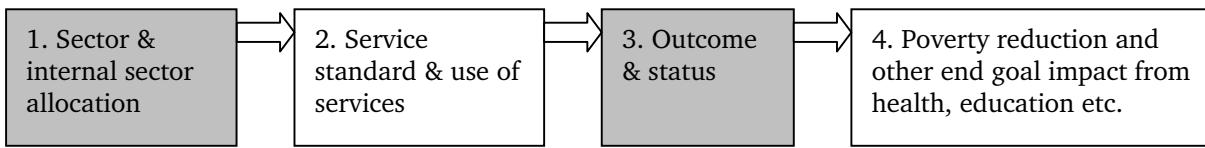
It is expected that increase in resource allocation for the education sector (expenditure per child, 6-13 years) will affect outcome. Output usually measured is literacy rate, however due to lack of data *percentages enrolled in 4th grade* and *percentage passing JCE* are used as proxies.

Figure 5.27. Input-outcome in Malawi education sector by district, sorted by expenditure

District	EXP/CHILD	% pass JCE	% Enrolled in 4th
Lilongwe	6	36	105
Chikwawa	22	29	87
Mangochi	24	22	80
Thyolo	25	35	125
Mwanza	26	42	109
Nsanje	29	32	80
Kasungu	29	46	135
Chiradzulu	39	49	133
Dedza	40	21	64
Mulanje	42	31	90
Blantyre	45	54	127
Salima	47	25	94
Phalombe	49	29	97
Machinga	50	22	91
Mchinji	54	32	99
Dowa	54	21	110
Zomba	57	26	104
Ntcheu	71	39	115
Nkhotakota	73	45	123
Karonga	95	70	132
Nkhata Bay	111	80	178
Ntchisi	124	97	122
Mzimba	131	62	164
Rumphi	163	90	174
Chitipa	225	78	158
Likoma			
Balaka		33	118

5.6.4. Are district differences in education sector outcome and educational status followed by district differences of end goal achievements?

```
┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────────┐
│ 1. Sector &  │   │ 2. Service   │   │ 3. Outcome   │   │ 4. Poverty       │
│ internal     │═> │ standard &   │═> │ & status     │═> │ reduction and    │
│ sector       │   │ use of       │   │              │   │ other end goal   │
│ allocation   │   │ services     │   │              │   │ impact from      │
│              │   │              │   │              │   │ health, educ etc.│
└──────────────┘   └──────────────┘   └──────────────┘   └──────────────────┘
```

For this relationship, outcome (measured by *percentage passing JCE* and *percentages enrolled in 4th grade*) is expected to have a direct relationship with impact (measured by *poverty headcount* and *extreme poverty headcount*).

Figure 5.28. Outcome - impact in Malawi education sector by district, sorted by poverty headcount, 2000

District	Pov HC	Per centpass JCE	Per centenrolled in 4th grd
Karonga	42.1	70	132
Likoma	47.7		
Nkhata Bay	47.7	80	178
Kasungu	48.9	46	135
Nsanje	51.3	32	80
Dowa	53.6	21	110
Chikwawa	54.8	29	87
Lilongwe	57.7	36	105
Salima	60.8	25	94
Blantyre	62.3	54	127
Machinga	63.5	22	91
Balaka	63.5	33	118
Nkhotakota	65.3	45	123
Chitipa	65.8	78	158
Rumphi	65.8	90	174
Mulanje	67.2	31	90
Phalombe	67.2	29	97
Mzimba	68	62	164
Mchinji	68	32	99
Mangochi	69.8	22	80
Mwanza	71.4	42	109
Zomba	72.6	26	104
Dedza	73.3	21	64
Chiradzulu	74	49	133
Ntchisi	76.3	97	122
Thyolo	76.8	35	125
Ntcheu	84	39	115

Figure 5.29. Outcome - impact in Malawi education sector by district, sorted by extreme poverty headcount, 2000

District	Ext pov HeadC	Per cent pass JCE	Per cent enrolled in 4th grd
Chikwawa	9.6	29	87
Karonga	10	70	132
Nsanje	10.8	32	80
Likoma	11.9		
Nkhata Bay	11.9	80	178
Kasungu	13.6	46	135
Rumphi	18.2	90	174
Salima	20.2	25	94
Nkhotakota	20.5	45	123
Dowa	21.4	21	110
Mwanza	22.8	42	109
Lilongwe	22.9	36	105
Machinga	24.4	22	91
Balaka	24.4	33	118
Mchinji	26.6	32	99
Ntchisi	27.7	97	122
Chitipa	28.8	78	158
Blantyre	29	54	127
Dedza	30.3	21	64
Zomba	31	26	104
Mzimba	33.1	62	164
Mulanje	33.9	31	90
Phalombe	33.9	29	97
Chiradzulu	36	49	133
Mangochi	38.2	22	80
Thyolo	42.9	35	125
Ntcheu	52.6	39	115

5.6.5. Assessment of whether district differences at one level are followed by district differences at the next level for the education sector in Malawi

Input-output at district level
In figure 5.25, except for some exceptions, investment into education sector generally affected gross enrolments. It is interesting that though Nchisi (Central region) had high official investment per child, it had relatively low gross enrolment. Kasungu (Central region), Chiradzulu (south) and Thyolo (south) have low official investment per child but still the gross enrolment rates are high. Lilongwe has also low official investment but relatively high gross enrolment rates. The number of certified teachers in the primary level, on the other hand, was not affected by the official investment level per child.

Output-outcome at district level
The level of outcome (percentage enrolled) in the education sector is strongly affected by the output, gross enrolment in the districts (figure 5.26). We see three northern regions having the most number of students enrolled in the fourth grade (Nkhata Bay, Rumphi and Mzimba). However the outcome percentage passing JCE examinations behaved independently of output data. It is remarkable that in Ntchisi (Central region) 97% of their students passed the JCE examinations.

Relating the output pupil-teacher ratio on the other hand shows less clear relationships. Two Northern regions (Chitipa and Rumphi) had the lowest pupil-teacher ratio and had high percentage of students passing JCE and high percentage of students enrolled in the fourth grade. Southern regions Machinga and Mangochi had the highest pupil-teacher ratio and a relatively low percentage of students passing JCE and low percentage of students enrolled in the fourth grade. Mzimba and Nkhata Bay (both in the Northern region) showed high percentage enrolled in fourth grade and relatively good rates of students passing JCE. It is also worth noting that in the central region, Ntchisi has a high percentage of students passing JCE (97%) and two other districts Mchinji had a low 32% even if it had lower pupil ratio (58.9%) and Nkhotakota had a low passing rate of 45% even if the pupil-teacher ratio of 60.4%.

Input-outcome at district level
Input to the sector seems to affect the outcome percentage of children enrolled in 4th grade (figure 5.27). However other outcome indicators like percentage passing JCE behaved independently of input in the districts. "Good performers" are Thyolo, Kasungu, Chiradzulu, and Blantyre, where outcomes were relatively good considering the level of resource input in the districts educational budgets.

Outcome- impact at district level
Based on figure 5.28, we see that outcome indicators in the education sector generally behaved independently of poverty headcount rates. Nkhata Bay, a Northern districts with low poverty headcount rate had high percentage rate of pupils still enrolled at 4th grade. Dedza located in the Central region has a high poverty headcount and had low percentage of pupils passing JCE examinations and low percentage of students enrolled in the 4th grade.

5.7. Are district differences in the water and sanitation sector at one level followed by district differences at the next level?

5.7.1. Are district differences in water and sanitation sector resource allocation followed by district differences in service standard?

1. Sector & internal sector allocation	2. Service standard & use of services	3. Outcome & status	4. Poverty reduction and other end goal impact from health, education etc.
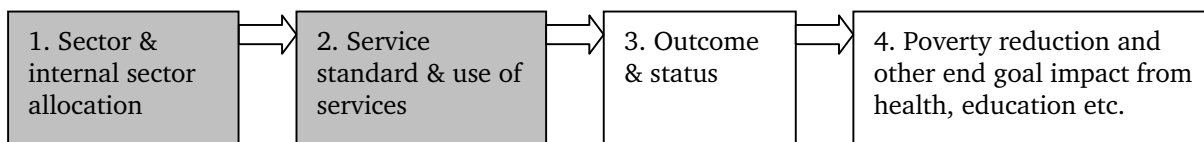
It is expected that input of public resources into the water and sanitation sector will result in more output, i.e. better *access to water and improved sanitation* in the districts.

Figure 5.30. Input-output in Malawi water and sanitation sector by district

DISTRICT	WatEXP	ACC WAT 1998	ACC SAN 1998
Salima	5	50.8	61.3
Nkhotakota	19	43.2	63.8
Mchinji	25	46.9	67
Kasungu	31	28	78.6
Chiradzulu	31	50	88.6
Dedza	41	41.4	83.9
Mangochi	44	39.1	82.3
Karonga	57	64.5	81.2
Chikwawa	71	55.1	42.4
Nkhata Bay	91	37.5	82.5
Rumphi	97	53	90.5
Chitipa	104	37	93.4
Mzimba	158	45.5	76.9
Machinga	179	48.6	76.3
Mulanje	201	49	79.3
Zomba	221	55.2	86.3
Ntcheu	225	64.9	86
Likoma		13.3	84.9
Dowa		25.2	70.3
Lilongwe		52.9	79.4
Ntchisi		30.8	78
Blantyre		76.9	91.9
Thyolo		26.8	86.6
Mwanza		40.7	76
Nsanje		72	45.7
Balaka		70.8	79.2
Phalombe		48.6	68.4

5.7.2. Are district differences in water and sanitation service standard and use of services followed by district differences in outcome and status?
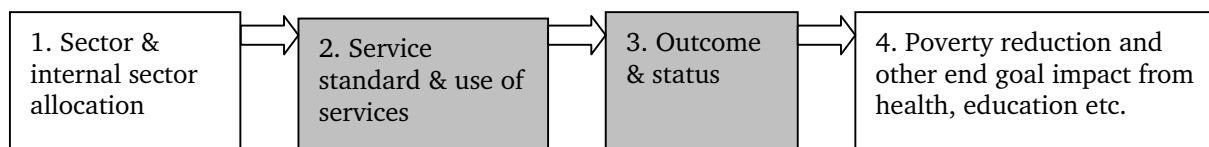
Output in the sector i.e. *better access to improved water* and *improved/ some sort of sanitation* is supposed to affect the output *incidence of diarrhoea of children <5 years of age*.

Figure 5.31. Output-outcome in Malawi water and improved sanitation sector by district, sorted according to incidence of diarrhoea

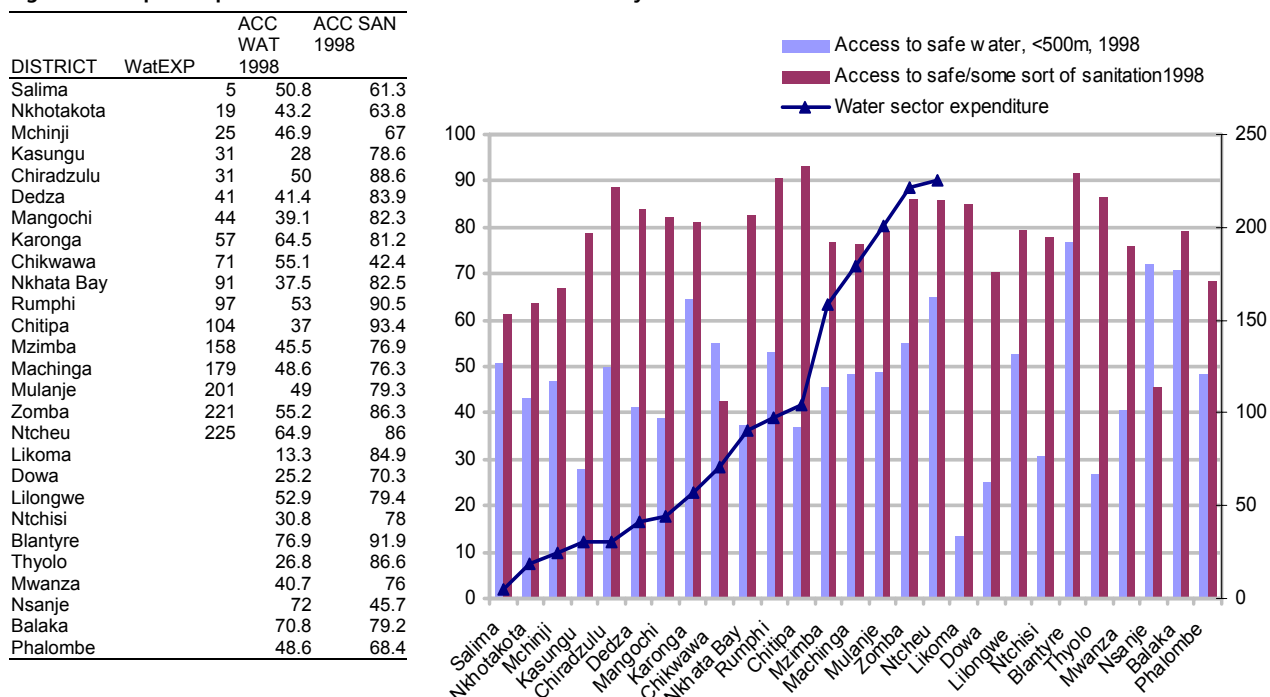| DISTRICT	DIARR CHIL 1995	ACC WAT 1998	ACC SAN 1998
Blantyre	7.6	76.9	91.9
Dedza	8.6	41.4	83.9
Zomba	8.9	55.2	86.3
Rumphi	9.6	53	90.5
Machinga	9.8	48.6	76.3
Chiradzulu	11.9	50	88.6
Nkhata Bay	12.1	37.5	82.5
Chikwawa	12.8	55.1	42.4
Ntcheu	13.2	64.9	86
Chitipa	13.4	37	93.4
Mwanza	13.4	40.7	76
Mzimba	13.9	45.5	76.9
Thyolo	14.4	26.8	86.6
Karonga	14.6	64.5	81.2
Mangochi	14.8	39.1	82.3
Kasungu	15.6	28	78.6
Salima	15.7	50.8	61.3
Nsanje	15.9	72	45.7
Ntchisi	16.4	30.8	78
Mchinji	16.8	46.9	67
Nkhotakota	17.9	43.2	63.8
Lilongwe	20.3	52.9	79.4
Mulanje	21.4	49	79.3
Dowa	22	25.2	70.3
Likoma		13.3	84.9
Balaka		70.8	79.2
Phalombe		48.6	68.4

5.7.3. Are district differences in water and sanitation sector resource allocation followed by district differences in outcome and status?
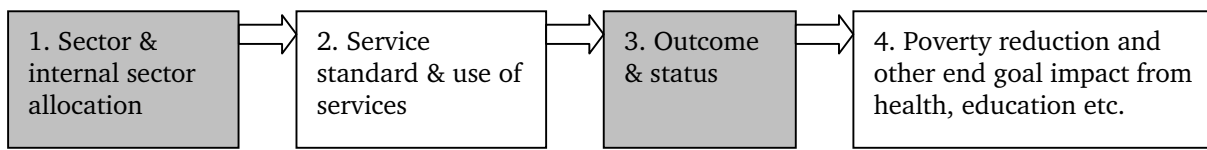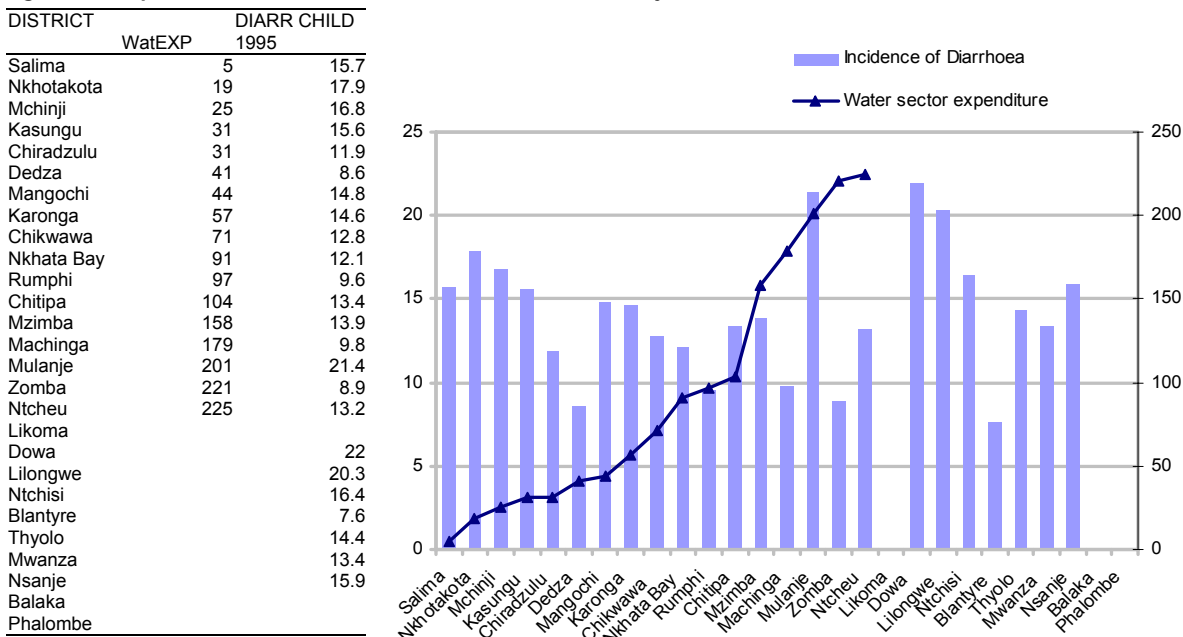
1. Sector & internal sector allocation	→	2. Service standard & use of services	→	3. Outcome & status	→	4. Poverty reduction and other end goal impact from health, education etc.

Investment into the sector is supposed to affect positively outcome indicator chosen *incidence of diarrhoea*. In this case, input data is only for water and not for sanitation.

Figure 5.32. Input- outcome in Malawi water and sanitation sector by district

DISTRICT	WatEXP	DIARR CHILD 1995
Salima	5	15.7
Nkhotakota	19	17.9
Mchinji	25	16.8
Kasungu	31	15.6
Chiradzulu	31	11.9
Dedza	41	8.6
Mangochi	44	14.8
Karonga	57	14.6
Chikwawa	71	12.8
Nkhata Bay	91	12.1
Rumphi	97	9.6
Chitipa	104	13.4
Mzimba	158	13.9
Machinga	179	9.8
Mulanje	201	21.4
Zomba	221	8.9
Ntcheu	225	13.2
Likoma		
Dowa		22
Lilongwe		20.3
Ntchisi		16.4
Blantyre		7.6
Thyolo		14.4
Mwanza		13.4
Nsanje		15.9
Balaka		
Phalombe		

5.7.4. Assessment of whether district differences at one level is followed by district differences at the next level for the water and sanitation sector in Malawi

Based on figures 5.30 to figure5.32, there are no strong relationships in the water and sanitation sector. Output behaved independently of input, outcome was not affected by output and outcomes were not affected by input.

Two Central districts (Kasungu and Likoma) and a Southern district (Thyolo) have poor access to improved water but at the same time better access to sanitation facilities. Residents of Blantyre, Nsanje and Balaka, all in the southern region, have better access to improved water but poorer access to improved sanitation. We should also note that Mulanje belonged to the districts with high expenditure level for their water sector and yet, we see high incidence rate of Diarrheoa at 21.4%. Dedza on the other hand had low expenditure level and yet the incidence of diarrhoea is quite low at 8.6%. The reason for this lack of relationships can be traced to both the structure and process of reporting in the water and sanitation sector i.e. expenditures recorded does not reflect private

investments, the ministry of health also include the building of latrines in their programmes.
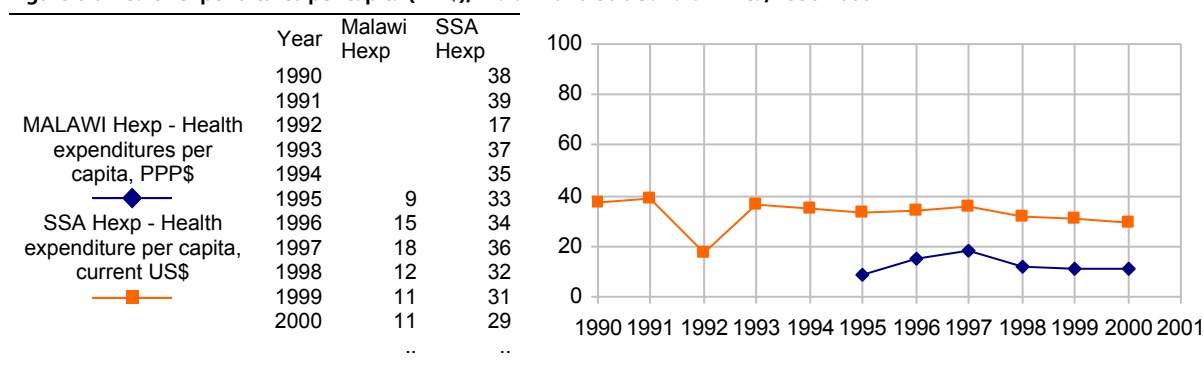
6. Malawi and Sub Sahara Africa compared

In this section, we want to present indicators allowing for comparing indicators for Malawi and the average for Sub Sahara Africa. However, the only indicators available for Sub Sahara Africa are from multilateral institutions which usually edit the data in order to fit international standards and smoothing trends. Hence the only way to ensure consistency is to use data from the same sources for Malawi as well. *Therefore data presented in this chapter might not always be consistent with data presented in the preceding chapters for Malawi alone.*

There might be similar problems with definitions as well. For information purposes, some data, which were vital, were presented despite differences in definitions.
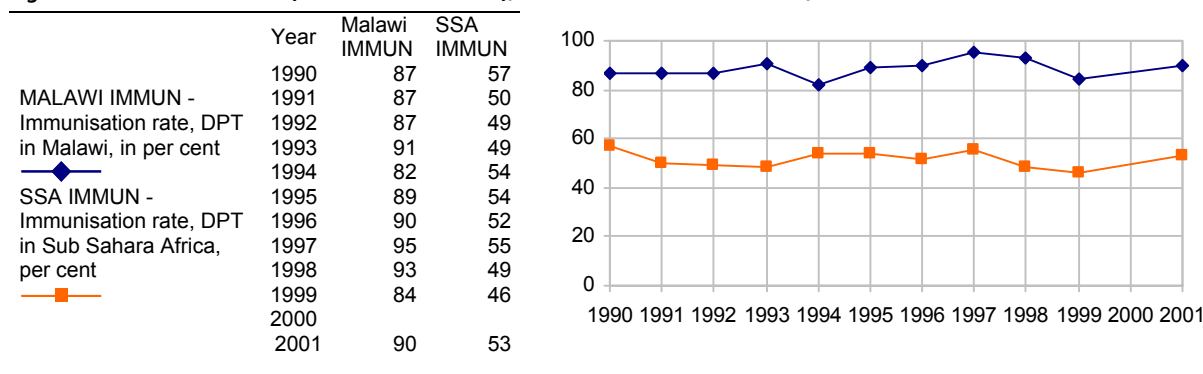
6.1. Health Sector

Figure 6.0 Health expenditures per capita (PPP$), Malawi and Sub Sahara Africa, 1990-2000

Year	Malawi Hexp	SSA Hexp
1990		38
1991		39
1992		17
1993		37
1994		35
1995	9	33
1996	15	34
1997	18	36
1998	12	32
1999	11	31
2000	11	29
	..	..

MALAWI Hexp - Health expenditures per capita, PPP$ ◆

SSA Hexp - Health expenditure per capita, current US$ ■

Health expenditures per capita, current US$ are defined as the sum of public and private health expenditures as a ratio of the total population. The data covers provision of health activities (preventive and curative), family planning activities, nutrition activities and emergency aid and designated for health but does not include provision of water and sanitation(WDI, 2003)**.**

Figure 6.1 Immunisation rate (DPT under 12 months), Malawi and Sub Sahara Africa, 1990-2001

Year	Malawi IMMUN	SSA IMMUN
1990	87	57
1991	87	50
1992	87	49
1993	91	49
1994	82	54
1995	89	54
1996	90	52
1997	95	55
1998	93	49
1999	84	46
2000		
2001	90	53

MALAWI IMMUN - Immunisation rate, DPT in Malawi, in per cent ◆

SSA IMMUN - Immunisation rate, DPT in Sub Sahara Africa, per cent ■

World Health Organisation defines child immunisation (DPT % of children under 12 months) as the the percentge of vaccination coverage of children under one year of age. A child is considered adequately 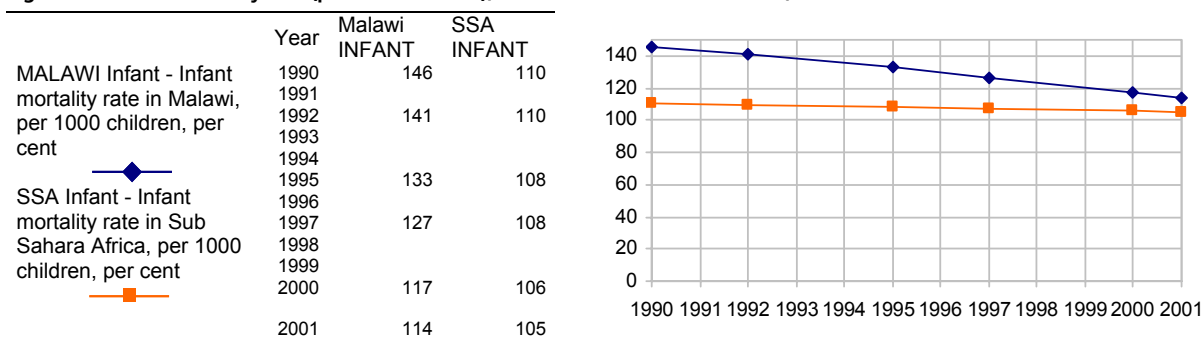immunised against diptheria, pertussis (or whooping cough), and tetanus (DPT) after receiving three doses of vaccine (WDI, 2003).

Figure 6.2. Mortality rate for 2-5 years (per 1000 children), Malawi and Sub Sahara Africa, 1990-2001
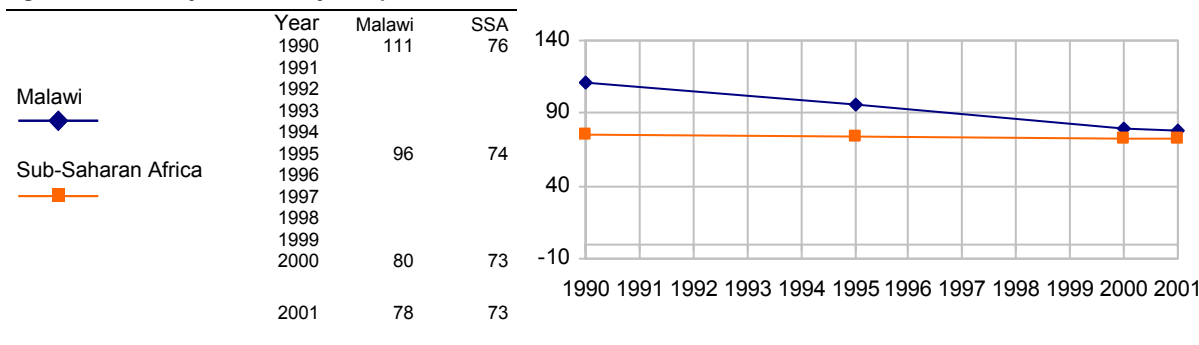
Year	Malawi	SSA
1990	111	76
1991		
1992		
1993		
1994		
1995	96	74
1996		
1997		
1998		
1999		
2000	80	73
2001	78	73

World Bank staff estimates using data from United Nations and UNICEF, and State of the World's Children defines mortality rate under 5 years (per 1,000 birth) as the probability that a newborn baby will die before reaching age five, if subject to current age-specific mortality rates. The probability is expressed as rate per 1,000 (WDI, 2003).

Figure 6.3. Infant mortality rate (per 1000 children), Malawi and Sub Sahara Africa, 1990-2001

Year	Malawi INFANT	SSA INFANT
1990	146	110
1991		
1992	141	110
1993		
1994		
1995	133	108
1996		
1997	127	108
1998		
1999		
2000	117	106
2001	114	105

MALAWI Infant - Infant mortality rate in Malawi, per 1000 children, per cent

SSA Infant - Infant mortality rate in Sub Sahara Africa, per 1000 children, per cent

World Bank staff estimates using data from United Nations and UNICEF, and State of the World's Children defines infant mortality rate as the number of infants dying before reaching one year of age, per 1,000 live births at a given year (WDI, 2003). Child mortality 12-59 months is then the number of 1000 1-years old children who will die before reaching 5 years of age.

Malawi and Sub Sahara's health sector compared

Input:
Malawi's health expenditures per capita consistently fell below the average for Sub Sahara Africa.

Output:
Malawi has been receiving help from the international community to pursue it's immunisation programmes, thus probably explaining why the immunisation rate for DPT[18] for children 12 months in Malawi is much higher that the Sub Sahara Africa average. Looking at the monetary input and the level of immunisation rates in Malawi shows that the Malawi government has given priority to this sector compared to average Sub Sahara Africa.

Outcome:
Mortality rates for infants and for children 12-59 months decreased for both Malawi and Sub Sahara Africa but Malawi experienced a much sharper drop than Sub Sahara. It is surprising that though Malawi's health expenditures and immunisation rates were higher than average for Sub Sahara Africa, mortality rates are still higher than average Sub Sahara Africa. However, if the trends continue, the situation will be better in Malawi than average Sub Sahara Africa within few years.

Summary:
Malawi's health expenditure on a per capita basis fell below the Sub Sahara Africa's (SSA) level. We also see that though Malawi's input was consistently below that of SSA and output (immunisation rate) is higher than the average for SSA, mortality rates registered are still higher for Malawi. However with the current trends it is just a matter of a few years before Malawi may pass average Sub Sahara Africa level.

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[18] DPT refers to diphtheria, pertussis (whopping cough) and tetanus.

6.2. Education sector

Expenditure per student, primary (% of GDP per capita)

Figure 6.4. Public education expenditure, Malawi and Sub Sahara Africa 1990-2000
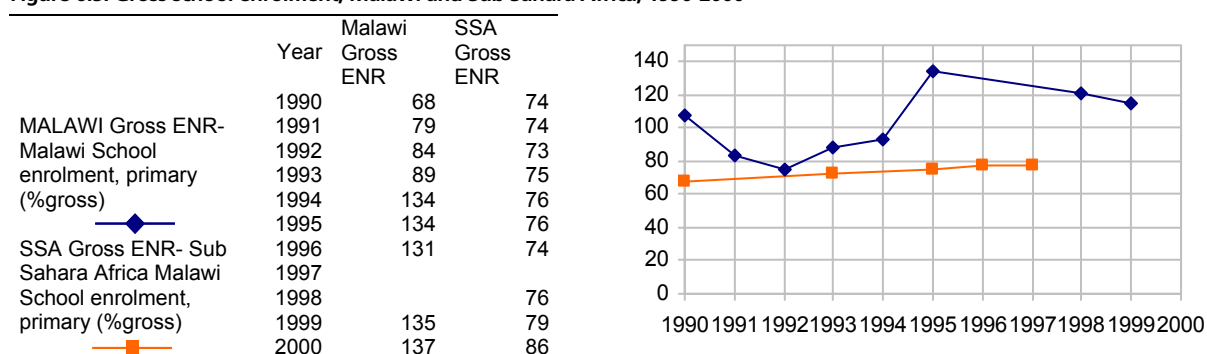
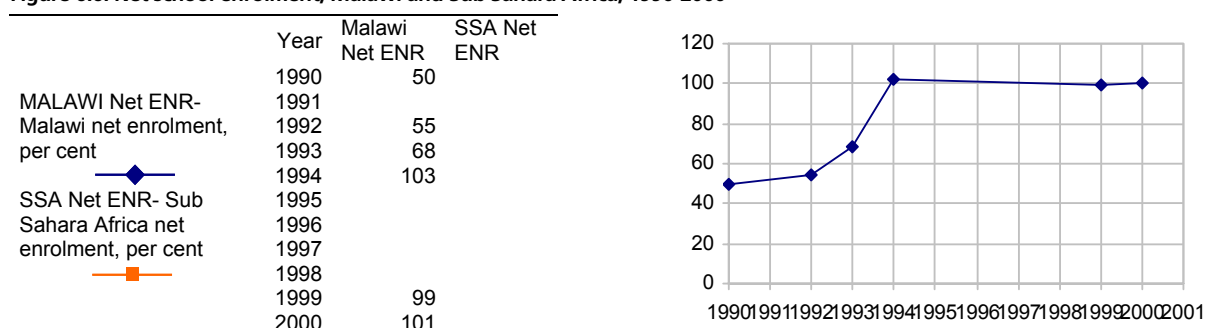|	Year	Malawi EXP	SSA Exp
MALAWI Exp as % - Expenditure per student, primary (% of GDP per capita) ◆	1990	3,2	3,3
	1991	3,1	3,1
	1992	4,7	4,5
	1993	4,3	4,3
	1994	4,1	4,5
	1995	5,3	4,3
SSA Exp as % - Expenditure per student, primary (% of GDP per capita) ■	1996		
	1997		
	1998	4,6	3,5
	1999		
	2000	4,1	3,4
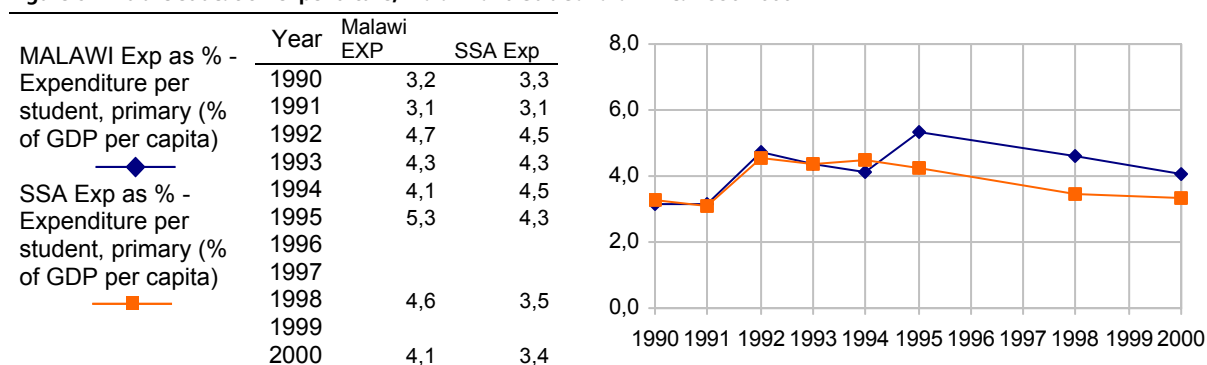
United Nations Educational, Scientific and Cultural Organisation and the World Bank and OECD GDP defines education expenditures as % of GDP per capita as the public current spending on education divided by the total number of students by level, as percentage of GDP per capita (WDI, 2003).

Figure 6.5. Gross school enrolment, Malawi and Sub Sahara Africa, 1990-2000

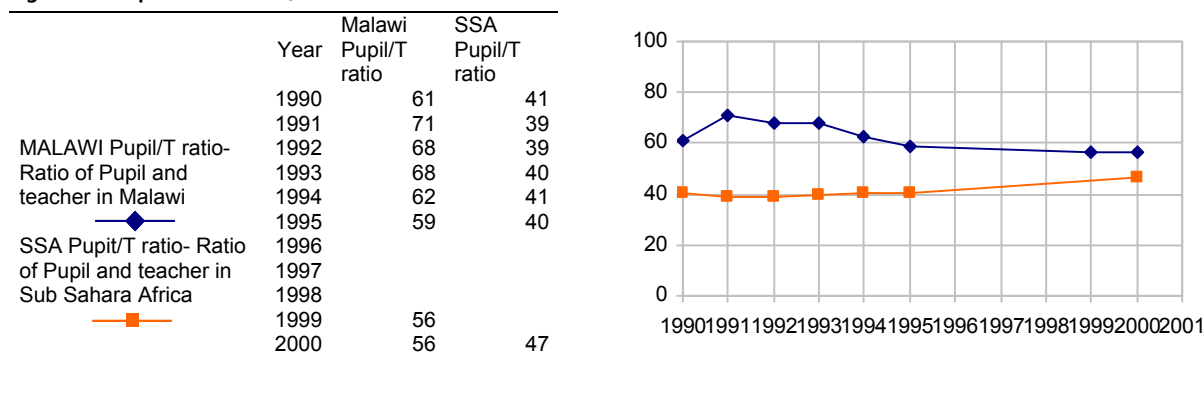|	Year	Malawi Gross ENR	SSA Gross ENR
	1990	68	74
MALAWI Gross ENR- Malawi School enrolment, primary (%gross) ◆	1991	79	74
	1992	84	73
	1993	89	75
	1994	134	76
	1995	134	76
SSA Gross ENR- Sub Sahara Africa Malawi School enrolment, primary (%gross) ■	1996	131	74
	1997		
	1998		76
	1999	135	79
	2000	137	86

United Nations Educational, Scientific and Cultural Organisation defines Gross enrolment ratio as the ratio of total enrolment, regardless of age, to the population of the a age group that officially corresponds to the level of education shown (WDI, 2003).

Figure 6.6. Net school enrolment, Malawi and Sub Sahara Africa, 1990-2000

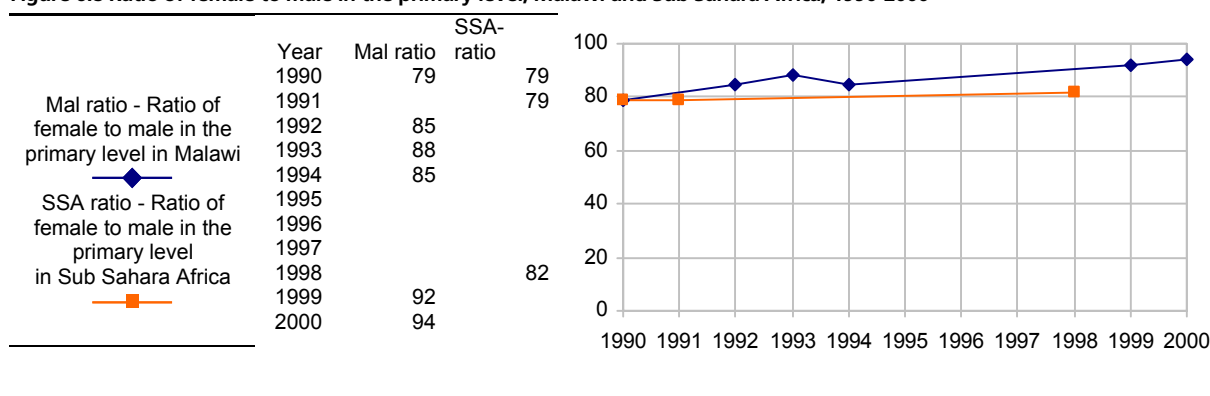|	Year	Malawi Net ENR	SSA Net ENR
	1990	50	
MALAWI Net ENR- Malawi net enrolment, per cent ◆	1991		
	1992	55	
	1993	68	
	1994	103	
SSA Net ENR- Sub Sahara Africa net enrolment, per cent ■	1995		
	1996		
	1997		
	1998		
	1999	99	
	2000	101	

United Nation Educational, Scientific and Cultural Organization defines net school enrolment ratio as the ratio of the number of children of official school age (as defined by the national education system) who are enrolled in school, to the population of the corresponding official school age (WDI, 2003).

Figure 6.7. Pupil-teacher ratio, Malawi and Sub Sahara Africa 1990-2000

Year	Malawi Pupil/T ratio	SSA Pupil/T ratio
1990	61	41
1991	71	39
1992	68	39
1993	68	40
1994	62	41
1995	59	40
1996		
1997		
1998		
1999	56	
2000	56	47

MALAWI Pupil/T ratio- Ratio of Pupil and teacher in Malawi

SSA Pupit/T ratio- Ratio of Pupil and teacher in Sub Sahara Africa

United Nation Educational, Scientific and Cultural Organization defines Pupil-teacher ratio as the number of pupils enrolled in primary school divided by the number of primary school teachers, regardless of their teaching assignment (WDI, 2003).

Figure 6.8 Ratio of female to male in the primary level, Malawi and Sub Sahara Africa, 1990-2000

Year	Mal ratio	SSA-ratio
1990	79	79
1991		79
1992	85	
1993	88	
1994	85	
1995		
1996		
1997		
1998		82
1999	92	
2000	94	

Mal ratio - Ratio of female to male in the primary level in Malawi

SSA ratio - Ratio of female to male in the primary level in Sub Sahara Africa

United Nation Educational, Scientific and Cultural Organization defines ratio of female to mae in the primary level as the percentage of girls enrolled at public and private schools (WDI, 2003).

Malawi and Sub Sahara's education sector compared

Input:
On the input side, Malawi has increased its education expenses based on public recurrent education expense per child in school age. It should be noted that the increase in education expenses from 1995 to 1996 is large (1.54 to 3.54%) which can be attributed to the then new governments move to make primary school free and invest in education. Malawi's public education expense as % of GDP has increased after 1995 and is a lot higher than Sub Sahara Africa.

Output:
The big investment thrust in the educational sector gave a positive effect in the output through a big increase in net enrolment from 71.4 in 1994 to 95.7 in 1995 and further increasing to 98.5 in 1999. Malawi's net enrolment rate is higher on the average compared to Sub Sahara Africa, except for 1993, there was

considerable progress made onwards, up to a high rate of 98.5% enrolment in 1999. Though net enrolment has fluctuated and increased, the pupil-teacher ratio remained stable, with ratios higher compared to Sub Sahara Africa.
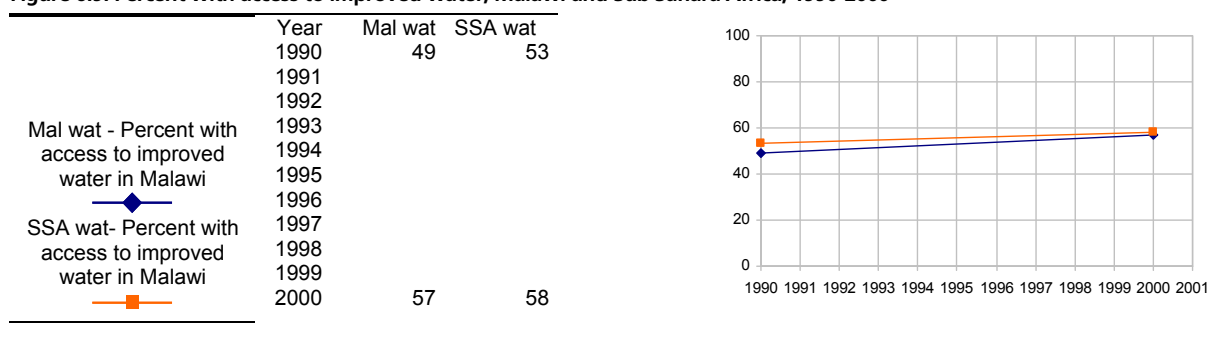
Outcome:
We see from figure 7.9 that even the ratio of female to male has been growing over these years and is higher in Malawi compared to the rest of Sub Sahara Africa.

Summary:
In the education sector, Malawi invested considerably more in the sector compared to the rest of Sub Sahara Africa. Outputs (enrolment rates and pupil-teacher ratio) and outcome (and ratio of female to male) were generally much better in Malawi than for average Sub Sahara Africa.
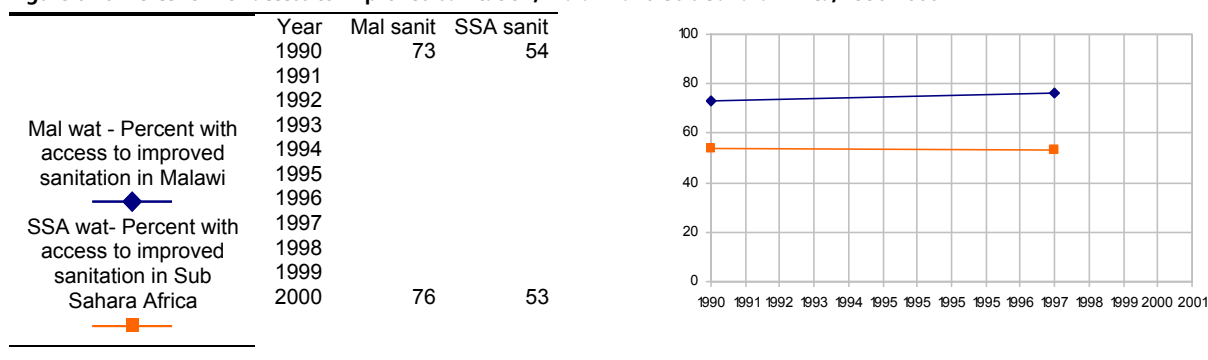
6.3. Water and Sanitation Sector

Figure 6.9. Percent with access to improved water, Malawi and Sub Sahara Africa, 1990-2000

Year	Mal wat	SSA wat
1990	49	53
1991		
1992		
1993		
1994		
1995		
1996		
1997		
1998		
1999		
2000	57	58

Mal wat - Percent with access to improved water in Malawi

SSA wat- Percent with access to improved water in Malawi

World Health Organisation, United Nations Childrens fund, Global Water supply and Sanitation Assessment 2000 Report defines access to improved sanitation facilities as the percentage of population with at least adequate extcreta disposal facilities (private or shared but not public), that can effectively prevent human, animal and insect contact with excreta. These improved facilities can be simple but protected pit latrines to flush toilets with a sewerage connection (WDI, 2003).

Figure 6.10. Percent with access to improved sanitation, Malawi and Sub Sahara Africa, 1990-2000

Year	Mal sanit	SSA sanit
1990	73	54
1991		
1992		
1993		
1994		
1995		
1996		
1997		
1998		
1999		
2000	76	53

Mal wat - Percent with access to improved sanitation in Malawi

SSA wat- Percent with access to improved sanitation in Sub Sahara Africa

World Health Organisation, United Nations Childrens fund, Global Water supply and Sanitation Assessment 2000 Report defines access to improved water sources as the percentage of population with reasonable access to an adequate amount of water from an improved source, such as a household connection, public standpipe, borehole, protected well or spring and rainwater collection (WDI, 2003).

Malawi and Sub Sahara Africa's water and sanitation sector compared

Based on available data, more people in Sub Sahara Africa have access to improved water compared to those living in Malawi However the opposite is true for access to improved sanitation; the situation is much better compared in Malawi compared to other countries in Sub Sahara Africa.
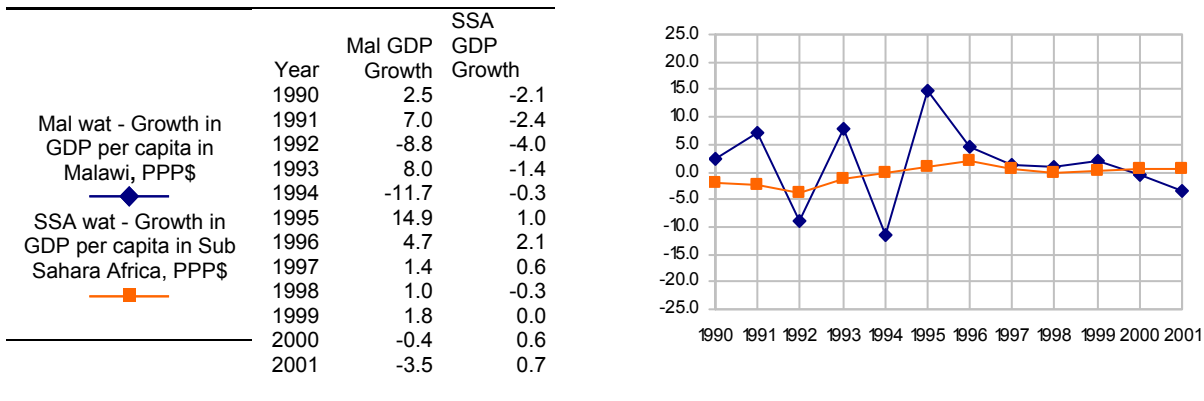
6.4. Poverty data

There is still a great lack of comparable poverty data for Sub-Sahara Africa. National data might be available for a single year, but not for two or more years and hence trend data are not available. The World Bank compiles such data for internal use, but these data are till not being made available at country level.

The situation is however about to change with second and subsequent national data sets being collected and disseminated in a growing number of countries.
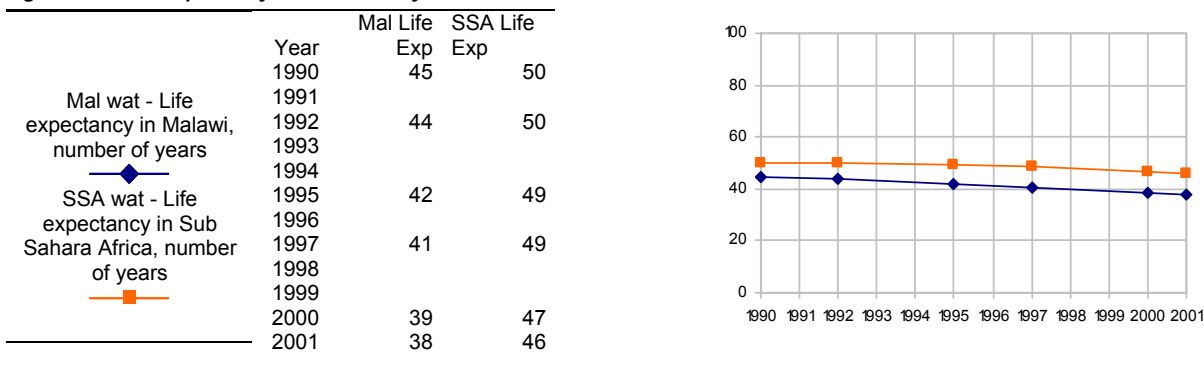
While waiting for comparable real poverty trend data to become available, we have chosen to present two other variables which usually would be a proper indicator of poverty levels, GDP growth and life expectancy.

Figure 6.11. Growth in GDP (PPP$) per capita (in percent), Malawi and Sub Sahara Africa. Africa.), 1990-2001

	Year	Mal GDP Growth	SSA GDP Growth
	1990	2.5	-2.1
	1991	7.0	-2.4
Mal wat - Growth in GDP per capita in Malawi, PPP$	1992	-8.8	-4.0
	1993	8.0	-1.4
	1994	-11.7	-0.3
SSA wat - Growth in GDP per capita in Sub Sahara Africa, PPP$	1995	14.9	1.0
	1996	4.7	2.1
	1997	1.4	0.6
	1998	1.0	-0.3
	1999	1.8	0.0
	2000	-0.4	0.6
	2001	-3.5	0.7

From the World Bank national accounts data and OECD National accounts data files, the Gross Domestic Product i.e. the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the product, is defined as the annual percentage growth of GDP per capita based on constant local currency (WDI, 2003).

Figure 6.12. Life expectancy (in number of years), Malawi and Sub Sahara Africa, 1990-2001

	Year	Mal Life Exp	SSA Life Exp
	1990	45	50
	1991		
Mal wat - Life expectancy in Malawi, number of years	1992	44	50
	1993		
	1994		
SSA wat - Life expectancy in Sub Sahara Africa, number of years	1995	42	49
	1996		
	1997	41	49
	1998		
	1999		
	2000	39	47
	2001	38	46

.

World Bank staff estimates from various sources defines life expectancy as the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life (WDI, 2003).

Malawi and Sub Sahara Africa poverty indicators compared

Investment in all sectors aims to improve the life standards of the country. Looking at poverty levels in Malawi and SSA, we see that Malawi's growth in GDP (PPP$) both before and after 1995 showed similar average trends as in average Sub Sahara Africa, but was extremely volatile in the early 1990s. The years 1992 and 1994 were low years in terms of growth for Malawi but 1991,1993 and 1995 were exceptional with high GDP growth rates. The year after 1994, the GDP growth was higher than Sub Sahara Africa. After that the economy performed poorly compared to Sub Sahara. As in many single countries dependent upon agriculture, you would expect the GDP to fluctuate substantially. Whether the smaller amplitudes since mid 1990 reflects a more active economic policy is not possible to tell without more data.

Life expectancy has a long tradition as an indicator of welfare, but as we see from figure 6.12, today this is rather an indicator of the toll of HIV/AIDs. Life expectancy declines year by year in Malawi as in average South Sahara Africa and is all the time lower in Malawi. It is not possible from the data to tell whether this is a reflection of a widespread HIV/AIDs prevalence or rather a poverty indicator.

7. Conclusions and recommendations

7.1. Empirical findings

7.1.1. Health sector
Single variables:
For the health sector, available data showed that resource allocation towards the sector resulted in increased output and outcome. However, it important to bear in mind that there are differences in reporting of expenditures for some hospitals i.e. Lilongwe's expenditures are include in official statistics while Blantyre's are not included. In addition, donor contributions towards the sector are not included in resource allocation statistics.

Relationships by sector:
Input into the health sector which fluctuated slightly but remained basically at the same level, did not really produce the desired output i.e. increase in immunisation rate. Output and outcome data are few and based on available data, output-outcome presented a mixed picture. There was a different trend before and after Banda's time but we see a weak relationship between input and outcome. Outcome-impact relationship on the other hand showed the expected positive relationship.

Assessing the trends and relationships at the national level gives an overview of the status of the sector and can give the right warning signals. However it is important to put look at the quality of data and the context. The reason for the lack of relationship between input and output can be attributed to the administrative reporting procedures i.e. donor contributions are not included and the process of reporting expenditures is different for different national hospitals.

District level:
Latest data from the districts showed that the southern region invested more per capita in the sector while the northern districts either lost out in the health budget allocation process or that local leaders had other priority areas for 2000. The southern districts produced more outputs i.e. better immunisation coverage but surprisingly, the northern districts

followed the leader in terms of output. Even more surprising is that the outcome indicator chosen (mortality rates) was best in the Northern areas. This can point to either the effectiveness of investment in the Northern areas or that there are other actors (NGOs) active in the area.

7.1.2. Education sector
Single variables:
For the education sector, available data was able to capture key developments in the sector. The new government in 1994 pushed its program for universal education. There was an increase in budget resulted which resulted in an increase in output (drastic increase in net enrolment). Other output indicators showed interesting results namely improvement of girl/boy ratio; decrease in pupil-teacher ratio and decrease in the percentage of certified teachers. Yet despite the decrease in the percentage of certified teachers there was an increase in outcomes presented (increase in per cent of students passing JCE examinations and increase in percentage of students enrolled in the fourth grade). There are speculations about regarding this phenomena and concerns of security of examinations has been raised by the Ministry of Education and and Malawi National Commission for UNESCO (2004) and Chakwera *et al*. (2004).

Relationships by sector:
Data on input in the sector does not reflect all the investment from the private sector, thus linking the data to output and outcome did not really tell the whole story. The model however showed the increase in output in 1996 (increase in net enrolment and also capture the remarkable outcome result (% passing JCE examinations). The lack of clear relationship of output-outcome- impact can be a helpful point for national planners and donors to see where adjustments need to be done. The outcome indicators in the education sector behaved independently in relation to the overall national economic growth of Malawi.

District level:
For the education sector, more was allocated per child (aged 6-13) to the northern areas and less for Lilongwe's school children. Output indicators in the districts showed that the northern areas have the most number of certified teachers at the primary level while the south had very high pupil-teacher ratio. There are no data on literacy rates thus the proxy chosen was passing the Junior certification of secondary education examination (JCE). Outcome indicators show that the northern areas had more pupils passing the JCE, a national examination taken after two years in the secondary level.

7.1.3. Water and sanitation sector
Single variables:
For the water sector, statistics showed that resource allocation was much lower compared to the other two sectors presented and that output i.e. access to improved water and sanitation facilities and outcome i.e. incidence of diarrhoea behaved independently of input. However, real resource allocation to the sector is not seen reflected in the present statistics like the Ministry of Health's inclusion of latrine building in their program. There are also other organisations and government agencies that include encouragement of latrine building in their program.

Relationships by sector:
Based on figures 23-25, there are no strong statistical relationships in input-output-outcome for the water and sanitation sector. The lack of relationships can be an indication that investment and efforts to improve the sector is not effective and shows the need to improve the system of data collection. However, the fact that available data shows an increase in incidence of diarrhoea should be a cause for concern and that attention should be directed to the sector.

District level:
At the district level, there are no patterns but the southern districts of Blantyre, Nsanje and Balaka have better access to improved water but poorer access to improved sanitation. On the other hand, two central districts (Kasungu and Likoma) and a southern district (Thyolo) have poor access to improved water but at the same time better access to improved sanitation facilities.

7.1.4. Malawi and Sub Sahara Africa compared
Malawi's health expenditure on a per capita basis fell below the Sub Sahara Africa's (SSA) level. We also see that though Malawi's input was consistently below that of SSA and output (immunisation rate) is higher than the average for SSA, mortality rates registered are still higher for Malawi. However with the current trends it is just a matter of a few years before Malawi may pass average Sub Sahara Africa level.

In the education sector, Malawi invested considerably more in the sector compared to the rest of Sub Sahara Africa. Outputs (enrolment rates and pupil-teacher ratio) and outcome (and ratio of female to male) were generally much better in Malawi than for average Sub Sahara Africa.

Based on available data, most Malawians have better access to improved sanitation facilities compared to Sub Sahara improved water but access to improved water is much better in Sub Sahara Africa. .

Investment in all sectors aims to improve the life standards of the country. Looking at poverty levels in Malawi and SSA, we see that Malawi's growth in GDP (PPP$) both before and after 1995 showed similar average trends as in average Sub Sahara Africa, but was extremely volatile in the early 1990s. The years 1992 and 1994 were low years in terms of growth for Malawi but 1991,1993 and 1995 were exceptional with high GDP growth rates. The year after 1994, the GDP growth was higher than Sub Sahara Africa. After that the economy performed poorly compared to Sub Sahara. As in many single countries dependent upon agriculture, you would expect the GDP to fluctuate substantially. Whether the smaller amplitudes since mid 1990 reflects a more active economic policy is not possible to tell without more data.

Life expectancy has a long tradition as an indicator of welfare, but as we see from figure 6.12, today this is rather an indicator of the toll of HIV/AIDs. Life expectancy declines year by year in Malawi as in average South Sahara Africa and is all the time lower in Malawi. It is not possible from the data to tell whether this is a reflection of a widespread HIV/AIDs prevalence or rather a poverty indicator.

7.2. Data availability
Generally, the data at the national level needs strengthening especially poverty data. For the health sector, annual data on government health expenditures at the national level for Malawi is available but no information on private or total health expenditures. Neither data on output and outcome are available. data. For the education sector, literacy data are only available for one year. For the water and sanitation sector, there is lack of data for expenditures and there are data gaps for access to improved water and sanitation facilities.

At the district level, the survey practice of lumping of data for small districts is obviously making it difficult to compare data across districts. Obviously data are missing for new districts and they catch up over time, with the exception of Likoma, where data are still missing. Likoma is a small island with a small population and it is expensive to travel to the island thus it has not been included in surveys.

7.3. MPRSP and planned monitoring system

Malawi Poverty Reduction Strategy (MPRS) notes that there has been no coherent institutional and management structure for planning of public expenditure and policy. Several initiatives like the MTEF, SIPS, SWAPps and VISION 2020 were seen as separate activities. Hence the Government of Malawi has combined separate strategies under the umbrella of MPRS, having its roots in the overall vision defined in Vision 2020. Three year sectoral Medium Terms Expenditure Frameworks (MTEFS) prepares budget plans that are presented to Parliament. Reviews and consultations is part of the process. A challenge is to integrate the decentralisation process in this framework. The Ministry of Finance and Economic Planning has the responsibility to ensure that line Ministries adhere to prepared budgets.

The MPRSP Monitoring and Evaluation Masterplan was endorsed by the Cabinet in the last quarter of 2004. The intention is to use the same monitoring model as presented in this document, the Input-output-outcome-impact model both at the national, district and local levels. However the focus is on two models, one for input-output and one for outcome-impact. Sources for the input-output model of the monitoring and evaluation process are administrative and management information systems. The MPRS stresses that the quality of administrative and management information systems is crucial for the planned monitoring process. Sources for the outcome-impact part are annual surveys like the Core Welfare Indicator Questionnaire (CWIQ) conducted in 2002 and the Welfare Monitoring Survey from 2005, crop estimate survey and food price surveys. Other sources are Integrated Household Surveys (IHS) to be conducted every five years (1997/98 and 2004/05), Demographic and Health Surveys (DHS) (1992,2000, 2004) and Qualitative Impact Monitoring Survey (QUIM).

Figure 7.2.   Shows the institutional framework for the MPRSP monitoring system
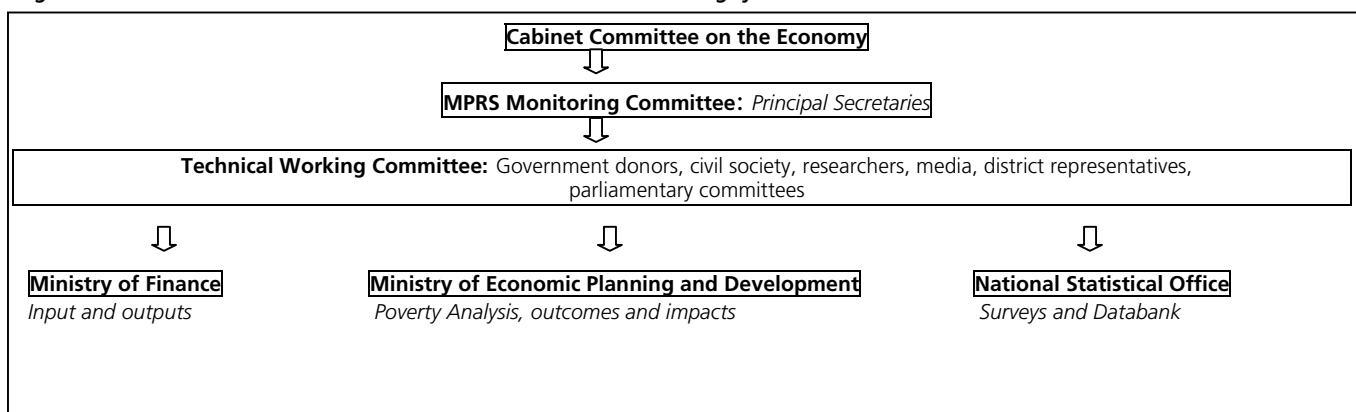
7.4 Recommendations

It is essential that now, when the MPRSP Monitoring and Evaluation Master Plan has been endorsed by the Cabinet, capacity and funding for a system for annual monitoring are ensured. Support is needed from donors to establish and build capacity for the system, including developing a cost efficient system, which can be funded by the ordinary recurrent costs budget of the Government.

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Collection and monitoring efforts in Malawi

This section looks into key aspects of collection and monitoring efforts in Malawi.

According to Haque and Kleppe (1995), several institutions have been undertaking surveys on living conditions and through the years in Malawi but there were duplication of efforts, data gaps and scarcity of data to use in poverty analysis. The general scarcity in data to assess poverty was attributed to the lack of comparability and consistency of data collection initiatives. The fact that these surveys have been initiated and planned by donors adds to the challenges in data collection (i.e. pressure to include every aspect of living conditions, lack of coordination between different institutions).

Fanton *et. al.* (2004) gave a good overview of the different types of surveys done in Malawi.
The two key systems used to monitor living conditions are *household surveys* and *administrative records* (Fanton, *et.al.* 2004). The types of *household surveys* in Malawi:
- *the population census*, conducted every 10 years;
- *Integrated Household survey* (HIS), every 5 years of so;
- *Malawi Demographic and Health Survey* (DHS), every 5 years of so (in between censuses);
- *Annual Welfare Monitoring Survey* started in 2002 and based on the *Core Welfare Indicator Questionnaire* methodology; and
- other ad-hoc surveys.

Administrative records on the other hand are based on
- *health information systems* (HMIS) and
- *education management information systems* (EMIS)

Population census was conducted in 1998 and forms the basis for sample selection in household surveys and the methodology are assessed to be in accordance with standard international recommendations. A standard smoothing adjustment methodology is applied to some tabulations by the NSO adjust for significant age "heaping".[19]

Integrated Household Survey (HIS) conducted in 1997-98, collects information on income and expenditures (including consumption). A number of questions on other aspects of welfare and living standards were included in the survey. The rate of response is very high (close to 100%) but this survey is expensive and data processing and analysis was delayed with one-two

year delay between the end of the survey and the release of key results.

Demographic and health survey (DHS) has been conducted since 1990 (1992, 1996, 2000 and 2003). Information collected centered on demographic and health issues. DHS is considered as important and reliable in health and inter-censal demographic data. However this is an expensive survey and relies on external funding and there is little attention paid to developing local sustainable capacity.

Core Welfare Indicators Questionnaire Survey (CWIQ) is a form of annual welfare monitoring survey that includes key questions to monitor the basic welfare conditions. It includes questions on education, health, employment, household assets including sources of water and toilet, safety and security, HIV/AIDS prevention and a number of poverty indicators. Statistics Norway, through NORAD funding is currently helping in the development and implementation of CWIQ. The idea is to take a panel (or sub-sample) of households from the His, but the final design is still being developed.

External partners have primarily funded other ad-hoc surveys and these surveys include 2002 Education Survey (Ed Ata), 2002 Child Labor Survey, and the 2003 Crime Survey. Results of these surveys have been underutilized because indicators produced are sometimes not comparable. There is also lack of awareness and lack of dissemination, useful national data are not utilised.

The *health management information system* (HMIS) is a register based system of the Ministry of Health and has around 70 indicators. However there are a number of concerns raised regarding HMIS data. Some of these concerns are: lack of quality checks and follow up due to limited resources; reporting bias due to perceptions by medical staff that data reported will influence resource levels leads to reporting bias; definition of health indicators does not match with other sources (i.e. DHS); indicators calculated by the Ministry of Health does not use projections calculated by NSO but from estimates made by the Health ministry's staff.

The *education management information system* (EMIS) is based on the number of registers (e.g. schools, teachers, children). The system though comprehensive is relatively weak due to scarcity of personnel and computer equipment. There is a concern of upward bias in reported enrolment figures by schools because resource levels are linked to school size. The statisticians of Ministry of Education also tend to use

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[19] Heaping occurs when certain ages (i.e. 20 and 30, etc.) are more commonly reported than others. This can have an effect on indicator calculations requiring estimates of populations in specific year range, such as school net enrolment, or the primary school completion rate.

their own population estimates when calculating key indicators instead of using projections done by the NSO.

Fantom *et. al.* in their assessment of the surveys notes that there is a demand for and access to indicators, particularly by policy makers. But there are a number of challenges and they are as follows:

- PRSP indicators definitions still need streamlining,
- ensure that data be obtained at a reasonable costs,
- that the desired frequency of indicator estimates is realistic (taking into account costs and sensitivity of indicators to policy changes),
- many indicators lack precision and thus results change in values yearly and different indicators may be open to interpretation,
- the decentralisation initiation has developed a monitoring and evaluation system which demands indicators aggregated at low geographical levels, particularly at district which require additional financial and human resources and coordinating efforts of those who produce official statistics in Malawi, and lastly
- NSO has a small core of relatively well-trained staff, staff attrition is low, funds for staff development are hard to identify and NSO is forced to rely almost entirely on donor support.

Definitions Used in the different data sources

A. Health Sector

Input: (Missing definitions for health input from Malawi - Estrellita)

GTEXP AS % - Grand total government health expenditures as percent of total government expenditures

RECEX AS % - Recurrent health expenditures as percent of total government expenditures

Health recurrent expenditure per capita, PPP$-

Output:

IMMUN, DPT- Immunisation, DPT (% of children under 12 months) Percent of children 12-23 months receiving DPT vaccine before 1st birthday. (NSO, 2001). Child immunisation measures the percentage of vaccinations coverage of children under one year of age. A child is considered adequately immunised against diphtheria, pertusis (or whooping cough), and tetanus after receiving three doses of vaccine (WHO, 2004).

Children fully immunised in Malawi **-** Children who are fully vaccinated, i.e. those who have received BCG, measles and three doses of DPT and polio vaccine (excluding polio vaccine given at birth) (NSO, 2001).

BIRTH ATT - Birth attended by skilled personnel represents the proportion of births attended by a skilled health worker. The term "skilled attendant" refers to a health professional - such as midwife, doctor or nurse -who have been educated and trained to proficiency in the skills needed to mange normal (uncomplicated) pregnancies, childbirth and the immediate postnatal period, and in the identification, management or referral of complication in women and newborns (WHO, 2004).

Outcome:

MORT 12-59 months - This rate refers to the probability that a newborn baby will die before reaching age five, if subject to current age-specific mortality rates. The probability is expressed as a rate per 1,000 (WHO, 2004).

Infant mortality (per 1,000 births) **-** Infant mortality rate is the number of newborns dying under a year of age divided by the number of live births during the year. The infant mortality rate is also called infant death rate (WHO, 2004).

UnderW **-** Percentage of moderately underweight children in Malawi (children under 5 years who are 2 standard deviations or more below the average for their age and sex group).

B. Education sector

Input:

EXP/CHILD - Recurrent expenditure per child in school age, PPP$

EXP % Gov - Recurrent expenditure as per cent of total government expenditure, per cent.

Output:

GAR **-** Gross enrolment ratio for the primary school is the total number of primary school students, of any age, expressed as the percentage of the official primary-school-age population. If there are significant numbers of overage and underage students at a given level of schooling, the GAR can exceed 100 per cent (NSO, 2001)

NAR **-** Net enrolment for primary school is the percentage of the primary school age (6-13) population that is attending primary school. (NSO, 2001)

Outcome:

% ENR 4 GRD - Percentage of students enrolled in 4th grade excluding drop outs.

% Pass JCE **-** Percentage of students passing Junior Certificate of Secondary Education (JCE), an exam taken after two years in the secondary level, students take the (JCE)

C. Water and Sanitation sector

Input:

EXP per capita **-** Water supply recurrent exp. per capita, PPP$

EXP as % **-** Water supply recurrent expense as % of total government expenditures

Output:

Access to improved water **-** Percent of household residents with improved water (/safe) supply (NSO, 2001)

Access to an improved water source refers to the percentage of the population with reasonable access to an adequate amount of water from an improved source, such as household connection, public standpipe, borehole, protected well or spring, and rainwater collection. Unimproved sources include tanker trucks, and unprotected wells and springs. Reasonable access is defined as the availability of at least 20 liters per person per day from a source within one kilometre of the dwelling. (WHO, UN Children's Fund, Global Water Supply and Sanitation Assessment 2000 Report.)

Access to improved/some sort of sanitation **-** Percent of household residents with improved (/safe) latrine or toilet (NSO, 2001).

Access to improved sanitation facilities refers to the percentage of the population with are least adequate excreta disposable facilities (private or shared, but not public) that can effectively prevent human, animal, and insect contact with excreta. Improve facilities range from simple but protected pit latrines to flush toilets with a sewerage connection. To be effective, facilities must be correctly constructed and properly maintained.
(WHO, UN Children's Fund, Global Water Supply and Sanitation Assessment 2000 Report.)

Outcome:
Diarrhoea - incidence (in per cent): Percentage of children under 5 years with diarrhoea in the two weeks preceding the survey (NSO, 2001)

Data From National And District Level

A. National level data

A.1 Health sector

A.1.1. Health sector input

YEAR	Health grand total	Health rec. exp. M.Kw	General government final consumption expenditure (current LCU) M.Kw	Population, total in '000	GDP Deflator, current MKw to PPP (current international $)	Health, Grand total per capita, PPP$	Health, Rec. exp. per capita, PPP$	Health, Grand total as per cent of total gov. exp.	Health rec. exp. as per cent of total gov. exp
1990	92247	70845	772900.0	8507.0	1.4	8.0	6.1	11.9	9.2
1991	101982	76146	741800.0	8643.2	1.5	8.1	6.0	13.7	10.3
1992	101341	81150	913275.0	8781.5	1.6	7.2	5.8	11.1	8.9
1993	202321	106348	1187900.0	8922.1	2.0	11.2	5.9	17.0	9.0
1994	192448	150545	3257900.0	9065.0	2.5	8.6	6.8	5.9	4.6
1995	401334	244929	4068699.9	9210.0	4.3	10.1	6.1	9.9	6.0
1996	400731	334970	4635800.1	9440.2	6.9	6.1	5.1	8.6	7.2
1997	560636	444114	5241800.2	9664.9	7.5	7.7	6.1	10.7	8.5
1998	929026	794062	7198700.0	9934	9.4	10.0	8.5	12.9	11.0
1999	1226163	737893	9877000.2	10153.0	13.1	9.2	5.5	12.4	7.5
2000	1268658	1209684	16987299.8	10475.0	15.9	7.6	7.2	7.5	7.1

A.1.2. Health sector output and A.1.3. Health sector outcome

YEAR	DPT immunisation	Children fully immunised	Births attended by skilled health personnel.	Use of condom (any partner)	Infant mortality rate	Child mortality rate 12-59 months	Under-weight, moderate	Maternal mortality ratio	HIV pre-valence rate
1990									
1991									
1992	88.6	81.8	54.8		135.7	120,1	27.2	620	
1993									
1994									
1995	76	61	49.4		133	90,0			6.6
1996	81	55		4.1					6.4
1997									8
1998					121		15.5		8.6
1999									
2000	84.2	70.1	55.6	9.35	112.5	101,6	25.4	1120	
2001									19.5
	DHS 1992, 2000	DHS 1992, CSR 2001, DHS 2000	DHS 1992, 2000	DHS 2000	DHS 1992, PHC 1998, DHS 2000	DHS 1992, 2000	DHS 1992, IHS 1998, DHS 2000	DHS 1992, 2000	NACP 1996 - 1999

A.2. Education sector

A.2.1. Education sector input and A.2.2. Education sector output

Year	Primary educ. recurrent exp., M.Kw.	Education, Rec. exp. per child in school age, PPP$	Education, Rec. exp. as per cent of total government exp.	No of children at prim. school age 6-13	Percent certified teachers in primary school	Primary school pupil-teacher ratio	Net enrolment primary school	Gross enrolment primary school	No of repeaters in primary school	Ratio girls-boys net enrolment, primary education
1990	51.2	2.2	6.6	1752540.0		64	81.8	107.2	20.7	80.4
1991	54.8	2.0	7.4	1832736.2	88.1	78	64.3	83.7	19.0	81.4
1992	62.2	2.0	6.8	1916602.2	84.1	71	60	75.1	16.0	84.3
1993	126.6	3.1	10.7	2004305.9	82.2	68	55.9	87.9	18.4	89.5
1994	160.1	3.1	4.9	2096023.0	83.9	68	71.4	93	16.5	92.8
1995	146.1	1.5	3.6	2191937.0	58	62	95.7	134	17.9	88.8
1996	562.9	3.5	12.1	2292240.0	66.9	59			15.1	88.9
1997	708.6	3.9	13.5	2397132.9	61.9	61			15.4	91.2
1998	1131.5	4.8	15.7	2506825.7		67	98.5	121	14.5	94.5
1999	1718.3	5.0	17.4	2621614.0		63	76	115	14.0	93.0
2000	2129.3	4.8	12.5	2788271.0	51.3	63			15.0	93.6

A.2.3. Education sector outcome

Year	No of children enrolled in 4th grade excl. drop outs	Per cent children enrolled 4th gr./ average each of 6-13 yrs	No. pass-out JCE	Per cent pass-out JCE/ average each of 6-13 yrs	Literacy rate	Ratio of literate females to males
1990	134068	61.2	7049	3.2		
1991	144587	63.1	7228	3.2		
1992	162312	67.7	7450	3.1		
1993	177619	70.9	9047	3.6		
1994	185717	70.9	9225	3.5		
1995	277473	101.3	10402	3.8		
1996	283882	99.1	11797	4.1		
1997	283990	94.8	60296	20.1		
1998	285972	91.3	51878	16.6	57.7	79.7
1999	306319	93.5	63133	19.3		
2000	323657	92.9	35644	10.2		

A.3. Water and sanitation sector

A.3.1. Input; A.3.2. Output, and A.3.3. Outcome

Year	Water supply recurrent exp., M.Kw.	Water supply development exp., M.Kw.	Water supply recurrent gov. exp. per capita,PPP$	Water supply recurrent gov. expense as % of government expenditures	Share of population with access to improved (/safe) water	Access to improved drinking water, Urban	Access to improved drinking water, Rural	Share of population w/ access to improved/(safe) sanitation	Access to improved sanitation, Urban	Access to improved sanitation, Rural	Diarrhoea, incidence
1990	2670		0.23	0.35							
1991	2847	9815	0.22	0.38							
1992	10163	179503	0.72	1.11	47.9	91	42	72.3	97	69	12.2
1993	14060	123482	0.78	1.18							12.6
1994	13782	285273	0.62	0.42							12.9
1995					48.0	92.2	43.7	72.0	88.5	70	13.3
1996		106711			47.5	95	40	70.0	96	66	13.7
1997	4329		0.06	0.08							14.0
1998	6577	155384	0.07	0.09							14.4
1999											14.9
2000					66.3	95	61	82.0	98	79	15.3
					DHS 1992, MSIS 1995, KAPHS 1996, PHC 1998, DHS 2000	DHS 1992, MSIS 1995, KAPHS 1996, PHC 1998, DHS 2000	DHS 1992, MSIS 1995, KAPHS 1996, PHC 1998, DHS 2000	DHS 1992, MSIS 1995, KAPHS 1996, PHC 1998, DHS 2000	DHS 1992, MSIS 1995, KAPHS 1996, PHC 1998, DHS 2000	DHS 1992, MSIS 1995, KAPHS 1996, PHC 1998, DHS 2000	

B. District level data

B.1. Health sector

B.1.1. Input, B.1.2. Output, and B.1.3. Outcome

District	Health rec. exp. per capita, 2000	Health rec. exp. per capita, 1998	DPT immunisation, 2000	Children fully immunised, 2000	Births attended by skilled health personnel, 2000	Distance to health facilities < 5km, 1995	Infant mortality rate, 2000	Child mortality rate, 12-59 months, 2000	Under-weight, moderate, 2000
Chitipa	14.7	14.6	80.9	66.8	54.6	50.4	109.3	106,2	26.9
Karonga	17.8	20.9	84.9	67.7	44.7	32.2	93.2	57,9	16
Rumphi	18.6	24.8	80.9	66.8	54.6	19.1	109.3	106,2	26.9
Likoma			80.9	66.8	54.6	..	109.3	106,2	26.9
Mzimba	14.7	42.4	86.7	75.3	63.6	49.3	105.2	84,7	18.7
Nkhata Bay	23.3	20.7	80.9	66.8	54.6	2.2	109.3	106,2	26.9
Kasungu	19.9	24.9	81.3	61.4	44.6	100	93.1	125,7	20.7
Nkhotakota	25.1	19.8	80.9	66.8	54.6	37.3	109.3	106,2	26.9
Mchinji	22.1	20.7	80.9	66.8	54.6	70.8	109.3	106,2	26.9
Dowa	22.2	20.6	80.9	66.8	54.6	92.4	109.3	106,2	26.9
Salima	17.9	15.4	71.4	61	46.7	100	131.9	123,9	29
Lilongwe	46.7	24.3	82.3	63.4	53.1	65.2	98.5	105,0	27.6
Dedza	25.7	28.5	80.9	66.8	54.6	61.9	109.3	106,2	26.9
Ntchisi	18.0	15.5	80.9	66.8	54.6	31.5	109.3	106,2	26.9
Ntcheu	25.3	26.4	80.9	66.8	54.6	48.8	109.3	106,2	26.9
Machinga	34.6	39.0	87.5	67.1	53.2	59.1	118.2	98,9	24.5
Mangochi	26.4	35.0	83.3	69	46.6	64.2	115.6	95,5	28.8
Zomba	14.7	15.4	89.6	84.3	53.3	41.3	151	76,7	24.6
Chiradzulu	17.0	15.6	80.9	66.8	54.6	57.6	109.3	106,2	26.9
Blantyre	2.8	10.0	93.4	82.9	80.8	57.1	106.1	94,6	18
Thyolo	17.9	26.3	92.6	81.6	59.8	38	145.5	93,5	25.9
Mulanje	30.6	45.1	91.7	81	53.4	59.4	130.3	111,6	27.7
Mwanza	13.1	20.2	80.9	66.8	54.6	85.2	109.3	106,2	26.9
Chikwawa	22.4	23.9	80.9	66.8	54.6	42.6	109.3	106,2	26.9
Nsanje	18.7	26.9	80.9	66.8	54.6	85.5	109.3	106,2	26.9
Balaka	15.6	19.0	80.9	66.8	54.6		109.3	106,2	26.9
Phalombe			80.9	66.8	54.6		109.3	106,2	26.9

B.2. Education sector

B.2.1. Input and B.2.2. Output

District	Primary education recurrent exp. per child 6-13, PPP$, 1998	Percent certified teachers in prim. educ., 2000	Primary school pupil-teacher ratio, 1999	Gross enrolment primary school (percent), 1999	Gross enrolment primary school, 1999	No of children at prim. school age 6-13, 1999	No of children at prim. school age 6-13 - Boys, 1999	No of children at prim. school age 6-13 - Girls, 1999	No. of children attending prim. school, 1999	No. of children attending prim. school - Boys, 1999	No. of children attending prim. school - Girls, 1999	Ratio girls-boys net enrolment, primary education
Chitipa	224.6	63.2	49.1	171.1	53310	31151	15382	15769	53310	27979	25331	90.5
Karonga	95.2	63.9	54.5	155.8	69487	44592	22278	22314	69487	36892	32595	88.4
Rumphi	163.1	63.6	51.6	189.6	53259	28088	14135	13953	53259	27383	25876	94.5
Likoma						1838	927	911				
Mzimba	131.2	43.7	58.5	173.0	236875	136900	68749	68151	236875	122678	114197	93.1
Nkhata Bay	111.5	64.2	64.7	187.6	68514	36529	18309	18220	68514	35704	32810	91.9
Kasungu	28.9	47.5	57.7	159.9	167957	105014	52792	52222	167957	87628	80329	91.7
Nkhotakota	73.0	49.3	60.4	143.4	73422	51198	25379	25819	73422	39239	34183	87.1
Mchinji	54.1	47.9	58.9	121.6	89870	73890	37241	36649	89870	46418	43452	93.6
Dowa	54.1	43.9	53.2	130.7	121213	92740	46257	46483	121213	60809	60404	99.3
Salima	47.4	48.5	61.9	119.8	66900	55820	27845	27975	66900	35619	31281	87.8
Lilongwe	6.1	46.3	53.6	134.4	392197	291850	143619	148231	392197	197795	194402	98.3
Dedza	39.6	52.9	64.0	101.6	113081	111345	54926	56419	113081	57115	55966	98.0
Ntchisi	124.3	56.4	60.2	142.0	55076	38798	19460	19338	55076	27876	27200	97.6
Ntcheu	71.5	45.7	64.0	146.9	122582	83435	42210	41225	122582	62962	59620	94.7
Machinga	50.3	42.4	94.5	111.4	91502	82153	40910	41243	91502	47809	43693	91.4
Mangochi	23.7	42.8	91.2	97.9	131490	134340	67174	67166	131490	69229	62261	89.9
Zomba	57.0	55.8	65.0	121.0	138768	114665	56734	57931	138768	71655	67113	93.7
Chiradzulu	39.3	59.8	57.0	147.7	74990	50780	25414	25366	74990	38660	36330	94.0
Blantyre	45.3	56.8	57.2	133.9	220625	164775	80249	84526	220625	111361	109264	98.1
Thyolo	25.0	48.7	67.1	150.4	147795	98289	49304	48985	147795	78250	69545	88.9
Mulanje	42.0	53.7	58.4	115.3	103793	90047	45074	44973	103793	52938	50855	96.1
Mwanza	25.9	56.1	56.1	136.2	42154	30949	15454	15495	42154	21714	20440	94.1
Chikwawa	22.3	49.5	74.8	105.2	82630	78565	39369	39196	82630	47797	34833	72.9
Nsanje	28.9	54.3	53.7	103.0	45347	44022	22314	21708	45347	26322	19025	72.3
Balaka		46.6				55485	27696	27789				
Phalombe	48.8	40.9	71.6	124.6	61645	49462	24681	24781	61645	31802	29843	93.8

B.2.3. Education sector outcome

District	No of children enrolled in 4th grade excl. drop outs,1999	Per cent children enrolled 4th gr./ average each of 6-13 yrs,1999	Per cent pass-out JCE/ average each of 6-13 yrs,2000	No pass-out PSLCE,2000	Adult literacy rate 15+,1998	Ratio of literate females to males,1998
Chitipa	6148	157.9	77.8	3029	78.5	80.9
Karonga	7384	132.5	70.0	3901	83.6	87.7
Rumphi	6092	173.5	89.6	3147	89.1	92.9
Likoma					82.6	92.8
Mzimba	28081	164.1	61.5	10532	80.2	84.2
Nkhata Bay	8149	178.5	80.2	3661	81.7	86.1
Kasungu	17709	134.9	46.3	6073	68.5	76.8
Nkhotakota	7845	122.6	44.6	2852	61.5	68.3
Mchinji	9133	98.9	32.4	2996	59.9	71.1
Dowa	12800	110.4	20.8	2411	59.7	72.8
Salima	6551	93.9	24.6	1714	51.9	61.9
Lilongwe	38253	104.9	36.3	13260	66.4	72.7
Dedza	8930	64.2	20.9	2913	59.9	71.1
Ntchisi	5914	121.9	97.0	4703	60.2	73.2
Ntcheu	12030	115.3	39.3	4097	63.7	72.2
Machinga	9316	90.7	22.3	2293	47.7	62.2
Mangochi	13485	80.3	21.8	3664	44	57.7
Zomba	14901	104.0	25.7	3681	65.7	74.5
Chiradzulu	8412	132.5	49.3	3132	71.1	78.4
Blantyre	26061	126.5	54.1	11146	83.7	85.4
Thyolo	15369	125.1	34.7	4262	64.6	62.7
Mulanje	10087	89.6	31.2	3509	58.5	66.4
Mwanza	4223	109.2	41.5	1607	61.9	73.4
Chikwawa	8592	87.5	28.6	2812	48.2	50.2
Nsanje	4382	79.6	32.0	1762	44	46.4
Balaka	8194	118.1	33.0	2286	70.1	79.7
Phalombe	6007	97.2	28.8	1779	55.9	63.7

B.3. Water and sanitation sector

B.3.1. Input, B.3.2. Output, and B.3.3. Outcome

District	Water supply rec. exp, 1998	Access to improved water < 500 m, 1998	Access to improved/some form of sanitation, 1998	Diarrhoea, incidence, 1998	Population, 1998	Children with diarrhoea, 1995
Chitipa	104	37	93.4	84532.7	126799	13.4
Karonga	57	64.5	81.2	129714.7	194572	14.6
Rumphi	97	53	90.5	85573.3	128360	9.6
Likoma		13.3	84.9	5382.7	8074	
Mzimba	158	45.5	76.9	407329.3	610994	13.9
Nkhata Bay	91	37.5	82.5	109840.7	164761	12.1
Kasungu	31	28	78.6	320439.3	480659	15.6
Nkhotakota	19	43.2	63.8	152973.3	229460	17.9
Mchinji	25	46.9	67	216627.3	324941	16.8
Dowa		25.2	70.3	274258.0	411387	22
Salima	5	50.8	61.3	165476.0	248214	15.7
Lilongwe		52.9	79.4	897573.3	1346360	20.3
Dedza	41	41.4	83.9	324454.7	486682	8.6
Ntchisi		30.8	78	111920.0	167880	16.4
Ntcheu	225	64.9	86	247171.3	370757	13.2
Machinga	179	48.6	76.3	246409.3	369614	9.8
Mangochi	44	39.1	82.3	406826.0	610239	14.8
Zomba	221	55.2	86.3	364440.7	546661	8.9
Chiradzulu	31	50	88.6	157366.7	236050	11.9
Blantyre		76.9	91.9	539598.0	809397	7.6
Thyolo		26.8	86.6	305984.0	458976	14.4
Mulanje	201	49	79.3	285548.0	428322	21.4
Mwanza		40.7	76	92010.0	138015	13.4
Chikwawa	71	55.1	42.4	237788.0	356682	12.8
Nsanje		72	45.7	129949.3	194924	15.9
Balaka		70.8	79.2	168732.0	253098	
Phalombe		48.6	68.4	154660.0	231990	

B.4. Poverty data

District	Poverty headcount	Extreme poverty headcount
Chitipa	65.8	28.8
Karonga	42.1	10
Rumphi	65.8	18.2
Likoma	47.7	11.9
Mzimba	68	33.1
Nkhata Bay	47.7	11.9
Kasungu	48.9	13.6
Nkhotakota	65.3	20.5
Mchinji	68	26.6
Dowa	53.6	21.4
Salima	60.8	20.2
Lilongwe	57.7	22.9
Dedza	73.3	30.3
Ntchisi	76.3	27.7
Ntcheu	84	52.6
Machinga	63.5	24.4
Mangochi	69.8	38.2
Zomba	72.6	31
Chiradzulu	74	36
Blantyre	62.3	29
Thyolo	76.8	42.9
Mulanje	67.2	33.9
Mwanza	71.4	22.8
Chikwawa	54.8	9.6
Nsanje	51.3	10.8
Balaka	63.5	24.4
Phalombe	67.2	33.9

Acronyms and Abbreviations

ADMARC	Agricultural Development and Marketing Corporation
AFORD	Alliance for Democracy
BASIS CRSP	Broadening Access and Strengthening Input Market Systems Collaborative Research Support Program
BCG	Bacilliuns Calmette- Guerin
CHAM	Christian Hospital Association
CPAR	Canadian Physicians for Aid and Relief
CSR	Centre for Social Research
CWIQ	Core welfare indicator Questionnaire
EHP	Essential Health Package
EHO	Environmental Health Officer
DFID	Department for International Development (UK)
DHS	Malawi Demography and Health Survey
DPT	Diphtheria, Pertussis, and Tetanus vaccination
GAVI	Global Alliance for Vaccines and Immunisations
GDP	Gross Domestic Product
HESSEA	Household Expenditure and Small-scale Economic Activities
HIPC	Highly Indebted Poor Countries
HIS	Integrated Household Survey
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
IDB	Inter-American Development Bank
IMF	The International Monetary Fund
INGO	International Non-Governmental Organisations
IRIN	Integrated Regional Information Network
JCE	Junior Certificate of Secondary Education
KfW	KfW Entwicklungsbank (The German Development Bank)
MAI	Ministry of Agriculture and Irrigation
MCP	Malawi Congress Party
MFEP	Ministry of Finance and Economic Planning
MKAPHS	Malawi Knowledge, Attitude and Practice in Health Survey
MEST	Ministry of Education, Science and Technology
MANEB	Malawi Examination Board
MOHP	Ministry of Health and Population
MPRSRP	Malawi Poverty Reduction Strategy Paper
MSIS	Malawi Social Indicator Survey
MTEF	Medium term expenditure framework
NACP	National Aids Control Program
NCA	Norwegian Church Aid
NGO	Non-Governmental Organisations
NLS	National Library Service
NORAD	Norwegian Agency for Development Cooperation
NRI	Natural Resources Institute
NSO	National Statistical Office
NSSA	National Sample Survey of Agriculture
ODI	Overseas Development Institute
OECD/DAC	OECD/ Development Assistance Committee
PAP	Policy framework for Poverty Reduction
PARIS21	Partnership in Statistics for Development in the 21st Century
PHC	Malawi Population and Housing Census
PPP$	Purchasing Power Parity $
PRSP	Poverty Reduction Strategy Papers
PSLCE	Primary School Leaving Certificate Examinations
QUIM	Qualitative Impact Monitoring System
SIDA	The Swedish International Development Cooperation Agency
SIPS	Sector Investment Programmes
SOSIT	Sosial Sector IniTiave (NORAD)

SWAps	Sector Wide approaches
UDF	United Democratic Front
UN	United Nations
UN ECOSOC	UN Economic and Social Commission
UNDP	United Nations Development Program
UNDP/HDR	United Nations Development Program Human Development Report
UNESCO	UN Educational Scientific and Cultural Organization
UNFPA	UN Family Planning Association
UNICEF	UN Children's Fund
USAID	US Agency for International Development
Vision 2020	2020 Vision for Food, Agriculture and the Environment is an initiative of International Food Policy Research Institute (IFPRI)
WDI	World Development Indicators
WHO	World Health Organisation

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