Experiences of implementation of a deprivation-based resource allocation formula in Zambia: 2004–2009

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Executive summary

The allocation of health care resources continues to be a key function of often complex nature at both national and international levels. Resource allocation provides a fundamental tool for addressing public health, social and economic goals of equity, access and coverage in terms of provision of health care. Due to the poverty prevalence in Zambia at the time, with rural poverty being as high as almost 80%, as well as poor and declining socio-economic indicators, with core health indicators such as maternal mortality, infant and under five mortality rates declining, as well as a decline in general life expectancy, the Government faced health care financing challenges to address population health for all in general and for the poor in particular. It was faced not only with resource mobilisation questions related to raising more health care resources but also how to ensure that the allocation of resource was based on principles and criteria that were objective. Furthermore, this needed to be aligned with helping to compensate for poor health among poor, disadvantaged groups in ways that would address the imbalances in health status among different socio-economic groups. Diederichsen (2004) notes that there tends to exist what is considered as the 'inverse care law'. This states that the poor have a higher burden of ill health in comparison the rich, while the poor receive or consume the least amount and value of health care resources, both financial and otherwise. From about 1994 the Ministry of Health (MoH) introduced population-based allocation criteria, which were revised and modified during 20002/3 and 2009. Despite the revisions, it has not been clear the extent to which the expectations of the allocation formula have been met and the degree to which the criteria have been modified or implemented according to the results.

This generated a need to study the trends and practices pertaining to resource allocation in Zambia. This study was undertaken by University of Zambia within the Health Financing theme work of the Regional Network for Equity in Health in East and Southern Africa (EQUINET) within a regional programme, co-ordinated by Training and Research Support Centre (TARSC) and the University of Cape Town's Health Economics Unit, that is exploring progress in integrating equity into resource allocation. It is part of the monitoring and evaluation work in which EQUINET continues to take an active interest and supports health systems strengthening and health care financing work. This forms the basis for this study, which was undertaken with the following objectives:

- to provide an update of the experiences and progress on the design, review and implementation of an equity-based resource allocation formula in the Zambian health sector;
- provide a critical assessment of the formula in terms of weaknesses and strengths, constraints and success factors;
- assess its contribution towards relative redistribution of financial resources on a geographic basis (or/and demographic basis); and
- identify evidence of the formula associated with health systems strengthening.

To analyse data, quantitative methods, using Excel and STATA, were used. This was supplemented with qualitative methods based on semi-structured interviews with selected key stakeholders in involved in the allocation process.

We found that the formula has only been implemented in partial form. From the current body of evidence, the only criterion to have been implemented in its full context was the first-generation formula that used district population as a weighting factor. Second- and third-generation

formulae have not been adjusted in the implementation process. For instance, due to the issues surrounding re-distribution of resources, the urban areas have experienced the largest share of likely reduction in the resources in comparison to previous levels – a result that has brought about key resistance from the districts concerned and from policy makers. A related issue concerns the static levels of funding – the already constrained budgets have received little additional increases. This has constrained the capacity to phase the implementation in a way that would have held the revenue loss constant while adjusting the additional revenue upwards for the districts that were expected to receive higher revenues. Although the formula was revised for the third time, this was made without an attempt to undertake an evaluation of the effects of the partial use of the formula.

This study makes a number of recommendations. It is necessary to have an evaluation of the changes in health outcomes, outputs or processes as a consequence of the revised formula in the country to determine the causality or association of the formula with any changes. The evaluation should assess the intended achievement objectives and the variance as well as, accordingly, the revised objectives. The public health system has a pooled financing mechanism in place. However, policy implementation has weakened since the 1990s. As a result, parallel financing structures have evolved particularly in the disease or programme areas of HIV and AIDS, malaria, tuberculosis, child health and maternal health. These programmes have marginalised the health system and compromised the extent of the efficacy of total health system resources to the extent that resources for the three diseases are greater than the total contribution to the entire health system. This has contributed to the situation in which the formula addresses only limited resources and has run the risk of limited impact with respect to the objective of addressing inequalities in the health system. Evidently there is a need for a strengthened health system in which the integration of financing is a key factor, in order to begin to generate the anticipated gains.

The expansion of the pooled resource envelope to the health sector is necessary for a realistic implementation of the formula. In accordance with public financing principles, the richer districts should not have to risk a revenue reduction as opposed to limited revenue growth relative to accelerated revenue growth for the poorer districts. A clear time line should be established with regard to the transformation of the resource allocation and this should be updated based on emerging evidence. A monitoring and evaluation process that tracks performance of both resource allocation and health performance should be developed as opposed to the current situation in which nothing exists. Lastly, it has been observed that the institutional framework such as the Resource Allocation Working Group (RAWG), and its sub-group the Resource Allocation Technical Committee no longer exist. In addition, following the abolition of the decentralisation of health boards, the performance-based funding arrangement was extensively diluted. Implementation and achievement of performance-based targets may have been adversely affected by this measure. Ministry of Health needs to evaluate the effect of structural changes with regard to resource management and performance so as to ensure that best implementation modalities.

1.   Introduction

The 'inverse care law', which is the principle that the availability of good medical care tends to vary inversely with the need of the population that is served, may be applied to health care and resource allocation, with less resources allocated to the poor and more to the rich (Diederichsen, 2004). Invariably, poor people have the largest share of the burden of ill health but receive the least share of resources. In short, health care resources are distributed inversely in relation to need. The question of the fair allocation of resources is a core issue both with domestic health care systems and international health. This paper considers Zambia's resource allocation at domestic and national levels.

The Zambian Ministry of Health (MoH) has made the twin objectives of allocating resources fairly and promoting the equitable mobilisation of resources central to their policies over the last 40 years, following the attainment of independence. Having inherited an inadequate and inequitable health system, with poor allocation of resources, the first post-independence Government addressed the imbalances through a series of policy reforms, which included free health services and the development of health facilities and resources for the country's most disadvantaged socio-economic groups (MoH, 1995).

The strategy of developing and promoting access to health care of the citizenry was accompanied by rapid expansion in health infrastructure and services, thanks to increased financing. However, Zambia's declining economic performance and subsequent macro-economic adjustment measures reduced the resource base and brought about cuts in social expenditures, which reversed these gains in health outcomes. Most affected were poor and vulnerable groups such as children and rural populations, who experienced less access to services in comparison to urban populations (CSO, Ministry of Health, Macro Int 1997; CSO, Ministry of Health, UNZA Macro Int 2009).

Reforming health care financing invariably addressed the question and modality of how the health sector allocated resources. Chitah and Masiye (2007) have addressed the issue of progression of an equity-oriented resource allocation formula in the Zambian health care system. This work therefore builds on the work previously undertaken. It was undertaken by University of Zambia within the Health Financing theme work of the Regional Network for Equity in Health in East and Southern Africa (EQUINET), within a regional programme, co-ordinated by Training and Research Support Centre (TARSC) and the University of Cape Town's Health Economics Unit, that is exploring progress in integrating equity into resource allocation.

Improving equity in population health is a key objective of virtually all health systems (Roberts et al, 2004). This objective is supported by other policy commitments made domestically, regionally and internationally. For instance, commitments to achieve universal access to health care in general or, more specifically, for universal access to antiretroviral therapy, immunisation and similar programme goals, are intended to eliminate the discrepancies and unnecessary existence of poor and inequitable health outcomes among different population groups.

It is recognised that resource allocation criteria are not the only key factor impacting the distribution of health and health outcomes of the population. Other interventions are relatively significant. For instance, the institutional framework, service delivery organisation and policy environment all contribute significantly to how well health is accessed and the impact on health

outcomes However, the distribution of resources remains a key aspect of health care financing and the impact of resources on health care and health outcomes.

In addition, McIntyre et al, (2001) have argued that, to make positive impact on health care and health status, the principles of resource mobilisation and resource allocation should be based on vertical equity. Allocation of the resources can then be constructed to take into account these principles and values.

1.1   Institutional framework reforms for resource allocation in Zambia

A key aspect to resource allocation in Zambia included not simply revising resource allocation based on historical or inflation-adjusted criteria to a deprivation- and population-weighted formula for primary-level care, but was also intended to be linked to a formula that would maintain similar rationality at the secondary and tertiary levels of care. The formula revision was designed to further support the reforms related to performance-based financing and the introduction of a purchaser-provider split based on agency theory. This was expected to be implemented through a commissioning process in which 'the money would follow the patient' (Ministry of Health, 1995).

Community-level and prevention aspects were key to an integrated initial strategy that would lead to a restructuring of resource allocation in the initial period, from curative and clinical prioritisation towards prevention and promotion of health care. The focus moved from secondary and tertiary levels – which accounted for over 50% of consumption of health care resources – to primary-level care (Ministry of Health, 1995). The formula review would be accompanied by a restructuring of resource allocation that was performance based in accountability terms through the contracting mechanism. This was to be achieved by creating District Health Boards, Hospital Management Boards and the Central Board of Health as autonomous agencies of the health system, with the Ministry of Health as the principal (ibid). These bodies would help ensure that allocated resources would be applied to their intended use, based on performance-related criteria. The methods for selecting and implementing priorities in the health system were based on an essential health-care package. This reflected disease priorities and the selected cost-effective interventions, which would be funded by public resources.

1.2   Study objectives

Our general objective in this study was to provide an update of the experiences and progress on the design, review and implementation of an equity-based resource allocation formula in the Zambian health sector. Specifically, we aimed to:

- provide a specific update on the elements of the resource allocation formula;
- address the weighting factors and their contribution to overall weighting structure;
- provide a critical assessment of the formula in terms of weaknesses and strengths, constraints and success factors;
- assess its contribution towards relative redistribution of financial resources on a geographic basis (or/and demographic basis);
- identify evidence of the formula associated with health systems strengthening; and
- recommend any changes that would enhance the efficacy and performance of the formula towards the attainment of Zambia's health system goals.
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The process of redistributing health care resources to vulnerable groups addresses three issues. It addresses inequalities in the disease burden (poor health) among the poor, as well as more equitable re-allocation of resources across the various socio-income groups. It also leads to the formation of and restructuring of the allocation of resources through criteria that take into account key variables or factors that impact on health and the allocation of resources.

1.3   Main concepts used to guide resource allocation

Resource allocation is based on a number of concepts. In terms of agency theory and the principal-provider split, an agency relationship is said to exist when the principal delegates decision-making to an agent with the belief, expectation and trust that the agent will act to provide services agreed upon, contracted or expected to be performed.

Resource allocation is also based on deprivation and need. McIntyre et al (2001) consider deprivation as a state of observable and demonstrable disadvantage relative to the local community or the wider society to which an individual family or group belongs. In other words, deprivation refers to a situation in which the material and social conditions that are experienced by individuals, households and communities are inadequate in relation to what is usually available or experienced in the rest of society. Two terms defining deprivation are commonly cited. Material deprivation includes lack of or inadequate food, clothing, food and nutrition, sanitation and water, as well as poor physical and mental living and high levels of pollution etc. In contrast, social deprivation refers to low level of education and lack of accessible education facilities, few employment opportunities, lack of recreation and poor or low social capital, such as a lack of community facilities. In turn, need may be defined as the effective capacity to benefit from health care to the extent that additional consumption does not generate any more substantive health care gains (Folland et al, 2007).

Equity is another important concept used to determine resource allocation. The overall purpose of deprivation-based allocation is to achieve a balance in both health status and access to health care resources needed to provide the necessary health care. While such an understanding includes other sector resources included in public health – such as water sanitation and education – this paper takes a narrower health sector-based approach to equity and reduction of inequalities in health care Whitehead (1990) states that: '*the term inequity has a moral and ethical dimension. It refers to differences which are unnecessary and avoidable but, in addition, are also considered unfair and unjust' (p 5).*This is the premise adopted in this paper. Equity, as stated by Braveman and Gruskin (2003), is an ethical concept that defines social justice and fairness as key parameters in the equity dimension. Equity as an applied concept is not used as a norm – rather, the preference is to discuss health inequalities. Two forms of equity are normally used from the resource generation and health care consumption points of view. Vertical equity refers to the unequal treatment of unequals, in which the better off are expected to contribute to health care financing in a progressively higher manner and the worse off in health status are expected to consume more relative their health care needs. Horizontal equity refers to a situation in which persons in a similar state are expected to contribute to resource generation and consume health care resources at par with people of similar status.

Diderichsen (2004) has argued that the allocation of resources follows two general pathways. First, resources may be located through existing structures and budgets, which is a supply-oriented approach. This process is undertaken through incremental adjustments to the budgets and global budgeting cash disbursements. This process is constrained by the fact that it tends

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to perpetuate historical imbalances arising out of pre-existing investments in infrastructure or the distribution of, for example, human resources. Second, resources may be allocated through capitation and 'need'. This process is undertaken through adjusting for epidemiology or socio-demographic factors that serve as a proxy for need factors. This is often and increasingly the current mode of allocating some proportion of health care resources; substantially those addressing recurrent expenditures.

McIntyre et al (2001) set out a series of principles to help guide understanding of the factors influencing resource allocation. The first part addresses conceptual issues surrounding deprivation, poverty and equity, among others. We found this terminology highly relevant to our study. As far as equity is concerned, there is always the debate on horizontal and vertical equity. The two concepts may be distinguished firstly by the fact that horizontal equity is primarily associated with service provision, while vertical equity builds on the concept of consumption of health services based on 'health need', and considers that contributions for health services should be determined by the user's ability to pay. These features have implications on the progressivity of tax financing and other payment mechanisms. Health need has been defined in a number of ways, sometimes controversial. In this paper, we define need according to Wagstaff and van Doorslaer's (1998) definition as 'the capacity to benefit'. Certain factors are relevant to need in this instance, such as morbidity and mortality. Difficulties may arise, however, as accurate and dependable morbidity and mortality data is often unavailable in developing countries (Diederichsen, 2004).

2. Methods

In this study, we used both qualitative assessment and quantitative methods in analysing the trends in resource allocation progression, i.e. to identify implementation issues, decisions proposed and actual decisions in the development and application of deprivation-based resource allocation since 2002 in Zambia.

We conducted personal interviews with the technical officers in the Ministry of Health, as well as with the District Heath officials. We used longitudinal time series data between 2000 and 2009 to undertake a trend analysis of the stated objectives of the allocation criteria and consistency between targets and practice. We undertook quantitative analysis of district poverty indices and allocated resources (in US$), using Excel spreadsheets for descriptive data analysis, graphs, correlations and tabulations.

We collected data from the Ministry of Health for the period 2000 to 2009, which also provided the revised resource allocation criteria. The allocation criteria were tested using regression analysis, specifically principal component analysis (PCA) in SPSS. The inclusion of the financial variables therefore arises as a consequence of this method.

Resource allocation in Zambia has been developed according to a framework that addresses some of the factors discussed in section 1.3. It is further premised on the assumption that the inverse health status impacts most negatively on relatively poor households in comparison to wealthier households. If resources are to make a difference, then there has to be improved access to health-impacting interventions for poorer households to the extent that the weighting recognises the greater capacity of poor households to benefit from health interventions.

3.   Zambia's policy and technical changes in allocating resources for health

In 1992, the Zambian government revised its policy framework to regulate resource allocation to better address the existing inequities and differentials in health status and the distribution of health resources (Chitah, Masiye 2006). Until the fiscal year 1993/1994, the allocation for recurrent and capital expenditures was based on incremental or supply side-based principles. Budgets were set annually and adjustments based on cost differentials between periods were used as adjustment factors. As stated earlier, the drawback with this approach is that initial health care investments for infrastructure and services are often not undertaken on the basis of access and equality principles, and this was the case in Zambia. Subsequent resource distribution was based on existing historical imbalances and perpetuated this bias in the initial resources and access objectives. The institutional framework during the period prior to the use of population-weighted and poverty-related allocation formulae was one in which the Ministry of Health headquarters was responsible for all fiduciary management in the health sector, representing a highly centralised management model. At the time, district and health services used to present their actions plans, which were then integrated and funded centrally for all functions, with the exception of minor day-to-day financial operations, such as medical supplies procurement and travel imprest.

Between 1993/1994 and 2004, the health sector was decentralised and district and hospital management health boards were formed, which assumed autonomous status. These had fiduciary autonomy – including planning and human resource management functions – over up to about 15% of medicines and capital investments, while the larger share of budget remained at central level so government could save money by making bulk procurements. In addition, a provider-purchaser split was introduced with contracting functions split between fund-holding agencies and service providers. The principal was defined as the Ministry of Health and the fund holders were the Central Board of Health, which contracted with the District Health Boards (DHBs) and Hospital Management Boards (HMBs) for secondary- and tertiary-level services. In addition, the DHBs contracted among each other for first-level services, as well as with secondary and tertiary health facilities.

Based on the above structure, the principle was for 'the money to follow the patient' rather than the other way round. More importantly, to promote health equity together with the goal of management efficiency, the allocation mechanism was revised to take into account the population as proxy for health need (see *Table 1*).

Table 1: Variables used in the first-generation resource allocation formula: 1994–2002

Variables	Weighting factor
Population	0.5
Fuel cost	0.1
Distance of district from Lusaka	0.1
Availability of bank within the district	0.2
Risk likelihood to infectious disease outbreaks	0.1

Source: Central Board of Health 2005

3.1 Evaluating implementation of the deprivation-based resource allocation formula in 2006

An earlier evaluation of resource allocation in Zambia by Chitah and Masiye (2006) identified five major issues regarding the formula design and implementation. First, they found that the population-based allocation formula that government previously used was biased in favour of urban areas, which received disproportionately higher allocations. The allocations made prior to the development of the deprivation-based formula were found to have been much higher relative to the more deprived rural areas.

Second, discrepancies emerged between the actual allocation of resources and the proposed allocation based on the formula. These discrepancies were due to the fact that the previous formula allocations had been biased towards the cities and other bigger towns or the urban areas, such as Lusaka, Livingstone, Kitwe and Ndola. Third, both the providers and the funding or co-operating partners agreed that a more 'balanced' allocation formula should be developed and implemented. In particular, providers who were based in rural areas were concerned that districts in urban areas raised much more funding from user fees by serving households with higher incomes, as well as receiving relatively higher funding. They felt that rural areas were being 'negatively taxed', in the sense that the potential for generating user fee revenue at the time was limited by greater rural poverty.

Fourth, after reviewing the complexities relating to what was termed 'loss of income' for the urban-based districts if the new allocation formula were to be implemented, it was agreed that the implementation should be phased in over a three to five time framework. During this period there should be attempts to increase the resource envelope and nominally adjust the allocations for the larger urban-based districts, as the relative shares of the poorer rural-based districts were increased to equalise them with the levels derived from the new formula allocations. However, Chitah and Masiye found that none of these two sets of recommendations from the Resource Allocation Working Group (RAWG) were being followed up, according to their data analysis of the budgets, allocations and actual disbursements or payments to the districts. Fifth, the institutional framework upon which commissioning was premised was dismantled when the autonomous District Health Boards and the Central Board of Health were dissolved in 2006. In effect, the Ministry of Health was left with no agents and had to serve as both principal and agent to itself, a significantly flawed position. An immediate risk was that performance would be compromised due to the drastic and dramatic reduction in resources. There had to be an adjustment period in which resources needed to be realigned.

3.2 Changes in the resource allocation formula: 2004-2010

As part of the ongoing process of reviewing the formula to take account of additional information and to ensure an improving equality perspective, the Zambian government revised the existing formula in 2009/10 to factor in elements of geographical deprivation. *Tables 2* and *3* compare the variables used in the resource allocation formula in 2004/2005 from those used in the new formula in 2009/2010.

Table 2: Variables used in the resource allocation formula: 2004/2005

Household-level variables	Individual-level variables
Geographic identification/location of household	Household roster, demography and migration
Household income and individual incomes	Health and education
Household amenities and housing conditions	Economic activity
Household access to facilities	Household income and expenditure
Household ownership of assets	Fertility
Household expenses	
Housing characteristics	
Agricultural assets (ploughs, stock etc)	

Source: Central Board of Health 2005

Table 3: Variables used in the resource allocation formula: 2009/2010

Household-level variables	Individual-level variables
Geographic identification/location of household	Household demography/migration
Household income	Health and education
Housing amenities and conditions	Economic activity
Household access to facilities	Population
Wealth/asset ownership	Incidence of disease and 'fatality rates'
Poverty	

Source: Ministry of Health 2009 (b)

The two tables demonstrate that there have hardly been any changes at all to the variables over the four-year period. However, there are some striking differences when it comes to the actual derivation of the material deprivation indices themselves. These results are given in the Appendix, in *Tables A1.1* and *A1.2*, which show the material deprivation indices for the two periods for all districts. *Tables 4* and *5* below show the relative wealth and related district indices for all districts, as classified by quintile or wealth group. The tables compare data for 2004 with that from 2009. (As stated earlier the inclusion or exclusion criteria of the variables was due to the significance results undertaken using PCA. This is a separate discussion outside the scope of this paper.)

Tables 4 and *5* show that, in general, there are fewer districts classified in the wealthiest quintiles 1 and 2 during the period under consideration. This in itself appears to be paradoxical with the counterfactual relating to apparent decline in rural and urban poverty (CSO, Ministry of Health, UNZA, Macro Int 2009). The tables also show that there has been an increase in the number of districts in the poorest quintiles 4 and 5 since the previous period.

Table 4: Classification of districts in Zambia by quintile: 2004

Quintile 1	DI*	Quintile 2	DI	Quintile 3	DI	Quintile 4	DI	Quintile 5	DI
Livingstone	-3.09	Monze	-0.18	Luangwa	0.33	Mporokoso	0.53	Zambezi	0.72
Lusaka	-2.85	Kasama	-0.04	Mpika	0.38	Isoka	0.57	Mungwi	0.73
Kitwe	-2.79	Kalomo	0.03	Mambwe	0.42	Kaoma	0.61	Kabompo	0.74
Mufulira	-2.74	Mumbwa	0.05	Kawambwa	0.42	Chinsali	0.62	Mwinilunga	0.74
Chililabombwe	-2.69	Siavonga	0.06	Solwezi	0.43	Nyimba	0.63	Senanga	0.74
Chingola	-2.64	Sinazongwe	0.07	Sesheke	0.44	Petauke	0.64	Kaputa	0.75
Luanshya	-2.51	Chipata	0.09	Mbala	0.47	Lufwanyama	0.65	Lundazi	0.78
Ndola	-2.5	Mongu	0.1	Itezhi-Tezhi	0.47	Katete	0.65	Chilubi	0.8
Kabwe	-2.17	Mansa	0.16	Gwembe	0.48	Nchelenge	0.65	Kalabo	0.8
Kalulushi	-2.08	Chibombo	0.17	Masaiti	0.49	Mufumbwe	0.65	Lukulu	0.83
Kafue	-1.81	Mkushi	0.24	Serenje	0.5	Samfya	0.66	Chiengi	0.9
Mazabuka	-0.6	Namwala	0.27	Mwense	0.52	Milengi	0.7	Chama	0.91
Chongwe	-0.46	Kapiri Mposhi	0.29	Luwingu	0.52	Chadiza	0.71	Chavuma	0.92
Choma	-0.39	Nakonde	0.31	Kasempa	0.52	Mpulungu	0.72	Shangombo	1.09
		Mpongwe	0.33	Kazungula	0.52				

Source: Ministry of Health, Central Board of Health (2005)
*DI = District Deprivation Index

Table 5: Classification of districts in Zambia by quintile: 2009

Quintile 1	DI*	Quintile 2	DI	Quintile 3	DI	Quintile 4	DI	Quintile 5	DI
Lusaka	-4.65	Mkushi	-0.31	Mumbwa	0.45	Lufwanyama	0.96	Kasempa	1.15
Kitwe	-4.53	Monze	-0.29	Sesheke	0.5	Mporokoso	1.03	Luwingu	1.16
Livingstone	-4.24	Chipata	-0.17	Kawambwa	0.54	Nchelenge	1.03	Mwense	1.25
Chililabombwe	-3.84	Masaiti	-0.1	Petauke	0.55	Zambezi	1.04	Kapombo	1.26
Ndola	-3.81	Mpika	0.07	Mansa	0.56	Lundazi	1.04	Gwembe	1.26
Kafue	-3.68	Kasama	0.09	Mufumbwe	0.58	Siavonga	1.05	Chinsali	1.29
Luanshya	-3.68	Mongu	0.13	Namwala	0.65	Kazungula	1.05	Kalabo	1.31
Mufulira	-3.62	Mambwe	0.15	Katete	0.67	Luangwa	1.06	Lukulu	1.33
chingola	-3.51	Kapiri Mposhi	0.23	Samfya	0.69	Chama	1.06	Chilubi	1.34
Kabwe	-3.13	Solwezi	0.27	Nyimba	0.7	Senanga	1.07	Milengi	1.37
Kalulushi	-2.94	Nakonde	0.29	Isoka	0.75	Mpongwe	1.09	Kaputa	1.38
Mazabuka	-1.63	Sinazongwe	0.34	Mpulungu	0.77	Serenje	1.1	Mwinilunga	1.39
Chongwe	-1.46	Itezhi-Tezhi	0.35	Mbala	0.78	Chadiza	1.1	Shangombo	1.39
Chibombo	-0.51	Kalomo	0.41	Kaoma	0.88			Chiengi	1.4
Choma	-0.43							Mungwi	1.5
								Chavuma	1.66

Source: Ministry of Health 2009

*DI = District Deprivation Index

In the Appendix, *Tables A1.1* to *1.3* show all 72 districts in Zambia and the related deprivation indices with weighted populations, in both the 2004 formula and the 2009 revised formula. There are some striking changes. For instance, of the urban areas or cities only Kabwe, Mufulira and Ndola appear to have had a significant adjustment upwards as more funding was disbursed and allocated to them. Similarly for the rural areas, certain districts have had significant increases. Districts such as Chibombo, Kapiri-Mposhi, Mumbwa, Serenje, Chama, Chadiza, Lukulu, Senanga, Sesheke were allocated more resources. Peri-urban areas, such as Chipata, Kasama, Choma, also demonstrated significant increases.

Table A 1.2 in the Appendix is a ranking of districts, ranging from 'worst' to 'best'. These are some of the issues that can be briefly indicated before presenting more information.

3.3   Geographical equalisation of resource allocation and application of the formula

The district poverty indices and the derived material and population weights are shown in the tables in Appendix 1, as well as *Tables 4, 5* and *6. Table A1.2* in the Appendix shows the derived indices by district, while *Tables 5* and *6* show the comparative ranking of districts on the basis of their weights. Variations in the categorisation or classifications by the differences in the weights are shown in these tables. For more detailed information, refer to *Table A1.3* in the Appendix.

Table 6: Selected district disbursements relative to the resource allocation weighting factors and *per capita* of the disbursements (US$)

Districts	Per capita disburse- ments 2004	Per capita disburse- ments 2005	Per capita disburse- ments 2009	Depri- vation index 2004	Normalised deprivation score 2004	Depri- vation index 2009	Normalised deprivation score 2009
Chadiza	11,634	15,569	6,000	0.71	4.80	1.1	6.75
Chama	12,634	16,905	7,679	0.91	5.00	1.06	6.71
Chavuma	20,297	23,746	11,972	0.92	5.01	0.29	5.94
Chibombo	9,854	13,577	4,876	0.17	4.26	-0.51	5.14
Chiengi	13,363	17,832	6,098	0.90	4.99	1.4	7.05
Chongwe	11,212	13,027	5,873	(0.46)	3.63	–	–
Gwembe	19,454	19,660	8,864	0.48	4.57	-0.43	5.22
Kabwe	10,941	9,915	4,522	(2.17)	1.92	-3.13	2.52
Kafue	10,622	10,182	3,807	(1.81)	2.28	-1.46	4.19
Lusaka	10,008	8,694	2,574	(2.85)	1.24	1.06	6.71
Milengi	21,272	24,014	14,355	0.70	4.79	1.37	7.02
Mkushi	11,704	15,282	5,311	0.24	4.33	-0.31	5.34
Ndola	3,241	4,142	2,973	(2.50)	1.59	-3.81	1.84
Zambezi	14,411	17,383	7,157	0.72	4.81	0.27	5.92

Figures 1 and 2 compare the wealthiest and poorest quintile districts between 2004 and 2009. The figures indicate an increase in the wealth of the wealthy districts and an increase in poverty of some of the poor districts.

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Figure 1: Comparison of the wealthiest and poorest quintile districts: 2004
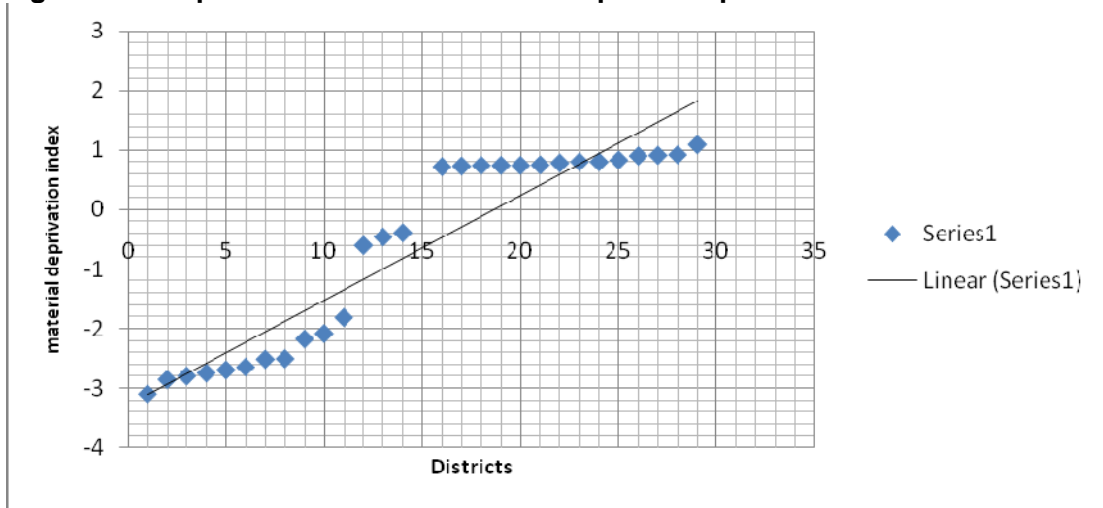
Figure 2: Comparison of the wealthiest and poorest quintile districts: 2009
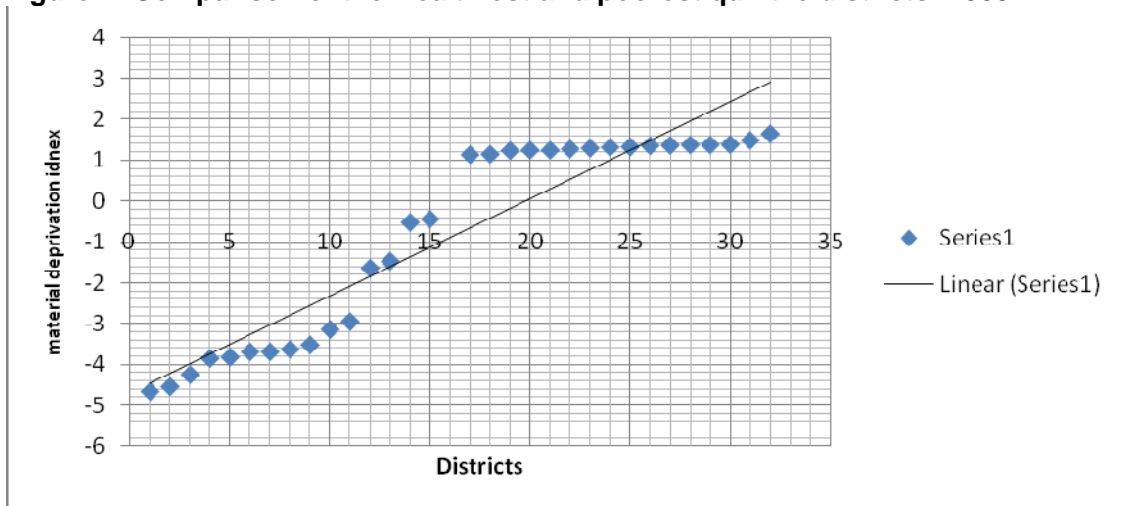
Figure 3: Per capita allocations by districts: 2004, 2005 and 2009 (US$)
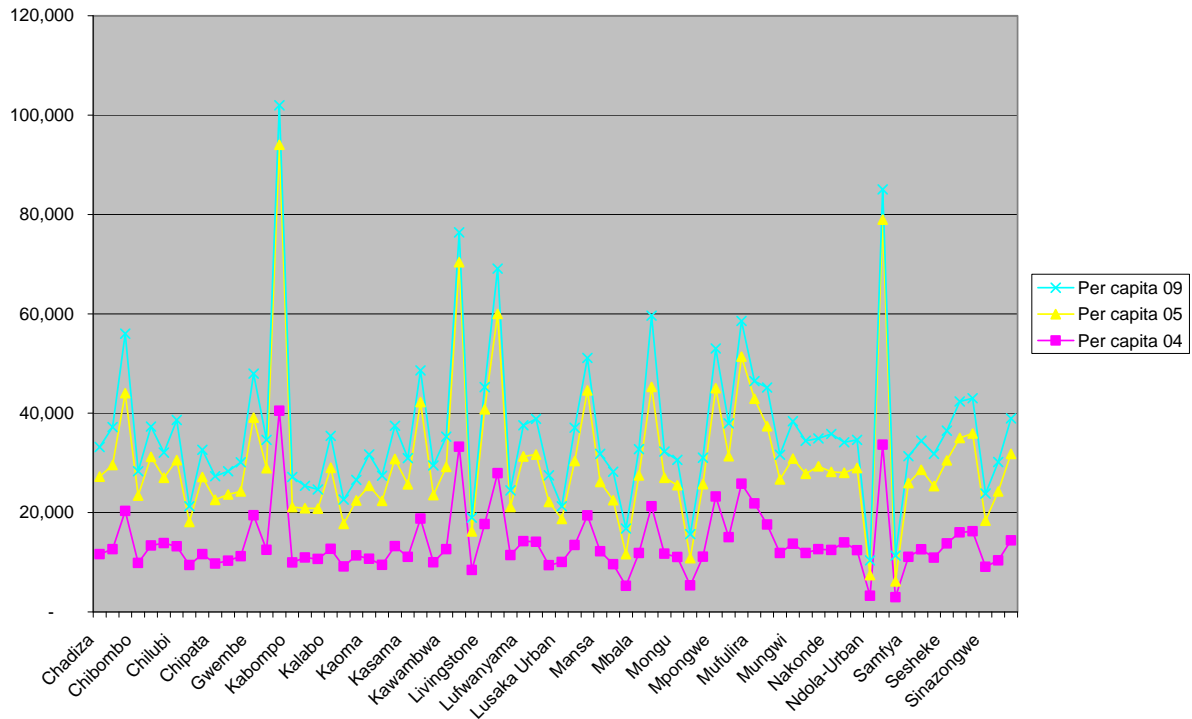
Figure 3 shows the per capita allocations of district funding. They provide evidence of the erratic and inconsistent use of the deprivation formula by Ministry of Health. The noticeable elements in the table are the fluctuations within and among districts in terms of the variation in the allocations. Differentials in the allocation appear random and not attributable to the resource allocation formula. In *Table A1.3* in the Appendix, the most deprived districts are ranked by the lowest positive number while the wealthiest are ranked with the least negative score in terms of the deprivation index. The table shows the disbursements made relative to the corresponding weights. The weights for 2009 are also provided although these are yet to be used in the allocation formula. It was anticipated that the new weights would come into use in the 2011 fiscal year (Zambia has since re-aligned its public fiscal year with the calendar year, starting with the 2010 fiscal year).

Table 7: Allocation trends by region: 2006–2007 (Kwacha)

Provinces	Total allocation by province 2007	Total allocation by province 2006	% provincial allocation 2006	% provincial allocation 2007
North-Western	11,112,928,712	7,905,618,439	7	7
Petauke	–	–	–	–
Eastern	22,782,866,813	15,173,028,270	14	14
Lusaka	15,046,623,736	10,277,155,862	10	10
Southern	20,235,047,380	14,026,547,507	13	13
Western	14,380,006,287	9,626,346,883	9	9
Central	16,767,805,975	10,952,803,547	11	10
Luapula	14,419,730,840	9,997,034,006	9	9
Northern	24,165,627,058	16,672,645,843	15	16
Copperbelt	18,351,125,630	12,221,633,550	12	11
Total District Health Board	157,261,762,430	106,852,813,908	[100]	[100]

Source: Ministry of Health. 2006 - 2008

Figure 4: Allocations trends by region: 2006–2007 (Kwacha)
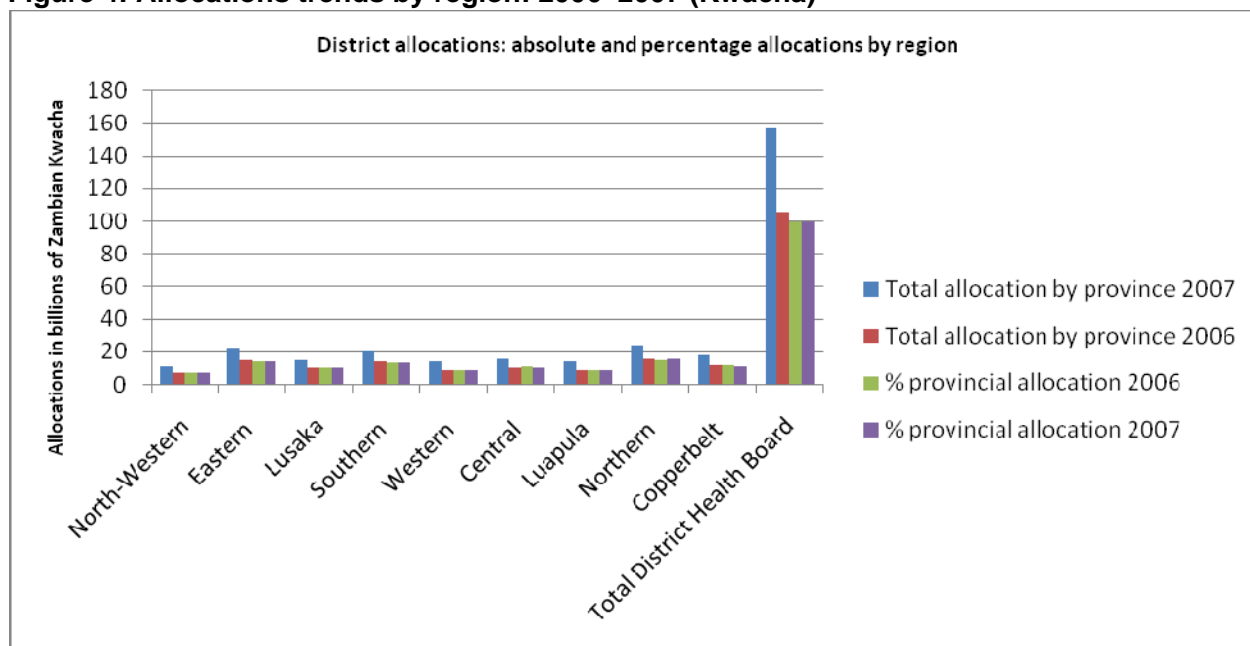
4.   Resource allocation and health systems strengthening: Limitations

Effective resource allocation assumes comprehensive jurisdiction over the totality of resources to achieve the desired health system goals of inequality reduction and increased life expectancy outcomes, as well those relating to the development of a strengthened and functional health system. This financing situation has been the focus of financing frameworks such as sector-wide approaches (SWAps) and direct budget support (DBS). However, *Table 8* indicates the share of resources that are under the purview of the allocation formula and the Global Financing Initiatives, which are involved in vertical or direct project funding for their own programmes or programmes contracted out to local agents, including the public sector. This restrains the effectiveness of a health system-wide resource allocation formula and consequently is bound to impact on the outcome performance. By comparison the share of resources by funding agent is then related to the share of hospital facility ownership. This again demonstrates the work load and supply-side responsibility of the public sector as opposed to the resource flows from Global Health Initiatives, which may not necessarily take these considerations into account in their own funding criteria.

Table 8: Average shares of total health expenditure by source (Kwacha bn): 2003–2006

Financing Sources	2003			2005			2006		
	Nominal	Real	% of THE*	Nominal	Real	% of THE	Nominal	Real	% of THE
Government of Zambia	329	37.9	24.5	450	39.1	19.9	599	43.9	24.4
External funders	493	59.4	36.6	1,042	91.0	46.1	1,018	74.2	41.5
Global Fund	42	4.8	3.1	274	23.2	12.1	87	6.3	3.6
USAID	66	9.0	4.9	251	21.9	11.1	311	22.3	12.7
Other	385	45.7	28.6	516	45.9	22.9	620	45.6	25.3
Household	400	44.9	29.7	618	52.3	27.4	669	48.1	27.3
Total	1,346	156.3	100.0	2,259	194.8	100.0	2,454	178.2	100

*THE = Total Health Expenditure
Source: Ministry of Health National Health Accounts, 2009

The data points for analysis shown for two years partly has to do with the consistency and comparability of the data in the other years. In addition, the information gain or loss appears to be minimal as the implementation of the revised formula during 2004 was being delayed by the reluctance to implement it according to the derived weights and indices mainly because of the lack of additional resources and secondly the political reluctance within the Ministry to explain the undertaking to Parliament, Cabinet as well as the communities through the district health management teams of the reduction in the resources for the affluent urban areas.

The data shows that there has been little attempt to shift resource allocation. This raises serious questions about the need to review the resource allocation formula, when the evaluation of the indicators does not provide any reason to justify whether the initial objectives have been achieved or not. *Table 8* shows the resource flows from all sources. The Global Health

Initiatives have increased in terms of their contribution. These have been used as 'fungible' sources of funding by the Ministry of Health to the detriment of the resource allocation formula, as they are made as sometimes 'off-budget' commitments and payments. These funds are not subject to allocation by use of the formula and yet do significantly alter the resource envelope of the districts, adversely affecting equality, as the key programmes are invariably in the urban areas that face more acute and worse indicators in these disease or programme areas.

5. Discussion

5.1 Implementation of the resource allocation formula

The data presented in the above sections shows that there have been few changes if any in terms of the statistical analysis for the derivation of the weights, indices and overall deprivation based allocation formula. In both formulae there has not been any demonstrable link between the district epidemiological trends as a proxy for the degree of health status and deprivation levels. This is probably due to the fact that utilisation rates of health facilities are not themselves weighted by population for the districts. In any event, what does emerge is the level of similarity in the variables.

The current revised formula has produced some remarkable results in terms of the shift into worsening status of deprivation by the majority of the districts. This appears to be happening as the national poverty statistics indicate improvement in both urban and rural poverty levels.

The allocation criteria based on the 2004 revision generated a number of issues, key among which was the variation between the allocated resources based on formula and the actual disbursed resources. A number of factors contributed to this. Firstly, there was uncertainty as to how the policy makers would respond to the anticipated large financial cuts and redistribution from the urban areas to the rural areas. This measure was seen to be politically sensitive if not impossible to undertake (personal communication). Secondly, the low levels of funding (budget) and lack of ability in increasing the resource envelope constrained the ability to increase funding without reducing to other districts as was recommended by the Resource Allocation Working Group. Thirdly, the option of maintaining the status quo and adjusting resource allocation through other mechanisms such as resources from Global Health Initiatives such as the Global Fund and Global Alliance for Vaccine Initiative was rejected, despite arguments that these resources should form part of the pooling of funds for sector support as part of the health systems strengthening approach.

The initial development of the formula was criticised extensively were it to be implemented in the form that it had been developed (Chitah and Masiye, 2007). The reasons for this were that abrupt and acute (significant) changes in funding to districts would have negative effects on their capacity to deliver services in the event that the funding went down and, where the funding would increase significantly, there may be constraints relating to absorption capacity. However, the consensus of the Resource Allocation Working Group, which consisted of health care providers (district and hospital management teams, Ministry of Health and co-operating partners), centred on the principle of public financing that ensures protection of funding to entities and it was argued that it would be a bad principle to reduce funding for any districts. Rather, the recommendation was that the formula should be implemented in a structured and incremental manner over time. This would allow the funding to be gradually adjusted without any negative effects. This could be done by having relatively differential funding in proportional

terms so that equilibrium would be reached that takes into account larger increments to the districts that ought to be better funded and lower increments in districts that were better off until the formula targets were reached. Tentatively, these changes could be made over a five-year period (Ministry of Health, Central Board of Health 2005).

The assessment of the allocations (see *Tables A1.1* to *A1.3* in the Appendix) and *Table 7* show that there have been adjustments at district level that are not consistent. Furthermore, the Ministry of Health has chosen to allocate resources with the use of the formula and to adjust such allocations with an administratively determined allocation to balance for the differentials in the allocations. In spite of the revision of the formula, the Ministry continues to use the 2004/5 adjusted formula partially, while adjusting the allocations derived at the discretion of the budgeting officer.

5.2   Need and equality

The identification of need variables is an important aspect in the process of developing a needs-based resource allocation formula. This aspect has been neglected particularly in the second review of the resource allocation by the Ministry of Health. Assumptions have been made on the continued existence of inequalities in health without preliminary evaluation of the differences existing in health status and ill health and the extent to which such differences or their absence can then be a valid basis to review the allocation criteria.

Diderichsen (2004) has noted that regression analysis (principal component analysis, or PCA) may not necessarily be the ideal approach for identifying need factors. He cites the South African experience where, of all the need variables, the one relating to piped water tended to generate the same results as all the other that arose out of PCA. This appears to be a critical aspect in the analysis process for need variables. It raises fundamental questions about a more critical approach in assessing the variables for inclusion in resource allocation, as well as trying to determine the variation in health outcome or status, if possible, and linking this to changes over time related to funding or expenditure patterns.

The revised resource allocation formula appears to add very little value to the on-going process for improving allocations. The 2004/5 formula should probably be maintained. More work should be done on trying to identify variables based on demography (age, sex), socio-economic background (income, wealth, education and housing), geography (location, and rural-urban relationship) and epidemiology (disease patterns and distribution).

5.3   Unified funding structure and evidence of strengthening of the health system

The absence of a unified budget provides critical structural inefficiencies that limit or dilute the efficacy of an allocation formula (Diderichsen, 2004). A unified funding structure is defined as an integrated and single budget that is the basis for application of the formula. Currently, the resource envelope landscape in Zambia is fraught with donor funds. Global Fund and USAID spending on AIDS, TB and Malaria was more than the health sector budget in 2005 (Table 8) and it is disbursed in a rigid and inefficient vertical process (Ministry of Health, 1999–2006). Apart from this there are other programmes in child, reproductive and maternal health, malaria, tuberculosis and others that consume a large share of resource but their allocation is done outside the health sector allocation mechanisms and structures. Although HIV and AIDS is a multi-sectoral problem, there remains a significant health sector response – an issue different

stakeholders often blind themselves to and therefore continue to justify vertical and inefficient funding practices.

6. Recommendations

We propose four actions that may be taken to ensure more equitable allocation of resources for health in Zambia. First, the government should revise the programmatic assessment and performance framework. In view of the work that has been done on the resource allocation formula and the practical difficulties relating to the full implementation of the formula, the Ministry of Health should set specific performance targets of what it hopes to accomplish. Such targets can be based on the need to equalise differences in population health. As such there can be selected indicators that provide the achievement levels. For example, there could be both long-term outcome targets, such as infant mortality rate and maternal mortality reduction, as well as medium- to short-terms objectives addressing immunisation, the provision of skilled health workers for reproductive and maternal health and other priority public health programmes or disease conditions.

Furthermore, these could be complemented by financial targets that demonstrate an actual achievement of the intended changes in the distribution of resources. As a matter of process, financial indicators could be set as the initial objectives in the need to meet the redistribution targets of the formula. Subsequently and once achieved, the second level of indicators could focus on other areas of health outputs and these could be linked to achieving health outcomes as a measure of the changes in performance of the redistribution effort. The Ministry should:

- set financial indicators outlining the achievement targets by district of the revised formula on a comparative basis with the previous formula;
- set process, output and outcome indicators to determine the achievement rates and effort that resource redistribution intends to provide; and
- provide a monitoring and evaluation framework and sub-system to assess the performance over time of the resource allocation process.

Second, the Resource Allocation Working Group (RAWG) and the Resource Allocation Technical Sub-Committee should be re-established. Key deficiencies in the work around resource allocation and the apparent ad hoc nature of resource allocation function appear to emanate from the void left through disbanding the RAWG and its technical sub-committees such as the Resource Allocation Technical Sub-Committee. The Ministry of Health should revisit this, as the work under by the two groups was made on a continuous basis, unlike now when it is difficult to find who is accountable, as well as data that is uniformly captured and stored.

Third, government should review the institutional mechanism for the implementation of nationwide performance-based financing. Resource allocation was intended to be an integral part of the reform process that incorporated the autonomously functional institutions and operated under a principal-agency framework. This allowed other aspects of equality such as utilisation to be undertaken through the purchasing function and payment of health services on an inter-provider basis. Since the dissolution of the Boards, the Ministry of Health has assumed all functions and acts as both an agent and principal. Failure of clear lines of responsibility and accountability greatly diminish any capacity to generate performance-related activities.

Fourth, the weakening pooled funding mechanism (SWAp) needs to be strengthened. A feature of the Zambian health care system is that, since the dissolution of the boards and other related factors, vertical programme expenditure has grown significantly (personal communication). This

position is demonstrated partly by the relative shares of the funding sources. This practice is undermining the capacity of the health system and the current health indicators appear to be symptomatic of the failure to record associated improvements relative to increased resource flows. Accountable performance tracking of Global Health Initiatives appears to be complex and demands resources beyond the capacity of the health system.

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Appendix

Table A1.1: Material deprivation indices by district: 2004/5 vs 2008/9

Districts	Material deprivation index 2004/5	Material deprivation index 2008/9	Normalised material deprivation index 2004/5	Normalised material deprivation index 2008/9	Weighted population 2004/5	Weighted population 2008/9	Percentage share (weighted population) 2004/5
Chibombo	0.17	-0.51	4.26	5.14	1,029,267	1,664,300	2.9
Kabwe	-2.17	-3.13	1.92	2.52	339,375	543,112	1
Kapiri-Mposhi	0.29	0.23	4.38	5.88	85,304	1,500,196	2.4
Mkushi	0.24	-0.31	4.33	5.34	465,207	811,008	1.3
Mumbwa	0.05	0.45	4.14	6.1	657,685	1,311,235	1.9
Serenje	0.5	1.1	4.59	6.75	609,717	1,227,053	1.7
Chililabombwe	-2.69	-3.84	1.4	1.81	94,546	167,607	0.3
Chingola	-2.64	-3.51	1.45	2.14	249,438	240,735	0.7
Kalulushi	-2.08	-2.94	2.01	2.71	152,370	252,438	0.4
Kitwe	-2.79	-4.53	1.3	1.12	488,961	531,335	1.4
Luanshya	-2.51	-3.68	1.58	1.97	233,695	355,747	0.7
Lufwanyama	0.65	0.96	4.74	6.61	299,497	545,167	0.8
Masaiti	0.49	-0.1	4.58	5.55	437,761	683,279	1.2
Mpongwe	0.33	1.09	4.42	6.74	284,520	555,969	0.8
Mufulira	-2.74	-3.62	1.35	2.03	194,306	389,753	0.5
Ndola	-2.5	-3.81	1.59	1.84	595,864	862,874	1.7
Chadiza	0.71	1.1	4.8	6.75	403,109	821,533	1.1
Chama	0.91	1.06	5	6.71	374,450	691,962	1.1
Chipata	0.09	-0.17	4.18	5.48	1,536,313	2,447,646	4.3
Katete	0.65	0.67	4.74	6.32	897,045	1,564,217	2.5
Lundazi	0.78	1.04	4.87	6.69	1,153,377	2,155,269	3.3
Mambwe	0.42	0.15	4.51	5.8	213,666	364,558	0.6
Nyimba	0.63	0.7	4.72	6.35	332,406	602,802	0.9
Petauke	0.64	0.55	4.73	6.2	1,115,708	2,098,193	3.1
Chiengi	0.9	1.4	4.99	7.05	418,282	773,326	1.2
Kawambwa	0.42	0.54	4.51	6.19	462,289	828,511	1.3
Mansa	0.16	0.56	4.25	6.21	763,933	1,511,375	2.2
Milengi	0.7	1.37	4.79	7.02	137,904	259,191	0.4
Mwense	0.52	1.25	4.61	6.9	487,549	985,728	1.4
Nchelenge	0.65	1.03	4.74	6.68	526,704	968,955	1.5
Samfya	0.66	0.69	4.75	6.34	777,143	1,334,174	2.2
Chongwe	-0.46	-1.46	3.63	4.19	498,983	745,770	1.4
Kafue	-1.81	-3.68	2.28	1.97	342,495	373,331	1

Luangwa	0.33	1.06	4.42	6.71	83,750	175,155	0.2
Lusaka	-2.85	-4.65	1.24	1	1,345,032	1,330,826	3.8
Chilubi	0.8	1.34	4.89	6.99	324,393	609,275	0.9
Chinsali	0.62	1.29	4.71	6.94	605,923	1,170,032	1.7
Isoka	0.57	0.75	4.66	6.4	462,827	807,328	1.3
Kaputa	0.75	1.38	4.84	7.03	422,208	779,017	1.2
Kasama	-0.04	0.09	4.05	5.74	692,262	1,258,591	2
Luwingu	0.52	1.16	4.61	6.81	372,294	687,645	1.1
Mbala	0.47	0.78	4.56	6.43	682,331	1,263,480	1.9
Mpika	0.38	0.07	4.47	5.72	653,496	1,057,975	1.8
Mporokoso	0.53	1.03	4.62	6.68	341,552	687,478	1
Mpulungu	0.72	0.77	4.81	6.42	325,166	549,156	0.9
Mungwi	0.73	1.5	4.82	7.15	544,549	1,077,854	1.5
Nakonde	0.31	0.29	4.4	5.94	330,594	564,675	0.9
Chavuma	0.92	1.66	5.01	7.31	150,004	287,128	0.4
Kabompo	0.74	1.26	4.83	6.91	344,080	682,137	1
Kasempa	0.52	1.15	4.61	6.8	239,277	484,344	0.7
Mumfumbwe	0.65	0.58	4.74	6.23	208,569	380,541	0.6
Mwinilunga	0.74	1.39	4.83	7.04	567,549	1,129,166	1.6
Solwezi	0.43	0.27	4.52	5.92	921,162	1,573,870	2.6
Zambezi	0.72	1.04	4.81	6.69	312,472	575,356	0.9
Choma	-0.39	-0.43	3.7	5.22	758,123	1,280,901	2.1
Gwembe	0.48	1.26	4.57	6.91	155,988	324,989	0.4
Itezhi-Tezhi	0.47	0.35	4.56	6	196,586	362,315	0.6
Kalomo	0.03	0.41	4.12	6.06	698,352	1,404,989	2
Kazungula	0.52	1.05	4.61	6.7	314,702	613,054	0.9
Livingstone	-3.09	-4.24	1	1.41	103,288	175,845	0.3
Mazabuka	-0.6	-1.63	3.49	4.02	709,234	1,076,091	2
Monze	-0.18	-0.29	3.91	5.36	639,590	1,436,593	1.8
Namwala	0.27	0.65	4.36	6.3	361,052	757,106	1
Siavonga	0.07	1.05	4.16	6.7	244,874	493,966	0.7
Sinazongwe	0.06	0.34	4.15	5.99	333,888	681,116	0.9
Kalabo	0.8	1.31	4.89	6.96	561,401	988,256	1.6
Kaoma	0.61	0.88	4.7	6.53	764,070	1,375,203	2.2
Lukulu	0.83	1.33	4.92	6.98	336,405	6,22,632	0.9
Mongu	0.1	0.13	4.19	5.78	678,788	1,150,571	1.9
Senanga	0.74	1.07	4.83	6.72	527,045	909,177	1.5
Sesheke	0.44	0.5	4.53	6.15	354,106	592,097	1
Shangombo	1.09	1.39	5.18	7.04	362,854	622,796	1

Source: Ministry of Health Central Board of Health 2005

Table A1.2 Allocations per district based on the resource allocation formula (Kwacha): 2006–2007 *

Districts	Total allocation by district 2007	Total allocation by district 2006	% of total national allocation 2006	% of total national allocation 2007	Differentials in % allocation
North-western Province					
Chavuma	731,541,166	623,129,447	0.5	0.6	0.1
Kabompo	1,444,156,252	680,103,857	0.9	0.6	-0.3
Kasempa	1,020,275,536	1,002,133,581	0.6	0.9	0.3
Mufumbwe	881,862,281	736,740,631	0.6	0.7	0.1
Mwinilunga	2,340,115,181	1,613,920,067	1.5	1.5	0.0
Solwezi	3,370,053,902	2,343,009,263	2.1	2.2	0.0
Zambezi	1,324,924,394	906,581,593	0.8	0.8	0.0
Eastern Province					
Chadiza	2,157,766,630	1,168,318,489	1.4	1.1	-0.3
Chama	1,601,655,285	1,101,502,717	1.0	1.0	0.0
Chipata	5,238,276,560	3,755,608,541	3.3	3.5	0.2
Katete	3,164,881,805	2,117,280,220	2.0	2.0	0.0
Lundazi	4,169,615,202	2,693,714,234	2.7	2.5	-0.1
Mambwe	933,847,194	966,314,667	0.6	0.9	0.3
Nyimba	1,417,772,007	2,685,836,820	0.9	2.5	1.6
Petauke	4,099,052,130	684,452,581	2.6	0.6	-2.0
Lusaka Province					
Chongwe	2,064,038,378	1,421,930,437	1.3	1.3	0.0
Kafue	1,781,185,889	1,196,602,519	1.1	1.1	0.0
Luangwa	619,992,012	533,636,423	0.4	0.5	0.1
Lusaka	10,581,407,457	7,124,986,484	6.7	6.7	-0.1
Southern Province					
Choma	3,101,361,369	2,136,238,354	2.0	2.0	0.0
Gwembe	723,452,755	604,498,287	0.5	0.6	0.1
Itezhi-Tezhi	865,786,248	1,921,284,122	0.6	1.8	1.2
Kalomo	2,787,212,147	1,113,453,238	1.8	1.0	-0.7
Kazungula	1,344,006,590	2,059,422,776	0.9	1.9	1.1
Livingstone	1,682,177,589	1,856,326,962	1.1	1.7	0.7
Mazabuka	2,997,925,217	1,049,484,474	1.9	1.0	-0.9
Monze	2,699,318,626	743,608,515	1.7	0.7	-1.0
Namwala	1,544,266,429	974,925,616	1.0	0.9	-0.1
Siavonga	1,055,439,299	914,218,921	0.7	0.9	0.2
Sinazongwe	1,434,101,111	653,086,242	0.9	0.6	-0.3

Districts	Total allocation by province 2007	Total allocation by province 2006	% provincial allocation 2006	% provincial allocation 2007	Differentials in % allocation
Western Province					
Kalabo	2,565,710,517	1,474,501,222	1.6	1.4	-0.3
Kaoma	2,709,761,131	1,906,938,475	1.7	1.8	0.1
Lukulu	1,411,655,599	963,714,446	0.9	0.9	0.0
Mongu	2,656,813,235	1,833,042,399	1.7	1.7	0.0
Senanga	2,000,752,694	1,378,854,843	1.3	1.3	0.0
Sesheke	1,496,352,861	1,020,699,523	1.0	1.0	0.0
Shang'ombo	1,538,960,250	1,048,595,976	1.0	1.0	0.0
Central Province					
Chibombo	3,802,378,288	2,697,827,232	2.4	2.5	0.1
Kabwe Urban	2,887,447,040	1,337,117,095	1.8	1.3	-0.6
Kapiri-Mposhi	3,096,639,598	2,056,713,923	2.0	1.9	0.0
Mkushi	1,980,430,092	1,356,653,438	1.3	1.3	0.0
Mumbwa	2,775,438,140	1,910,942,256	1.8	1.8	0.0
Serenje	2,225,472,817	1,593,549,602	1.4	1.5	0.1
Luapula Province					
Chiengi	1,921,020,689	1,192,863,456	1.2	1.1	-0.1
Kawambwa	2,439,972,991	1,315,942,272	1.6	1.2	-0.3
Mansa	1,952,810,021	2,083,569,332	1.2	1.9	0.7
Milengi	1,193,367,716	584,889,275	0.8	0.5	-0.2
Mwense	2,364,613,082	1,371,681,768	1.5	1.3	-0.2
Nchelenge	2,062,779,523	1,480,925,474	1.3	1.4	0.1
Samfya	2,485,166,817	1,967,162,428	1.6	1.8	0.3
Northern Province					
Chilubi	1,381,908,445	943,120,323	0.9	0.9	0.0
Chinsali	2,343,741,969	1,621,396,713	1.5	1.5	0.0
Isoka	1,874,185,556	1,303,948,294	1.2	1.2	0.0
Kaputa	1,781,448,100	1,223,180,115	1.1	1.1	0.0
Kasama	2,895,966,061	2,007,395,811	1.8	1.9	0.0
Luwingu	1,568,544,159	1,075,520,913	1.0	1.0	0.0
Mbala	2,746,912,495	1,899,327,663	1.7	1.8	0.0
Mpika	2,475,388,024	1,732,970,785	1.6	1.6	0.0
Mporokoso	1,461,072,042	995,465,761	0.9	0.9	0.0
Mpulungu	1,380,944,852	1,345,417,866	0.9	1.3	0.4
Mungwi	2,290,489,649	1,582,803,538	1.5	1.5	0.0
Nakonde	1,965,025,704	942,098,061	1.2	0.9	-0.4

Districts	Total allocation by province 2007	Total allocation by province 2006	% provincial allocation 2006	% provincial allocation 2007	Differentials in % allocation
Copperbelt Province					
Chililabombwe	1,345,208,985	698,089,641	0.9	0.7	-0.2
Chingola	1,763,962,325	1,172,971,541	1.1	1.1	0.0
Kalulushi	977,671,495	671,116,114	0.6	0.6	0.0
Kitwe	3,349,705,435	2,218,494,181	2.1	2.1	-0.1
Luanshya	1,581,217,666	1,052,771,664	1.0	1.0	0.0
Lufwanyama	1,286,193,544	868,836,628	0.8	0.8	0.0
Masaiti	1,785,896,602	825,183,983	1.1	0.8	-0.4
Mpongwe	1,214,750,661	1,071,678,838	0.8	1.0	0.2
Mufulira	1,621,646,295	2,443,094,809	1.0	2.3	1.3
Ndola (urban)	3,424,872,624	1,199,396,152	2.2	1.1	-1.1
Total: District Health Board	**57,261,762,430**	**106,852,813,908**	**[100]**	**[100]**	**–**

*Allocations are adjusted for gains and losses by MoH subsidy determined administratively.

Table A1.3: Per capita disbursements to district (Kwacha)and formula weights: 2004–2009

Districts	Per capita disburse-ments 2004	Per capita disburse-ments 2005	Per capita disburse-ments 2009	Depri-vation Index 2004	Normalised Deprivation Score 2004	Depri-vation Index 2009	Normalised Deprivation Score 2009
Chadiza	11,634	15,569	6,000	0.71	4.80	1.1	6.75
Chama	12,634	16,905	7,679	0.91	5.00	1.06	6.71
Chavuma	20,297	23,746	11,972	0.92	5.01	0.29	5.94
Chibombo	9,854	13,577	4,876	0.17	4.26	-0.51	5.14
Chiengi	13,363	17,832	6,098	0.90	4.99	1.4	7.05
Chililabombwe	13,831	13,182	5,030	(2.69)	1.40	-3.84	1.81
Chilubi	13,190	17,367	8,076	0.80	4.89	-4.65	1
Chingola	9,433	8,680	3,143	(2.64)	1.45	-3.51	2.14
Chinsali	11,620	15,497	5,512	0.62	4.71	1.34	6.99
Chipata	9,705	12,832	4,777	0.09	4.18	-0.17	5.48
Choma	10,271	13,367	4,659	(0.39)	3.70	1.04	6.69
Chongwe	11,212	13,027	5,873	(0.46)	3.63		
Gwembe	19,454	19,660	8,864	0.48	4.57	-0.43	5.22
Isoka	12,482	16,412	5,730	0.57	4.66	1.29	6.94
Itezhi-tezhi	40,491	53,543	7,942	0.47	4.56	1.26	6.91
Kabompo	9,934	11,133	6,072	0.74	4.83	1.66	7.31
Kabwe	10,941	9,915	4,522	(2.17)	1.92	-3.13	2.52
Kafue	10,622	10,182	3,807	(1.81)	2.28	-1.46	4.19
Kalabo	12,641	16,361	6,437	0.80	4.89	0.34	5.99
Kalomo	9,117	8,585	4,913	0.03	4.12	0.35	6

Districts	Per capita disburse-ments 2004	Per capita disburse-ments 2005	Per capita disburse-ments 2009	Depri-vation Index 2004	Normalised Deprivation Score 2004	Depri-vation Index 2009	Normalised Deprivation Score 2009
Kalulushi	11,367	11,069	4,149	(2.08)	2.01	-2.94	2.71
Kaoma	10,684	14,666	6,334	0.61	4.70	1.31	6.96
Kapiri-Mposhi	9,475	12,859	5,070	0.29	4.38	0.23	5.88
Kaputa	13,234	17,541	6,679	0.75	4.84	0.75	6.4
Kasama	11,067	14,610	5,268	(0.04)	4.05	1.38	7.03
Kasempa	18,772	23,444	6,390	0.52	4.61	1.26	6.91
Katete	10,000	13,508	5,981	0.65	4.74	0.67	6.32
Kawambwa	12,637	16,515	6,131	0.42	4.51	0.54	6.19
Kazungula	33,242	37,141	6,035	0.52	4.61	0.41	6.06
Kitwe	8,425	7,788	2,766	(2.79)	1.30	-4.53	1.12
Livingstone	17,690	23,084	4,451	(3.09)	1.00	1.05	6.7
Luangwa	27,914	32,065	9,117	0.33	4.42	-3.68	1.97
Luanshya	11,413	9,707	3,347	(2.51)	1.58	-3.68	1.97
Lufwanyama	14,206	17,072	6,295	0.65	4.74	0.96	6.61
Lukulu	14,083	17,607	7,161	0.83	4.92	0.88	6.53
Lundazi	9,378	12,749	5,337	0.78	4.87	1.04	6.69
Lusaka	10,008	8,694	2,574	(2.85)	1.24	1.06	6.71
Luwingu	13,447	16,932	6,692	0.52	4.61	0.09	5.74
Mambwe	19,417	25,164	6,554	0.42	4.51	0.15	5.8
Mansa	12,188	13,972	5,651	0.16	4.25	0.56	6.21
Masaiti	9,574	12,903	5,730	0.49	4.58	-0.1	5.55
Mazabuka	5,243	6,369	5,176	(0.60)	3.49	-4.24	1.41
Mbala	11,847	15,616	5,313	0.47	4.56	1.16	6.81
Milenge	21,272	24,014	14,355	0.70	4.79	1.37	7.02
Mkushi	11,704	15,282	5,311	0.24	4.33	-0.31	5.34
Mongu	11,040	14,452	5,098	0.10	4.19	1.33	6.98
Monze	5,328	5,490	4,815	(0.18)	3.91	-1.63	4.02
Mpika	11,113	14,602	5,313	0.38	4.47	0.78	6.43
Mpongwe	23,208	21,822	8,000	0.33	4.42	1.09	6.74
Mporokoso	15,033	16,288	6,631	0.53	4.62	0.07	5.72
Mpulungu	25,789	25,600	7,181	0.72	4.81	1.03	6.68
Mufulira	21,810	21,110	3,550	(2.74)	1.35	-3.62	2.03
Mufumbwe	17,578	19,805	7,768	0.65	4.74	0.45	6.1
Mumbwa	11,849	14,793	4,972	0.05	4.14	1.15	6.8
Mungwi	13,681	17,188	7,505	0.73	4.82	0.77	6.42
Mwense	11,856	15,921	6,655	0.52	4.61	1.25	6.9
Mwinilunga	12,609	16,682	5,621	0.74	4.83	0.58	6.23
Nakonde	12,442	15,729	7,673	0.31	4.40	1.5	7.15
Namwala	13,975	14,006	6,175	0.27	4.36	-0.29	5.36
Nchelenge	12,417	16,548	5,665	0.65	4.74	1.03	6.68
Ndola	3,241	4,142	2,973	(2.50)	1.59	-3.81	1.84
Nyimba	33,651	45,316	6,061	0.63	4.72	0.7	6.35

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Districts	Per capita disburse-ments 2004	Per capita disburse-ments 2005	Per capita disburse-ments 2009	Depri-vation Index 2004	Normalised Deprivation Score 2004	Depri-vation Index 2009	Normalised Deprivation Score 2009
Petauke	2,955	3,179	5,193	0.64	4.73	0.55	6.2
Samfya	11,045	14,873	5,425	0.66	4.75	0.69	6.34
Senanga	12,557	16,070	5,811	0.74	4.83	0.13	5.78
Serenje	10,890	14,450	6,476	0.50	4.59	1.1	6.75
Sesheke	13,794	16,719	5,958	0.44	4.53	1.07	6.72
Shang'ombo	15,991	18,993	7,372	1.09	5.18	0.5	6.15
Siavonga	16,208	19,687	7,101	0.07	4.16	0.65	6.3
Sinazongwe	9,092	9,283	5,448	0.06	4.15	1.05	6.7
Solwezi	10,361	13,901	5,893	0.43	4.52	1.39	7.04
Zambezi	14,411	17,383	7,157	0.72	4.81	0.27	5.92

Equity in health implies addressing differences in health status that are unnecessary, avoidable and unfair. In southern Africa, these typically relate to disparities across racial groups, rural/urban status, socio-economic status, gender, age and geographical region. EQUINET is primarily concerned with equity motivated interventions that seek to allocate resources preferentially to those with the worst health status (vertical equity). EQUINET seeks to understand and influence the redistribution of social and economic resources for equity oriented interventions, EQUINET also seeks to understand and inform the power and ability people (and social groups) have to make choices over health inputs and their capacity to use these choices towards health.

EQUINET implements work in a number of areas identified as central to health equity in east and southern Africa

- Protecting health in economic and trade policy
- Building universal, primary health care oriented health systems
- Equitable, health systems strengthening responses to HIV and AIDS
- Fair Financing of health systems
- Valuing and retaining health workers
- Organising participatory, people centred health systems
- Social empowerment and action for health
- Monitoring progress through country and regional equity watches

EQUINET is governed by a steering committee involving institutions and individuals
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