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Development and social justice: Education, training and health in Sudan
Samia Satti Osman Mohamed Nour

Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT)

email: info@merit.unu.edu | website: <http://www.merit.unu.edu>

Maastricht Graduate School of Governance (MGSoG)

email: info-governance@maastrichtuniversity.nl | website: <http://mgsog.merit.unu.edu>

Keizer Karelplein 19, 6211 TC Maastricht, The Netherlands

Tel: (31) (43) 388 4400, Fax: (31) (43) 388 4499

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By Dr. Samia Satti Osman Mohamed Nour

(January 30, 2013)

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Abstract

This paper discusses the importance of sound policies for achieving social development and social justice in provision of education, training and health services in Sudan. Different from Sudanese literature, we provide new contributions by explaining the low commitment to the standardized international equity criterion related to the supply-demand sides and provision of education, training and health services in Sudan. We fill an important gap in Sudanese literature by explaining that regional inequality in the demand for education (share in enrolment in education) is most probably due to economic reasons (per capita income and poverty rate), demographic reasons (share in total population) and other reasons (degree of urbanization) in Sudan. We find that the increase in the incidence of high poverty rates and low per capita incomes seem to be the most important factor limiting the demand for education, notably, demand for primary education, especially for females in Sudan. The major policy implication from our findings is that poverty eradication is key for the achievement of universal access to primary education, gender equality, equity, social justice and therefore, fulfillment of the second and third UN-MDGs in Sudan by 2015. We recommend further efforts to be made to improve equitable provision of education, training and health services to enhance social justice and social development in Sudan.

Keywords: Education, training, health, supply, demand, equity, development, social justice, Sudan

JEL classification: I14, I24, I28, I1, I2, I0, I00

¹ Corresponding Author: Dr. Samia Satti Osman Mohamed Nour, Affiliated Researcher – UNU-MERIT, School of Business and Economics, University of Maastricht, Maastricht, the Netherlands; and Associate Professor of Economics, Economics Department, Faculty of Economic and Social Studies, Khartoum University, Khartoum, Sudan. E-mail: samiasatti@yahoo.com; samia_satti@hotmail.com. This paper is based on the Author's research project "Technological Change and Skill Development: the case of Sudan" which is completed during the author's time as a visiting research fellow at the University of Maastricht, School of Business and Economics, UNU-MERIT, Maastricht, the Netherlands. The author gratefully acknowledges the Arab Fund for Economic and Social Development, Kuwait, for research grant and fellowship and University of Maastricht, School of Business and Economics, UNU-MERIT for the good hospitality during her visiting research fellowship. The first draft of this paper was originally prepared for the Arab Planning Institute (API) 11th International Conference on "Development and Social Justice" April 16-18, 2012. All the usual disclaimers apply.

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1. Introduction

Economists of different schools of thought confirmed the essential role of education and human capital in the creation, acceleration and sustainability of economic growth, and improvement of the quality of life in any society. In particular, endogenous and new growth theories and empirical literature recognized the importance of human capital accumulation/formulation for economic growth in both developed and developing countries (cf. Lucas 1988, Romer 1990).²

Since long, the advanced, adequate, equitable and efficient provision of education, training and health services are critical for social and sustainable development in both developed and developing countries. Effective capacity building in the developing countries depends on equitable access to education, training and health services for all individuals. Despite, the notable growth in the provision of these services in developing countries, inequalities persist within and across countries.

The international literature argues in support of sustainable development and social justice and equity. For instance, the United Nations Development Programme- Human Development Report (2011) argues that the urgent global challenges of sustainability and equity must be addressed together, and identifies policies on the national and global level that could spur mutually reinforcing progress towards these interlinked goals. In addition The World Development Report 2006 analyses the relationship between equity and development and discusses the role of equity in the process of development. The report indicates that the fundamentally unfair differences in life chances across nationality, race, gender, and social groups are likely to lead to wasted human potential and thus to missed development opportunities. According to the report equity means that individuals should have equal opportunities to pursue a life of their choosing and be spared from extreme deprivation in outcomes. The report indicates that equity is complementary, in some fundamental respects, to the pursuit of long-term prosperity. Institutions and policies that promote a level playing field—where all members of society have similar chances to become socially active, politically influential, and economically productive—contribute to sustainable growth and development. Greater equity is thus doubly good for poverty reduction: through potential beneficial effects on aggregate long-run development and through greater opportunities for poorer groups within any society. The complementarities between equity and prosperity arise for two broad sets of reasons. First, there are many market failures in developing countries, notably in the markets for credit, insurance, land, and human capital. As a result, resources may not flow where returns are highest. When markets are missing or imperfect, the distributions of wealth and power affect the allocation of investment opportunities. Correcting the market failures is the ideal response; where this is not feasible, or far too costly, some forms of redistribution—of access to services, assets, or political influence—can increase economic efficiency. The second set of reasons why equity and long-term prosperity can be complementary arises from the fact that high levels of economic and political inequality tend to lead to

economic institutions and social arrangements that systematically favor the interests of those with more influence. Such inequitable institutions can generate economic costs. These adverse effects of unequal opportunities and political power on development are all the more damaging because economic, political, and social inequalities tend to reproduce themselves over time and across generations. The report calls such phenomena “inequality traps.” The report documents the persistence of these inequality traps by highlighting the interaction between different forms of inequality. It presents evidence that the inequality of opportunity that arises is wasteful and inimical to sustainable development and poverty reduction.³

Along the lines of the increasing debate in the international literature, the argument in support of investment in human capital, sustainable development, social justice and equity has gained ground in the Arab region as well. Motivated by the lessons learned from the international literature, existing literature in the Arab region the United Nations Development Programme- Arab Human Development Reports (2002-2009) and the Arab Knowledge report (2009) highlight the investment in human capital, education and knowledge in the Arab region. Moreover, the joint report by the United Nations Development Programme and the League of Arab States (2009) “Development Challenges in the Arab States: A human development approach” highlights six key interrelated challenges facing the region, including: institutional reform; job creation; the promotion and financing of pro-poor growth; the reform of educational systems, economic diversification, and increased food security and self-sufficiency within existing environmental constraints.⁴ These reports affirm that dealing with these challenges and overcoming the detrimental factors that hampered the sustainable economic and social development in the Arab region and promoting the long run sustainable development in the Arab region requires the adoption of a comprehensive development model based on the human development approach which considers the promotion of social justice, equity and freedoms as the basis for development.

Earlier studies in the Sudanese literature show the importance of investment in education and provision of good and equitable opportunities for access to education and training in Sudan (cf. Ali, 2006; Suleiman, 2007; Jalal al-Din, 2002). From that perspective, therefore, it is convenient in this paper to discuss the the need for development and social justice in provision of education, training and health services in Sudan and to provide insights to help generate policies to enhance the equitable provision of education, training and health in Sudan. Thus, our paper is relevant to contribute to the few studies that address some aspects in relation to the need for equitable provision of education, training and health services in Sudan and to go beyond these studies, by providing a more comprehensive analysis to complement the earlier studies in the Sudanese literature (cf. Suleiman, 2007; Jalal al-Din, 2002, Nour, 2010, 2011a; b).

Different from earlier studies an interesting element in our analysis is that we discuss both the supply and demand sides in the provision of education, training and health services in Sudan.

² For theoretical and empirical literature on the importance of human capital see for instance, Stokey (1991), Schultz (1961), Mulligan and Sala-i-Martin (1995), Mincer, (1984, 1989), Mankiw, Romer and Weil (1992), Barro, (1991, 1996), Barro and Lee (1993, 2000); Becker (1962, 1964), Romer (1990) and Lucas, (1988).

³ See the World Bank (2005) “World Development Report 2006: Equity and Development”, p. 2.

⁴ See the United Nations Development Programme- the League of Arab States (2009) “Development Challenges in the Arab States: A human development approach” : <http://content.undp.org/go/newsroom/2009/december/development-challenges-outlined-in-new-arab-states-report.en>, accessed on November 11, 2011.

Moreover, our findings are consistent with the results in the Sudanese literature concerning the low commitment to the standardised international equity criterion related to educational policies. Different from the Sudanese literature (Suleiman, 2007; Jalal al-Din, 2002), an interesting element in our analysis is that we provide a more elaborate and comprehensive analysis concerning the serious problem of low commitment to the standardised international equity criterion not only related to the supply and demand sides of educational services but also related to the provision of training and health services in Sudan. We explain that the low commitment to the standardised international equity criterion is obvious not only from the supply side, but also holds from the demand side for education, training and health services. Finally, we provide a new contribution and fill important gap in the Sudanese literature by explaining the regional inequality and disparity in the supply and demand sides of education and training. Notably, we explain that the observed regional inequality (disparity) in the demand for education (defined by the share in total enrolment in education) is most probably interpreted due to economic reasons (defined by per capita income and poverty rate), demographic reasons (defined by the share in total population) and other reasons (defined by the degree of urbanization) across the main regions in Sudan. Particularly, we explain that the increase in the incidence of high poverty rate and the low per capita income seem to be the most important factors limiting enrolment and demand for education, notably, demand for basic (primary) education, especially for females in Sudan.

Based on the above, this paper aims to give an empirical investigation and policy analysis of the need for equity in the provision of education, training and health services in Sudan. First we discuss the regional inequality in supply-demand sides in the provision of education, training and health services, we highlight the need for prioritizing social justice and development and we provide insights to help generate policies to reduce inequality in the provision of education, training and health services to foster economic growth and development in the Sudan. Second, we examine the major reason for the observed inequality in the provision of education in the Sudan. Third we substantiate the need for reducing inequality in the provision of education, training and health services to ensure the effective social justice and development. Based on the above objectives, the major hypotheses to be tested in this paper are: first the Sudan needs to achieve development and social justice through relevant policies for enhancing equity in provision of education, training and health services. Second, the regional inequality (disparity) in the demand for education (share in enrolment in education) is due to economic reasons (per capita income and poverty rate), demographic reasons (share in total population) and other reasons (degree of urbanization) in Sudan. Third, poverty eradication is important for the achievement of universal and equitable access to education, social justice and development in Sudan.

The rest of this paper is organized as follows: Section 2 provides background and discusses the general socio-economic characteristics of Sudan. Section 3 explains the methodology and main results of regional inequality in the provision of education, training and health services. Section 4 provides the conclusions.

2. Background

Based on the above and before discussing the regional inequality in the provision of education, training and health services in Sudan, it is useful to start by explaining the general socio-economic characteristics of Sudan.

The political context in Sudan is characterised by a long history of political instability. Even after the independence of Southern Sudan, Sudan still endures political instability, a lack of sound and systematic institutions and a lack of a commitment to implementing long-term sustainable and balanced economic development plans and strategies. The general socio-economic characteristics of Sudan indicate great diversity between Sudan compared to other African, Arab and world countries in terms of population, standard of economic development defined by Gross National Income (GNI) and GDP per capita and human development index. Table 1 below explains that on average Sudan has a higher population coupled with a lower standard of economic development. The World Bank classification of economies puts Sudan among the lower-middle income bracket and the United Nations Development Programme (UNDP) puts Sudan among the low human development, and poor and highly indebted economies. Moreover, the United Nations Development Programme-Human Development Index (UNDP-HDI) shows that the average life expectancy, literacy rate and combined enrolment ratios of Sudan are lower than those of other Arab and world countries. Furthermore, Sudan has continued to suffer from macro-economic instability, high rates of poverty, unemployment and the high increase in debt services both as percentage of GDP (0.4 per cent-1.4 per cent) and as percentage of exports (8.7 per cent-6.5 per cent) over the period 1990-2005. (See UNDP, 2007).

The structure of Sudanese economy has long been characterised by a small share of industry, notably manufacturing, and a high share of agriculture and service sectors in GDP and employment. In 1999 Sudan began exporting oil and since then has become increasingly dependent on oil exports to the extent that the economy has turned into an oil dependent economy. Since the late 1990s the implementation of macro-economic reforms policies, along with the positive contribution of oil to Sudan economy since 1999, has caused a rapid increase in real economic growth, GDP and GDP per capita. Consequently, Sudan has moved from a low income economy into a lower medium income economy according to World Bank classifications. But while the increasing dependence on oil has had some positive effects, it has also sparked a number of negative impacts and raises questions such as the weak social development and high incidence of regional inequality as we explain in the next section.

One important challenge created by oil is its weak effect in improving social development indicators. For instance, despite the increase in development expenditure from public expenditure, rising from 9 per cent in 1999 to 31 per cent in 2004, its share then declined and flattened out at 24 per cent from the total public spending over the period 2006-09. The share of development spending from oil revenues declined from 58 per cent in 2006 to 34 per cent in 2008, while the share of current spending from oil revenues increased from 42 per cent in 2006 to 66 per cent in 2008.⁵ This clearly indicates the bias and deficiency in the use of oil resources on current spending instead of development spending. Despite the high oil revenues and impressive real growth, so far they are not fully utilised and do not prioritise improvement of social development indicators. Consequently, emerging

vulnerabilities can be seen from poverty, regional inequalities and a low and deteriorating ranking in the Human Development Index from 147 to 150 and to 154 out of 177 world countries in UNDP-HDI in 2007, 2009 and 2010 respectively.^{6, 7} The low human development indicators implies that Sudan continued to fall below the Arab states and world average level over the past three decades, for instance, the trend of human development index over the period (1980-2010) implies that Sudan's level in 2010 fell below the Arab states and world average level not only in 2010 but also in 1980 (see Figure 1 below). In addition to high poverty rates, according to Sudan Central Bureau of Statistics Household Survey Report (2009), about 45 per cent in northern Sudan are estimated to be living below the poverty line of less than US\$ 1 a day. Moreover, according to UNDP (2010), while progress has been made towards several of the Millennium Development Goals (MDG), such as in the area of education, infant and child mortality, access to water and sanitation, Sudan's performance against the MDG indicators demonstrates large inequalities with respect to gender, rural-urban residence, and at the regional and sub-regional level.⁸ The significant regional disparities between regions contributed to growing inequalities and unbalanced development in Sudan, as we explain below in the next section (see Tables 2-3 below).

3. Methodology and Results

To fulfill our objectives and test our hypotheses, we follow the new growth theories and literature in viewing and using a more broad definition of human capital: including education, training and health. We integrate the descriptive and comparative methods of analysis and use new secondary data at the macro level to test our earlier hypotheses regarding the inequity in the provision of education, training and health. Moreover, we use the ordinary least squares method and E-VIEWS, to test our hypothesis concerning the regional inequality in the demand for education across regions: that the observed regional disparity in the share in demand and enrolment in education due to demographic reason (measured by the share in total population), economic reasons (measured by per capita income and poverty rate) and other reasons (measured by the degree of urbanization) across the main regions in Sudan. We begin with explanation of regional inequality in the provision of education services; we use the UNESCO conceptual framework and indicators on measuring the supply and demand sides of education. We define the supply side by both physical infrastructure defined by the educational institutions (public and private education institutions) and human resources allocated in education and demand side by enrolment in education. Next, we examine regional inequality in the provision of training services in Sudan as measured by the share of the main regions in terms of the supply side as

⁵ See Sudan Ministry of Finance and National Economy (2002) 'Sudan Economy in Figures', Ministry of Finance and National Economy, Macroeconomic Policies and Programme Directorate MEPPD, First Edition (2002), p.27.

⁶ See WB-DTIS (2008), p.6.

⁷ See UNDP 'Human Development Reports' (2007, 2009, 2010). See: <http://en.wikipedia.org/wiki/Sudan>, accessed June 1, 2010.

⁸ The Millennium Declaration and adoption of the UN MDG in September 2000 implies commitment towards achievement of the eight MDG by 2015. The MDG are: (1) Eradicate extreme poverty and hunger: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day, and halve, between 1990 and 2015, the proportion of people who suffer from hunger. (2) Achieve universal primary education: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling. (3) Promote gender equality and empower women: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015. (4) Reduce child mortality: Reduce by two thirds, between 1990 and 2015, the under-five mortality rate. (5) Improve maternal health: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio. (6) Combat HIV/AIDS, malaria and other diseases. (7) Ensure environmental sustainability and (8) Develop a global partnership for development. See UNDP 'UN MDGs in Sudan': http://www.sd.undp.org/mdg_sudan.htm, accessed June 1, 2010.

measured by the total number of training centers and the demand side as measured by the capacity of training centers. Finally, we explain the regional inequality in the provision of health services as measured by inequitable distribution of health facilities as measured by the coverage of health insurance, the number of health centers, clinics, and hospitals and distribution of health manpower and health workers.

3.1. *Regional inequality in the provision of education in Sudan*

To explain the regional inequality in the provision of education we examine the supply-demand sides of education. We use the UNESCO definition to show the supply side/priority of investment in infrastructure and human investment in education as measured by physical infrastructure resources (public and private educational investment, the percentage share of public and private education institutions and human resources (teaching staff). Next, we show the demand for education as indicated by (enrolment ratios) and the impacts in the Sudan.

We discuss the equity criterion related to the supply and demand sides of educational policies in Sudan. We observe that the low commitment to the equity criterion in the supply side appears from the priority and trend of distributing the public and private investment in education between the different education levels in Sudan. One common characteristic of educational policies in Sudan and Arab countries is that the distribution/allocation of public investment on various educational levels tends to prioritize either primary or secondary education and seriously neglect tertiary education. For instance, despite the recent gradual increase in total investment in basic, secondary and tertiary educational levels as measured by the number of institutions, number of students and teachers in Sudan over the period (1993/1994-2008/2009), however, the distribution of the increasing investment and physical infrastructure on education as measured by the number of education institutions is still biased towards basic education followed by secondary education, in general the share of investment on tertiary education remains marginal and insufficient and even shows a declining trend in Sudan as in most other Arab countries. In our view the distribution of investment by educational levels may be related to both the potential share of students in total population and costs of various educational levels as measured by spending per pupils, thus the low investment and spending in tertiary education is probably related to both low share of potential student in tertiary education in total population and high costs of spending on tertiary students as compared to secondary and primary pupils and also probably because of high poverty rate in Sudan.⁹

In addition, we observe the low commitment to equity and the incidence of wide regional disparity between the main geographical regions in Sudan in terms of both supply of and demand for education.¹⁰ As for the commitment to equity criterion in the supply side we observe that the priority

⁹ By contrast Jalal al-Din (2002) argues that the poor provision of public education in some Arab and African countries is due to limited public and private spending that holds for all levels of education. But at least in many cases, the percentage of public spending on basic education is less than the proportion of spending on higher education, for example, in Sudan, spending on the basic education, which extends to eight years in the Sudan, exclusively accounted only for about 43% of the total spending on education. This is in spite of the fact that basic education includes more than three million students, a number nearly ten times the proportion of students in higher education.... However, spending on higher education after the expansion is still very limited unless it is compared to the poor situation of general education. Hence, there is urgent need to allocate more resources to the entire education sector, notably, by giving high priority to public and general education (see Jalal al-Din, 2002: 23-24).

¹⁰ In this research our analysis of the supply and demand for education from regional perspective is based on the classification of Sudan geographical areas according to main seven geographic regions that includes the Northern, Khartoum, Central, Kordofan,

and trend of distributing the public and private investment in education varies across the main geographical regions in Sudan. For instance, Tables 4-5 indicates the low commitment to equity and the incidence of regional disparity that appears from the share of the main regions in public, private and total number of schools in basic and secondary education in Sudan over the period (2001-2009). For instance, we observe the large share of the central region followed by Darfur, Kordofan and Khartoum as compared to Eastern, Southern and Northern regions in total numbers of basic schools and the large share of the central region followed by Khartoum, Darfur and Kordofan as compared to Northern, Eastern and Southern regions in total numbers of secondary schools over the period (2001-2009). Furthermore, from Tables 5 we observe the large share of the central, Darfur, Kordofan and Khartoum regions as compared to Northern, Eastern and Southern regions in total numbers of public basic and secondary schools over the period (2001-2009). Moreover, we observe the low commitment to equity and incidence of wide regional disparity between the main regions in Sudan in terms of the participation of private sector in basic and secondary education as can be seen from the heavy concentration of privatization in Khartoum region that has the largest share in terms of the private basic and secondary schools as compared to other regions. This probably implies the low commitment to equity and incidence of unbalanced or biased distribution of allocation of investment, resources and infrastructure in education as measured by the number of schools for basic and secondary educational levels which is probably related to an unbalanced spending and development planning in education. This low commitment to equity and incidence of unbalanced regional distribution in the supply side includes not only the financial resources, investment and physical infrastructure in education as measured by the share in total and public and private schools but also includes human resources in education as measured by both the total number of teachers and the pupils teachers ratios in basic and secondary education. This low commitment to equity and incidence of unbalanced regional distribution in the supply side probably has further implications for low commitment to equity and incidence of regional distribution in the demand side as measured by the share and distribution of students enrolment in total, public and private basic and secondary education as we will explain below in this section. Suleiman (2007) discusses the equity standard criterion and notes that the imposition of tuition fees does not help to achieve this equity standard criterion and to reduce differences between high income earners and low income earners. (See Suleiman, 2007: 122).

In addition, from Tables 6-7 below we observe the low commitment to equity and incidence of wide regional disparity that appear from the share of the main regions in Sudan in terms of the adequacy and efficiency of human resources allocated to basic and secondary education as measured by the share in total number of teachers, pupils teachers ratios and the share in total number of trained teachers in basic and secondary education in Sudan over the period (2001-2009). For instance, we observe that the quantitative adequacy of teachers as measured by low pupils teachers ratio is relatively better in the Northern region followed by Khartoum and the central and Eastern regions as compared to Kordofan, Darfur, and Southern regions. Moreover, we observe the large share of the central and

Darfur, Eastern and Southern regions. In particular, this classification implies that the Northern region includes Northern and Nahr Alnil states, the central region includes Al-Gazira, Sinnar, White Nile and Blue Nile states, the Eastern region includes Red Sea, Algedarif and Kassala states, the Western region includes Kordofan and Darfur regions that include all the states which are located in Kordofan and Darfur respectively and the Southern region includes Bahr Elghazal, Equatoria and Upper Nile states.

Khartoum regions as compared to Northern, Kordofan, Darfur, Eastern and Southern regions in terms of quantitative adequacy of human resources as measured by the share in total number of teachers and in terms of qualitative efficiency of human resources as measured by the share in total number of trained teachers in basic and secondary education. This probably implies the low commitment to equity and the incidence of unbalanced regional distribution of trained human resources available for education as measured by low pupils teachers ratios and large share in the total number of teachers and trained teachers for basic and secondary educational levels. These results may not be surprising in view of the fact that these regions also reported the large share in the financial investment and infrastructure on education as measured by the share in total numbers of basic and secondary schools over the period (2001-2009) as we explained above in this section. Moreover, we observe the incidence of the gender gap in efficiency that appears as the share of trained males teaching staff is relatively high as compared to females teaching staff, moreover, the observed gender gap in trained teaching staff in the private universities is more higher than in the public universities over the period 2000/2001-2007/2008- see Table 7 below.

Apart from the supply side, it is also important to examine the demand side as measured by enrolment ratios. We observe the, great regional disparity and variation across the main regions in public and private enrolment ratios of students in basic, secondary, technical, vocational and tertiary education in Sudan- see Tables 8-11 below. This implies the low commitment to standardised international equity criterion in the demand side (inequitable enrolment rate in primary, secondary and tertiary education across the main regions in Sudan).

Furthermore, we find evidences on the low commitment to the standardised international equity criterion in the demand side that appear in terms of the gender differences in educational attainment as measured by the gross enrolment ratio of female for primary, secondary and tertiary education. For instance, Figure 2 and Tables 9, 12 below illustrate that the percentage of female students for all levels of education in Sudan are lower than male students and both are low compared to the average for the Arab countries. We observe the differences in the regional distribution in the incidence of the gender gap across the main regions in Sudan which probably implies that the presence of gender disparity in primary education as the gross intake and enrolment rate for female fall below the gross intake and enrolment rate of male in all regions.¹¹ For secondary and tertiary education, gender disparity exists for the most poor and rural regions as the gross intake and enrolment rate for female fall behind the enrolment rate of male, by contrast for all Sudan and for relatively more urbanized and less poor regions the gross intake and the percentage of enrollment rate for female fall above the enrolment rate of male- see Tables 12-13 below. This implies that gender disparity and gap is more critical for more poor and rural regions and population groups, i.e. poor female and female living in rural areas are facing by serious situation of inequality and are suffering more in terms of net attendance or access to primary and secondary education in Sudan. Somewhat surprising the gender disparity is more serious in primary education compared to secondary education, especially for poor female; this is consistent with the findings based on the data from UNESCO (2006) which we presented in Nour (2010, 2011b). This implies that, especially among the poor, economic reasons were

¹¹ See for instance, AHDR, (2004: 73-74).

considered to be the most important factor limiting girls' potential to complete their primary (basic) and secondary school education and that the factors preventing males from completing their education differ from those hampering females. It is clear from Tables 9, 12-13 below that family economic problems impact more negatively on female than on male education. Likewise, families perceive educating girls to be less important than schooling boys. It is the need to work that has the largest effect on the withdrawal of boys from school.¹² Moreover, data and information from Sudan ministry of education and ministry of higher education provide further evidences for the incidence of gender inequality in education as measured by enrolment of students in primary (basic), secondary and tertiary education (measured by students nominated and admitted for governmental, private and foreign higher education institutes) over the period (2004-2007). For instance, the gender inequality for basic (primary) education is higher than for secondary and tertiary education. The incidence of gender inequality in tertiary education as measured by the share of female students enrolled or admitted in tertiary education in public and governmental higher education institutes is higher than that for private and foreign higher education institutes in 2005. Therefore, these findings imply low commitment to the standardised international equity criterion in the demand side as measured by the lack of gender equity in enrolment rate in primary, secondary and tertiary education and literacy rate of population.

In addition, we observe that the low commitment to equity criterion and the incidence of wide gap and regional disparity between the main regions in Sudan is not only limited to the supply side but also holds for the demand side. For instance, Tables 8-13 below indicate the incidence of regional disparity that appear from the share of main regions in total number of students enrolment in basic, secondary and tertiary education in Sudan over the period (2001-2009). For instance, we observe the large share of the central and Darfur regions followed by Khartoum in total numbers of students enrolled in basic education, and the large share of the central and Khartoum regions followed by Darfur region in total numbers of students enrolled in secondary education as compared to Kordofan, Eastern, Northern and Southern regions over the period (2001-2009). Moreover, we note the large share of the central and Khartoum regions followed by Northern region as compared to Darfur, Eastern, Kordofan and Southern regions in terms of the total numbers of students enrolled in tertiary education over the period (1996-2007). Moreover, we observe the heavy concentration of privatization in Khartoum region that has the highest share in terms of total number of students' enrolment in private basic and secondary schools as compared to other regions. This low commitment to equity criterion and the incidence of unbalanced distribution in the demand side as measured by the distribution and share of students enrolment in total and in public and private basic, secondary and tertiary education levels can be perceived as an implications that is consistent with the share of these regions in total number and public and private schools in basic and secondary education as we explained above in this section. This probably implies that the low commitment to equity criterion and the incidence of unbalanced development planning and unbalanced distribution in the supply side and investment as measured by the number of schools, number of teachers and the pupils/teachers ratios for basic and secondary educational levels that probably led to further implications in the demand side as measured by the

¹² See for instance, AHDR, (2004: 73-74).

distribution and share in total number of students enrolment in public and private schools and in basic, secondary and tertiary educational levels as we explained above in this section.

Moreover, using the ordinary least squares method and E-VIEWS, Tables 8-13 below explain that it is probably plausible to interpret the observed regional disparity in the share in demand and enrolment in education due to demographic reason (measured by the share in total population), economic reasons (measured by per capita income and poverty rate) and other reasons (measured by the degree of urbanization) across the main regions in Sudan. Starting with the demographic reason, Table 13 indicates significant positive correlation between the share in enrolment in basic and secondary education and the share in total population and positive correlation between enrolment in tertiary education and the share in total population. These results can be used to argue that the share in total population seem to be the first important factor determining the share and regional disparity in enrolment in education. Moreover, as for the economic reason, Table 13 indicates significant positive correlation between per capita income and total, female and male literacy rates, between per capita income and enrolment in secondary and tertiary education and female enrolment in tertiary education, and also significant positive correlation between per capita income and enrolment in basic education and female enrolment in basic and secondary education. In addition, Table 13 indicates significant negative correlation between poverty rate and total, female and male literacy rates, significant negative correlation between poverty rate and total and female enrolment in basic and tertiary education and negative correlation between poverty rate and total and female enrolment in secondary education. These results can be used to argue that the economic reasons as measured by per capita income and poverty rate seem to be the second important factor that determining the share and regional disparity in enrolment and demand for education. Notably, our results imply that the incidence of high poverty rate seem to be the most important factor determining or limiting the demand and enrolment, notably, in basic education. These findings imply that especially among the poor regions, economic reasons were considered to be the most important factor limiting poor students and especially, girls' potential to complete their primary (basic), secondary and tertiary education and that region economic problems impact more negatively on female than on male education. These results imply that the increase in the incidence of poverty and the low per capita income limited or led to low demand and enrolment in education, notably, across the poor regions and this probably interpret the regional disparity in the demand for education across the main regions in Sudan. In addition, as for the other reasons, Table 13 indicates positive correlation between enrolment in secondary education and degree of urbanization, significant positive correlation between enrolment in basic and tertiary education and degree of urbanization and between female enrolment in basic, secondary and tertiary education and the degree of urbanization. These findings can be used to argue that the degree of urbanization is the third and other factor that determining the share and regional disparity in enrolment in education. The major policy implication from our findings is that Sudan has the potential to achieve equity and fulfill the second and third United Nations Millennium Development Goals (MDGs) on universal access to primary education and gender equality respectively through reduction and elimination of poverty, notably, across the poor regions and population in Sudan, and this implies achievement of equity and international commitment to fulfillment of UN-MDGs in Sudan.

Moreover, we observe the low commitment to equity criterion and the incidence of regional disparities in terms of technical and vocational education. For instance, the central and Khartoum followed by Eastern region as compared to Northern, Darfur, Kordofan and Southern regions respectively show the large share in total number of schools, students, total number of teachers and trained teachers in technical and vocational education in Sudan over the period (2001-2009). In addition, Khartoum and the central regions followed by Eastern region as compared to Kordofan, Darfur and Southern regions respectively show the large share in total number of trained and graduated students of the apprenticeships programmes and vocational training in Sudan over the period (1995-2006). This probably implies the low commitment to equity criterion and the incidence of regional disparity and unbalanced distribution of trained human resources available for technical and vocational education. That may not be surprising in view of the fact that these regions also reported the large share in total numbers of basic, secondary and tertiary education over the period (2001-2009) as we explained above in this section.

We observe the low commitment to the standardised international efficiency and equity criterions and the incidence of considerable regional disparity between the main regions in Sudan in terms of internal efficiency/quality of primary, secondary and tertiary education. For instance, the efficiency and quality of primary and secondary education as measured by low percentage of repeaters and drop out in basic and secondary education are relatively better in Khartoum region followed by the central regions as compared to Darfur, Kordofan, Eastern and Northern regions respectively- see Table 14 below. In addition this regional disparity in the quality of education also holds for the percentages of success in the basic education which are reported high in the Northern region followed by the central, Kordofan, Eastern, Khartoum and Darfur regions respectively- see Table 15 below. This regional disparity in the quality of education is not surprising in view of the fact that these regions also reported the large share in terms of quantitative supply and demand in basic and secondary education over the period (2001-2009) as we explained above in this section. Furthermore, we find evidences on the gender differences that appear in terms of the efficiency and quality of education across the main regions in Sudan as measured by the percentage of repeaters and dropout from basic education. For instance, Table 14 indicates that over the period 2006-2009 the percentages of repeaters and dropout in primary education for female students are less than those of males students for the majority of main regions in Sudan.

Therefore, our findings presented above imply that the low commitment to the standardised international equity criterion in provision of education is obvious not only from supply side as measured financial and human resources but also holds from the demand side as measured by enrolment ratio and efficiency/ quality indicators.¹³

3.2. *Regional inequality in the provision of training in Sudan*

We observe that the major characteristics of training policies in Sudan are related to the biased structure in terms of type, duration and specialization pattern of training policies and the low

¹³ Suleiman (2007) indicates the most important three standard criteria for assessing education in Sudan, notably, the adequacy, equity and efficiency criterion. Suleiman (2007) discusses the equity standard criterion and notes that the imposition of tuition fees does not help to achieve this equity standard criterion and to reduce any significant differences between high earners and low income earners in Sudan. (See Suleiman, 2007: 122).

commitment to efficiency, adequacy and equity criterion in the provision of training in Sudan over the period (2004-2009). In particular, the major characteristic of training policies in Sudan is the significant regional disparity across the main geographical regions as measured by the share of the main regions in terms of the supply side as measured by the total number of training centers and the demand side as measured by the capacity of training centers and the impact of training as measured by the share of trained work force as a percentage of total labour force and the share in internal and external short and long run training in Sudan (2004-2009). In particular, from the distribution and share of main regions in training we observe the high share and more concentration of training in Khartoum region as compared to other regions in terms of the regional share in the supply side as measured by total number of training centers, the demand side as measured by the capacity of training centers and the impact of training as measured by the share of trained work force as a percentage of total labour force and the share in internal and external short and long run training in Sudan over the period (2004-2009). This implies the low commitment to equity criterion in terms of supply, demand sides and impact in the provision of training for different geographical regions in Sudan. Moreover, we observe that the disparity between Khartoum and other regions in terms of capacity of training centers implies the full utilization of capacity of training in centers located in Khartoum as compared to under utilization of capacity of training centers located in others regions that most probably critically undermined the efficient provision of training. Therefore, the low commitment to efficiency, adequacy and equity in the provision of training led to limited effect of training in upgrading skill level for the labour force, this appears from the low share of trained labour force that account for only 16 per cent and 17 per cent of total labour force in Sudan in 2008 and 2009 respectively- see Table 16 below.

3.3. *Regional inequality in the provision of health services in Sudan*

Regional inequality in the provision of health services in Sudan can be explained using the available information on the health indicators and the health facilities.¹⁴ We explain the regional inequality in the provision of health services as measured by inequitable distribution of health facilities as measured by the coverage of health insurance, the number of health centers, clinics, and hospitals and distribution of health manpower and health workers - see Tables 17-19 below

First evidence on the observed regional inequality in the provision of health services and facilities appears from the limited and inequality in the coverage of health insurance for some regions.¹⁵ The biased distribution of health insurance coverage is obvious from concentration in Khartoum region (36.5 per cent) compared with Kordofan (18.2 per cent) and Darfur (14.5 per cent)- see Table 17 below.

Moreover, the information on the provision of the health services indicates the slow progress in the national trends in the availability of public health facilities over the last decades. For instance,

¹⁴ Sudan Country Economic Memorandum (CEM), "Stabilization and Reconstruction," Report No. 24620-SU, Volume I: Main Text, June 30, 2003, Prepared Jointly by: Government of Sudan and Poverty Reduction and Economic Management 2 Africa Region, Document of the World Bank: Pp. 117-120.

¹⁵ There is at present in Sudan a national health insurance scheme implemented by the National Insurance Corporation. This scheme insures government employees and covers 100 percent of the cost of treatment (including dental services), while the client pays 25 percent of the cost of drugs. Members of this scheme pay 4 percent of their annual salary as a premium, and the government contributes 6 percent of the employee's annual salary. Employees in the formal private sector can also become members of this scheme, but it is understood that only about 6 percent of the total population is enrolled. (cf. CEM, p. 120).

the number of primary health care centers increased from 580 in 1996 to 1573 in 2008 and the total number of hospitals increased from 192 in 1996 to 365 in 2008. The number of beds increased from 1169 in 2003 to 20461 in 2007 and the number of total doctors increased from 4899 in 2004 to 5348 in 2007. Moreover, the number of hospitals per 100.000 populations increased from 74.4 in 2004 to 76.3 in 2007 and the total number of doctors per 100.000 populations increased from 8.5 in 1996 to 16.5 in 2004 and 18.4 in 2007.¹⁶ Despite this slight improvement, this should not however, hide the fact that the distribution of these health care facilities shows high inequality. Mainly because, most of the increase in the number of health facilities (hospitals, centers and clinics) has been almost exclusively in the main large regions, cities and urban areas- see Table 18 below.

For instance, in 2008, Khartoum, and Northern and Central regions had 222 hospitals that accounted for 88 percent of the total hospitals in all of Northern Sudan's regions, and they account for 51 percent of the total population in the Northern Sudan's regions. In addition to accounting for the largest hospitals in the Northern Sudan regions these three regions also accounting for the largest number of hospital beds and they constitute 64 per cent of total hospital beds in the Northern Sudan regions. The regional inequality and urban bias in the distribution of health facilities as measured by the number of health centers, clinics, and hospitals has resulted in a substantial drop in the relative access of rural people to health care facilities at all levels, compared with a substantial rise in access of the urban population to a broader range of more sophisticated facilities. The unequal distribution of health care facilities is understood to have contributed to the substantial rural to urban migration in recent years.¹⁷

Moreover, in terms of health manpower and health workers, the total number of specialists has increased from 1112 in 2004 to 1461 in 2007, and total number of doctors and general practitioners has increased from 4899 in 2004 to 5348 in 2007, but the total number of dentist declined from 283 in 2004 to 195 in 2007. The total number of specialists per 100,000 population has increased from 2.6 in 1996 to 4.6 in 2007, and total number of doctors and general practitioners per 100,00 population has increased from 8,5 in 1996 to 18.4 in 2007, but the total number of dentist per 100,000 population has declined from 1 in 1996 to 0.7 in 2007. See Table 19.¹⁸ The growth in these three health professional groups should not hide the fact regarding the incidence of high inequality in the distribution between regions in Northern Sudan. We find that the distribution of health staff has been highly unequal between rural and urban areas, our results based on the health indicators show evidence indicates that the health staff in rural areas is much weaker compared with urban areas. The biased distribution of general practitioners is shown by their concentration in Khartoum region (48.9 per 100,000 people) compared with Kordofan (5.2 per 100,000 people) and Darfur (4.1 per 100,000 people). The main reasons for the large differences among regions are the substantially lower incentives and working conditions for health care professionals in rural areas compared to urban areas- see Table 19 below.

¹⁶ See for example, Sudan Ministry of Health (2001) "A Study on Health Services in Sudan and their Compatibility with the Principles of Primary Health Care.", August/September 2001, Table 9, pp. 3 and 27. (cf. CEM, p. 117)

¹⁷ See for example, the CEM team was advised in mid-March 2002 that in North Kordofan close to 50 percent of primary health care units were not functioning because of budget constraints. (cf. CEM, p. 118).

¹⁸ See for example, Sudan Ministry of Health (2001). "Study of Health Services in Sudan," August/September 2001. (cf. CEM, p. 117).

The incidence of the regional inequality in the provision of health services and facilities is also interpreted in relation to the high incidence of poverty and regional economic inequality. "Mainly, the regional and urban/rural disparities in economic resources have clear implications for health and nutrition outcomes as well as services. For instance, average health and nutrition status tends to be lower in poorer areas, while the ability of communities and local governments to finance health services also differs. The poor in Sudan (like elsewhere) tend to have worse health and nutrition outcomes, as well as less access to health services, than the better-off."¹⁹

Hence, our results in this section support our three hypotheses presented in section 1 above: first the Sudan needs to achieve development and social justice through relevant policies for enhancing equity in provision of education, training and health services. Second, the regional inequality (disparity) in the demand for education (share in enrolment in education) is due to economic reasons (per capita income and poverty rate), demographic reasons (share in total population) and other reasons (degree of urbanization) in Sudan. Third, poverty eradication is important for the achievement of universal and equitable access to education, social justice and development in Sudan.

4. Conclusions

This paper discusses the need for development and social justice in the provision of education, training and health services in Sudan. Different from Sudanese literature, we provide a new contribution by explaining the low commitment to the standardized international equity criterion related to the supply-demand sides and the provision of education, training and health services in Sudan.

Our results show the low commitment to the standardized international equity criterion related to the supply-demand sides and provision of education, training and health services in Sudan. Furthermore, we then discuss the equity criterion which implies the equal distribution and allocation of financial resources to achieve the balance between the different education sectors and between different geographical regions not only from the supply side as measured by financial, physical infrastructure and human resources but also holds from the demand side as measured by enrolment ratio and efficiency/quality indicators. Moreover, we then examine the low commitment to the standardized international equity criterion in the provision of training services and regional disparity across the main geographical regions, as measured by the share of the main regions in terms of the supply side, as measured by the total number of training centres and the demand side as measured by the capacity of training centres and the impact of training as measured by the share of trained work force as a percentage of total labour force and the share in internal and external short and long run training in Sudan (2004-2009). In addition, we explain the regional inequality in the provision of health services as measured by inequitable distribution of health facilities as measured by the coverage of health insurance, the number of health centers, clinics, and hospitals and distribution of health manpower and health workers.

Moreover, we fill important gap in the Sudanese literature by explaining the regional inequality in the demand for education. We explain that it is probably plausible to interpret the observed regional disparity in the share in demand and enrolment in education due to demographic reason (as measured by the share in total population), economic reasons (as measured by per capita

¹⁹ François Decaillet, Patrick D. Mullen and Moncef Guen (2003) "Sudan Health Status Report, "World Bank/AFTH3, August

income and poverty rate) and other reasons (as measured by the degree of urbanization) across the main regions in Sudan. Starting with the demographic reason. Our results can be used to argue that the share in total population seem to be the first important factor determining the share and regional disparity in enrolment in education. Moreover, our findings can be used to argue that the economic reasons as measured by per capita income and poverty rate seem to be the second important factor that determining the share and regional disparity in enrolment and demand for education. Notably, our results imply that the incidence of high poverty rate seem to be the most important factor determining or limiting the demand and enrolment, notably, in basic education. These findings imply that especially among the poor regions, economic reasons were considered to be the most important factor limiting poor students and especially, girls' potential to complete their primary (basic), secondary and tertiary education. These results imply that the increase in the incidence of poverty and the low per capita income limited or led to low demand and enrolment in education across the main, notably, poor regions and this probably interpret the regional disparity in the demand for education across the main regions in Sudan. In addition, our findings can be used to argue that the degree of urbanization is the third and other factor that determining the share and regional disparity in enrolment in education.

Our results support our three hypotheses: first the Sudan needs to achieve development and social justice through relevant policies for enhancing equity in provision of education, training and health services. Second, the regional inequality (disparity) in the demand for education (share in enrolment in education) is due to economic reasons (per capita income and poverty rate), demographic reasons (share in total population) and other reasons (degree of urbanization) in Sudan. Third, poverty eradication is important for the achievement of universal and equitable access to education, social justice and development in Sudan.

The major policy implication from our findings is that Sudan has the potential to achieve equity and fulfill the second and third MDGs on universal access to primary education and gender equality respectively through reduction and elimination of poverty, notably, across the poor regions and poor population in Sudan, and this implies achievement of equity and international commitment to fulfillment of UN-MDGs in Sudan.

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²⁰ See UNDP (2010): <http://hdrstats.undp.org/en/countries/profiles/SDN.html>, accessed on December 22, 2010.

Table 1- General socio-economic characteristics of the Sudan²¹

Country	Population (millions) (2010)	Gross national income (GNI) per capita (PPP ^c US\$)	Human Development Index ^a (%)	Life Expectancy ^a (years)	Mean years of schooling	Expected years of schooling	Adult Literacy Rate ^a (% aged 15 and above)	Population with at least secondary education (% ages 25 and older)	Tertiary enrolment ratio (% of tertiary school-age population) Gross (%)
	2010 ^a	2010 ^b	2010 ^c	2010 ^a	2010 ^d	2010 ^e	2005–2008a ^e	2010 ^d	2001–2009a ^e
Sudan ^b	43.2	2,051	0.379	58.9	2.9	4.4	69.3	11.5	5.9 ^b
Latin America and the Caribbean	582.7	10,642	0.704	74.0	7.9	13.7	91.1	32.5	36.7
Arab States	348.2	7,861	0.588	69.1	5.7	10.8	72.1		22.7
Europe and Central Asia	410.3	11,462	0.702	69.5	9.2	13.6	97.5	65.1	54.2
East Asia and the Pacific	1,974.3	6,403	0.643	72.6	7.2	11.5			20.9
South Asia	1,719.1	3,417	0.516	65.1	4.6	10.0	62.4	21.6	12.8
Sub-Saharan Africa	808.8	2,050	0.389	52.7	4.5	9.0	62.4		5.5
OECD	1,026.3	37,077	0.879	80.3	11.4	15.9		73.8	71.4
High human development	1,052.4	12,286	0.717	72.6	8.3	13.8	92.3	41.0	43.2
Medium human development	3,597.3	5,134	0.592	69.3	6.3	11.0	80.7		17.6
Low human development	1,099.0	1,490	0.393	56.0	4.1	8.2	61.2	14.3	6.0
Least developed countries	854.7	1,393	0.386	57.7	3.7	8.0	59.9		5.4
World	6,908.7	10,631	0.624	69.3	7.4	12.3			25.7

Source: (a) UNDP (2010). Notes: ^a 2007, ^b 2008, ^c PPP – purchasing power parity: pp. 145-146, 186-187, 195-196.

(a) UNDESA (2009d), (b) Based on data on GNI per capita and GDP per capita in PPP US dollars (current and constant prices) from World Bank (2010g) and implied growth rates of GDP per capita from IMF (2010a), (c) Calculated based on data from UNDESA (2009d), Barro and Lee (2010), UNESCO Institute for Statistics (2010a), World Bank (2010g) and IMF (2010a), (d) Barro and Lee (2010), (e) UNESCO Institute for Statistics (2010a).

Table 2 - The status of MDGs in Northern Sudan in 2008

MDGs / Indicators	Indicators	Status in 2004 ^(a)	Current level ^(b)	Reference year	2015 Target	
MDG 1 Eradicate Extreme Poverty and Hunger	Estimated poverty incidence (% of total population) *	50% ⁽¹⁾	46.5%	2009	45%	
	Prevalence of child malnutrition (underweight for age; % under 5)*	35% ⁽¹⁾	31.8%	2006	16%	
	Prevalence of acute child malnutrition * (underweight for weight; % under 5)	16% ⁽¹⁾			8%	
MDG 2 Achieve Universal Primary Education	Gross primary enrolment ratio***	62%	71.1%	2009	100%	
	Percentage of cohort completing primary school***	21%			100%	
	Adult literacy rate **	65.1% ^(b)	77.5%	2009	25% 1	
MDG 3 Promote Gender Equality and Empower Women	Ratio girls to boys in primary education***	88%	53.9- 46.1%	2007	100%	
	Women's literacy rate	62%	86%	2009	-	
	Percentage of women in National Assembly/Council of States	19%	25%	2010	-	
MDG 4 Reduce Child Mortality	Under-5 mortality rate (per 1,000)*	105 ⁽¹⁾	102	2008	35	
	Infant mortality rate (per 1,000 live births)*	70 ⁽¹⁾	71	2006	-	
	One-year-olds immunized against measles ***	78%	85%	2009	-	
MDG 5 Improve Maternal Health	Maternal mortality ratio (per 100,000 live births)	638 ⁽¹⁾	534	2006	127	
	Birth attended by skilled health staff *	57% ⁽¹⁾	57%	2006	90%	
MDG 6 Combat HIV Aids, Malaria and other diseases	Contraceptive prevalence (% of women ages 15-49)***	7%	7.6%	2006	-	
	HIV Prevalence (% adults ages 15-49)*	1.6% ⁽¹⁾	0.5-1.24 ⁽²⁾	2009	-	
	Incidence of TB (per 100,000 per year)***	90	120		-	
	Children under 5 with fever treated with anti-malarials (%)	54.2% ⁽¹⁾			-	
MDG 7 Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources	Access to improved drinking water source (% of population)*	58.7% ⁽¹⁾	65%	2010	85%	
	Access to improved sanitation (% of population) *	39.9% ⁽¹⁾	42%	2009	67%	
MDG 8 Develop a Global Partnership for development	In cooperation with the private sector, make available the benefit of new technologies, especially information and communications	Telephone line per 100 population (% of population) (2005)	2%	0.9%	2009	
		Cellular subscribers per 100 population (% of population) (2005)	9%	28%	2009	
		Internet users per 100 population (% of population) (2009)	8.2%	10.4%	2010	

Notes: (1) Sudan Health and Household Survey 2006; (2) 0.5 for males and 1.24 for females

Sources: (a) Sudan Millennium Development Goals. Interim Unified Report, 2004 prepared by the UN Resident Coordinator's Support Office, Khartoum, Sudan: http://www.sd.undp.org/mdg_fact.htm, accessed in June 01, 2010, and (b) SPHS-2010, NBHS-2009, SHHS-2006 and administrative data from concerned institutions cited in pp. Sudan MDGs Progress Report 2011, Sudan National Population council, Khartoum, Sudan, 9-10.

²¹ The World Bank and United Nations Development Programme (UNDP) Human Development Report classify world countries differently according to income level. We use the World Bank classification of economies that puts Sudan in the lower middle-income category or group.

Table 3 – Regional Disparity in demographic and economic structure and achievements in MDGs in Northern Sudan (2005-2009)

Region			Northern	Khartoum	Central	Kordufan	Darfur	Eastern	Total
Demographic and economic structure (2005-2008)									
Population ^a	2008	Total	1819	5274	7423	4327	7516	4534	30893
		Share (%)	5%	13%	19%	11%	19%	12%	100%
Revenues ^b	2005	Total	14853	15678	19267	9546	10628	25382	95354
		Share (%)	16%	16%	20%	10%	11%	27%	100%
Actual Per capita Federal Allocation ^b	2005	Total	9068	8497	4872	3765	2732	2553	5248
Urbanization ^b	2005	Total	27	88	29	29	20	43	39
MDGs ^c (2009)									
Poverty gap ratio	MDG 1.2	Total	9.4	6.4	13.8	23.1	24.6	17.7	16.2
Net enrolment rate in primary education	MDG 2.1	Total	83	85	67	60	62	57	67
Literacy rate of 15-24 years-olds	MDG 2.3.1	Total	88	94	77	69	74	63	77
Literacy rate of 15-24 years-olds	MDG 2.3.2	Men	91	96	84	79	85	68	84
Literacy rate of 15-24 years-olds	MDG 2.3.3	Women	86	92	70	61	64	57	71
Share of women in wage employment in the non-agricultural sector	MDG 3.2	Total	15	19	13	19	22	12	17
Employment ratio to population 15 years old and above	MDG 1.5	Total	35.9	37	41.3	48.5	45.3	39	41.4
Proportion of employed population below poverty line	MDG 1.6	Total	30.1	21	41.5	55.5	58.8	39.2	42.5
Proportion of own account and contributing family workers to total employed	MDG 1.7	Total	39.2	25.3	36	39.8	50	46.7	45

Sources: (a) Adapted from Sudan Central Bureau of Statistics Population Census Data (2010): The Fifth Sudan Population and Housing Census (2008) (b) Elbadawi and Suleiman (2008:107) (c) the Sudan Central Bureau of Statistics (2011: 12).

Table 4- Regional distribution and share of main regions in total number of schools in basic and secondary education in Sudan (%) (2001-2009)

Share in total (%)	number of basic school							number of secondary school						
	2001	2002	2004	2006	2007	2008	2009	2001	2002	2004	2006	2007	2008	2009
All Sudan	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Northern	9%	9%	9%	7%	7%	7%	7%	10%	10%	9%	8%	8%	8%	8%
Khartoum	14%	15%	12%	13%	13%	12%	13%	24%	28%	25%	23%	24%	30%	25%
Central	27%	26%	27%	24%	23%	25%	22%	32%	30%	35%	37%	37%	35%	35%
Kordofan	17%	17%	20%	15%	15%	16%	17%	8%	7%	9%	8%	8%	8%	9%
Darfur	20%	19%	19%	21%	20%	19%	21%	12%	13%	11%	13%	12%	9%	12%
Eastern	11%	12%	10%	10%	11%	12%	11%	10%	10%	9%	8%	8%	7%	7%
Southern	3%	3%	3%	10%	9%	9%	9%	3%	2%	3%	3%	3%	3%	3%

Sources: Own calculation based on Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009): (2000-2001:39-43, 50-52), (2001-2002:67-70, 88-89), (2003-2004: 74-77, 97-99), (2004-2005: 77-80, 102-104), (2005-2006: 76-79, 97-98), (2006-2007: 79-82, 114-115), (2007-2008: 79-82, 115-116), (2008-2009: 100-103, 136-137).

Table 5- Regional distribution and share of main regions in total, public and private basic and secondary schools and the share in total public and private tertiary education institutions in Sudan (%) (1989/1990-2008/2009)

(a) Basic	Public							Private						
	2001	2002	2006	2007	2008	2009	2001	2002	2006	2007	2008	2009		
All Sudan	94.9%	93.2%	94.1%	93.8%	90.2%	92.6%	5.1%	6.8%	6.0%	6.2%	9.8%	7.4%		
Northern	8.3%	8.5%	7.3%	7.2%	6.5%	6.8%	0.2%	0.2%	0.1%	0.1%	0.2%	0.1%		
Khartoum	13.0%	11.8%	9.5%	9.4%	8.5%	8.8%	1.2%	3.3%	3.0%	4.0%	3.7%	4.2%		
Central	25.9%	24.9%	23.3%	23.0%	21.3%	21.7%	0.6%	0.6%	0.4%	0.3%	3.2%	0.6%		
Kordofan	16.4%	16.7%	15.1%	14.8%	15.1%	16.3%	0.4%	0.4%	0.4%	0.5%	0.8%	0.5%		
Darfur	19.0%	18.3%	19.2%	18.9%	17.8%	19.9%	1.0%	1.2%	1.3%	0.7%	1.4%	1.5%		
Eastern	9.4%	10.2%	9.4%	10.8%	11.7%	9.5%	1.2%	0.7%	0.7%	0.6%	0.6%	0.6%		
Southern	2.9%	2.8%	10.3%	9.7%	9.4%	9.8%	0.5%	0.5%	0.0%	0.0%	0.0%	0.0%		
(b) Secondary	Public							Private						
	2001	2002	2006	2007	2008	2009	2001	2002	2006	2007	2008	2009		
All Sudan	76.5%	77.2%	75.8%	74.6%	77.8%	71.2%	23.5%	22.8%	24.2%	25.4%	22.2%	28.8%		
Northern	9.6%	9.5%	7.2%	7.4%	6.7%	7.1%	0.3%	1.0%	0.7%	0.4%	0.4%	0.6%		
Khartoum	14.0%	13.2%	11.1%	10.3%	18.3%	9.9%	10.8%	10.3%	11.9%	13.9%	12.6%	15.1%		
Central	27.0%	26.6%	33.4%	36.2%	32.4%	32.5%	5.7%	4.6%	2.9%	2.1%	3.1%	3.5%		
Kordofan	8.1%	7.2%	7.2%	6.5%	6.2%	6.5%	0.5%	0.5%	0.9%	1.9%	1.8%	2.8%		
Darfur	8.7%	11.7%	8.1%	6.5%	6.9%	6.5%	3.0%	3.2%	6.2%	5.4%	2.3%	5.2%		
Eastern	7.1%	6.8%	6.7%	5.8%	4.8%	5.3%	2.5%	2.5%	1.5%	1.7%	2.1%	1.7%		
Southern	2.1%	2.2%	2.1%	2.0%	2.6%	3.4%	0.7%	0.7%	0.0%	0.0%	0.0%	0.0%		
(c) Tertiary	Public							Private						
Institutions	1989/1990	1990/1991	1994/1995	1999/2000	2006/2007	2007/2008	2008/2009	1989/1990	1990/1991	1994/1995	1999/2000	2006/2007	2007/2008	2008/2009
Total	17	18	25	26	29	29	51	2	7	16	26	49	61	55
Share (%)	89%	72%	61%	50%	37%	32%	48%	11%	28%	39%	50%	63%	68%	52%

Source: Own calculation based on Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009): (2000-2001: 29-38, 44-49), (2001-2002: 52-54, 63-66, 76-77, 82-83), (2003-2004: 59-62, 70-73, 83-85, 90-91), (2004-2005: 58-61, 73-76, 87-89, 94-96), (2005-2006: 61-64, 73-75, 85-86, 91-92), (2006-2007: 59-62, 75-78, 88-89, 94-95), (2007-2008: 62-65, 75-78, 88-89, 95-96), (2008-2009: 84-87, 96-99, 109-110, 116-117).

Table 6- Regional distribution and share of regions in total number of teachers and pupil teacher ratios in basic and secondary education in Sudan (%) (2001-2009)

Total number of teachers	basic number of teachers							secondary number of teachers					
	2001	2002	2005	2006	2007	2008	2009	2001	2005	2006	2007	2008	2009
All Sudan	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Northern	13%	11%	9%	9%	10%	10%	9%	7%	7%	8%	6%	10%	10%
Khartoum	17%	18%	19%	17%	19%	18%	20%	33%	45%	27%	35%	28%	28%
Central	35%	29%	29%	29%	29%	28%	28%	31%	25%	37%	29%	29%	30%
Kordofan	10%	12%	12%	12%	12%	11%	12%	7%	6%	7%	8%	9%	8%
Darfur	11%	17%	13%	13%	12%	14%	12%	9%	7%	9%	8%	12%	9%
Eastern	12%	9%	9%	10%	9%	9%	11%	8%	8%	10%	8%	9%	10%
southern	4%	3%	9%	9%	9%	9%	9%	3%	2%	3%	3%	5%	3%
pupils teacher ratio	basic pupils teacher ratio							secondary pupils teacher ratio					
	2001	2002	2005	2006	2007	2008	2009	2001	2005	2006	2007	2008	2009
All Sudan	34	28	30	33	33	34	36	22	19	17	16	16	17
Northern	22	22	23	23	21	20	20	33	25	18	25	13	13
Khartoum	41	31	30	29	27	29	27	20	10	14	12	15	16
Central	28	28	26	27	29	31	30	21	22	15	17	15	16
Kordofan	59	31	34	36	36	36	41	22	30	24	21	21	22
Darfur	51	24	36	47	58	44	54	25	32	30	22	22	29
Eastern	34	31	33	34	34	39	31	27	23	17	18	18	16
southern	39	39	39	43	46	45	76	16	28	15	15	10	26

Sources: Own calculation based on Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009): (2000-2001: 39-43, 50-52), (2001-2002: 67-70, 88-89), (2003-2004: 74-77, 97-99), (2004-2005: 77-80, 102-104), (2005-2006: 76-79, 97-98), (2006-2007: 79-82, 114-115), (2007-2008: 79-82, 115-116), (2008-2009: 100-103, 136-137).

Table 7- Regional distribution and share of main regions in trained and untrained teachers in basic and secondary education and the share of trained teachers in tertiary education defined by sector and gender in Sudan (1996/1997-2008) (%)

(a) Basic	trained						Untrained					
	2002	2005	2006	2007	2008	2002	2005	2006	2007	2008		
All Sudan	62%	60%	60%	66%	61%	38%	40%	40%	34%	39%		
Northern	8%	5%	5%	7%	6%	2%	4%	4%	3%	4%		
Khartoum	11%	11%	11%	13%	11%	7%	8%	7%	6%	7%		
Central	17%	19%	19%	22%	20%	13%	10%	10%	6%	9%		
Kordofan	9%	7%	7%	7%	6%	4%	5%	5%	5%	5%		
Darfur	11%	8%	8%	6%	8%	6%	5%	5%	5%	6%		
Eastern	5%	6%	6%	3%	2%	2%	3%	4%	4%	5%		
southern	2%	0.80%	2%			2%	4%	5%	5%	5%		
(b) Secondary	trained					Untrained						
	2002	2006	2007	2008	2009	2002	2006	2007	2008	2009		
All Sudan	51%	66%	63%	67%	62%	49%	34%	37%	33%	38%		
Northern	6%	5%	5%	7%	6%	2%	3%	2%	2%	4%		
Khartoum	18%	18%	25%	20%	16%	10%	8%	10%	9%	13%		
Central	16%	25%	16%	19%	20%	19%	11%	14%	11%	10%		
Kordofan	3%	3%	5%	6%	5%	3%	4%	3%	3%	3%		
Darfur	5%	7%	6%	8%	7%	5%	2.30%	3.50%	4%	2.30%		
Eastern	3%	6%	5%	6%	6%	6%	4%	4%	3%	3%		
southern	0%	3%	3%	3%	3%	3%	1.80%	1.60%	3%	3%		
(c) Tertiary	Trained						Untrained					
	1996/1997	1997/1998	2000/2001	2003/2004	2004/2005	2007/2008	1996/1997	1997/1998	2000/2001	2003/2004	2004/2005	2007/2008
All Sudan												
Total	66%	71%	75%	70%	77%	81%	34%	29%	25%	30%	23%	19%
Male	71%	76%	78%	73%	80%	84%	29%	24%	22%	27%	20%	16%
Female	52%	55%	64%	58%	71%	75%	48%	45%	36%	42%	29%	25%
Public												
Total			66%	55%	73%	73%			34%	45%	27%	27%
Male			83%	72%	81%	83%			17%	28%	19%	17%
Female			77%	70%	78%	80%			23%	30%	22%	20%
Private												
Total			65%	64%	67%	64%			35%	36%	33%	36%
Male			79%	75%	77%	75%			21%	25%	23%	25%
Female			75%	71%	73%	71%			25%	29%	27%	29%

Source: Own calculation based on Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009): (2001-2002: 30-31), (2003-2004: 34-37), (2004-2005: 32-35), (2005-2006: 31-34), (2006-2007: 31-34), (2007-2008: 33-36), (2008-2009: 58).

Table 8- Regional distribution and share of main regions in total number of students enrolled in basic, secondary and tertiary education in Sudan (%) (1996-2009):

Total	(a) basic education							(b) secondary education						
	2001	2002	2004	2006	2007	2008	2009	2001	2002	2004	2006	2007	2008	2009
All Sudan	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Northern	8%	8%	7%	7%	6%	5%	5%	10%	6%	9%	8%	8%	8%	7%
Khartoum	21%	21%	19%	15%	16%	16%	15%	29%	33%	24%	23%	28%	27%	26%
Central	30%	29%	29%	25%	26%	27%	24%	31%	32%	36%	31%	30%	28%	29%
Kordofan	13%	14%	14%	14%	13%	13%	14%	7%	8%	7%	9%	10%	10%	10%
Darfur	14%	14%	14%	17%	19%	19%	18%	10%	9%	12%	17%	11%	16%	14%
Eastern	12%	12%	10%	10%	10%	10%	9%	11%	8%	10%	10%	9%	9%	9%
Southern	3%	3%	6%	11%	11%	11%	16%	2%	3%	3%	3%	3%	3%	6%
(c) higher and tertiary education														
	1996/1997	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003	2004/2005	2005/2006	2006/2007	2007/2008	1996/2007			
Northern	13.1%	11.7%	28%	11.1%	10%	11.2%	10.6%	10%	10.3%	9.5%	12.5%			
Khartoum	30.8%	31.8%	33.8%	31.1%	30.4%	28.0%	31.8%	33.1%	33.1%	30.9%	31.5%			
Central	35%	35.5%	32.9%	33.9%	32.6%	29.8%	30.5%	30.2%	29.2%	30.4%	32.1%			
Kordofan	5.9%	4.8%	4.1%	4.9%	6.6%	6.6%	5.2%	6.2%	6.5%	7.5%	5.8%			
Darfur	5.5%	6.1%	6.3%	9.6%	12%	11.4%	9%	8.2%	9%	9.8%	8.6%			
Eastern	8.4%	8.9%	8.4%	7.4%	6.7%	7.8%	8.5%	8.1%	7.4%	7.7%	7.9%			
Southern	1.4%	1.17%	1.7%	2.2%	2.7%	3.9%	4.2%	4.4%	4.4%	4%	3%			
Outside Sudan	0%	0%	0%	0%	0%	0.1%	0.2%	0.2%	0.2%	0.2%	0.1%			
All Sudan	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			

Sources: Own calculation based on (a-b) Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009): (2000-2001: 39-43, 50-52), (2001-2002: 67-70, 88-89), (2003-2004: 74-77, 97-99), (2004-2005: 77-80, 102-104), (2005-2006: 76-79, 97-98), (2006-2007: 79-82, 114-115), (2007-2008: 79-82, 115-116), (2008-2009: 100-103, 136-137), (c) Sudan Ministry of Higher education statistics on enrolment various issues reports (1996-2007).

Table 9- Regional distribution and share of main regions in total number of students enrolment rate in basic, secondary and tertiary education level defined by education levels and gender in Sudan (%) (2001-2009)

(a) Basic	2001			2006			2007			2008			2009		
	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF
All Sudan	57.4	49.3	53.4	69.8	59.3	64.5	72	60.3	66.2	73.9	63.4	68.7	67.4	64.6	66.1
Northern	94	90	92	98	91	95	91	82	86	93	84	89	88	86	87
Khartoum	88.4	83.7	86.1	83.2	79	81.1	85.5	81.6	83.6	88.8	88.5	88.6	91.5	95.9	93.7
Central	65	42	60	72	61	66	78	64	71	82	69	75	84	74	79
Kordofan	50	43	46	63	57	60	67	52	60	67	55	61	84	74	79
Darfur	45	33	27	65	46	56	46	51	60	69	56	62	67	60	64
Eastern	48	38	43	67	50	58	70	50	60	67	48	58	51	49	50
Southern	24	17	21	55	45	50	55	52	53	56	52	54	49	48	49
(b) Secondary	2001			2006			2007			2008			2009		
	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF
All Sudan	18.1	18.4	18.2	26.2	25.3	25.7	26.9	25.7	26.3	29.6	26.3	28	29.4	29.9	29.7
Northern	39	52	45	45	52	49	42	48	45	46	52	49	46	53	49
Khartoum	35.7	40.8	38.1	44	50.6	47.4	52.9	56.4	54.6	54	55.8	54.9	62.1	68.9	65.4
Central	20	22	21	28	28	28	30	30	32	30	32	30	31	39	35
Kordofan	10	10	10	21	17	19	21	18	20	24	19	21	30	24	27
Darfur	14	9	12	24	18	21	18	12	15	26	15	20	22	18	20
Eastern	20	21	21	24	22	24	23	22	22	23	21	22	19	18	18
Southern	3	2	3	6	4	5	7	5	6	7	5	6	7	6	7
(c) Tertiary and higher education	2001/2002			2004/ 2005			2005/ 2006			2006/2007			2007/ 2008		
	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF
All Sudan	49.7	50.3	100	47.8	52.2	100	48	52	100	48.7	51.3	100	47.9	52.1	100
Northern	4.2	5.8	10	4.5	6.2	10.6	4.4	5.6	10	4.4	5.9	10.3	4	4	9.5
Khartoum	13.3	16.5	30.4	14.4	17.4	31.8	15	18.1	33.1	15.2	17.9	33.1	13.7	5.5	30.9
Central	15.7	17.1	32.6	14.5	16	30.5	14.5	15.8	30.2	14.2	15	29.2	14.4	1.6	30.4
Kordofan	3.4	3.2	6.6	2.6	2.7	5.2	3	3.2	6.2	3.3	3.3	6.5	3.6	3.9	7.5
Darfur	8.4	3.8	12	4.9	4.1	9	4.4	3.8	8.2	5.2	3.9	9	5.7	4.1	9.8
Eastern	3.5	3.2	6.7	4.1	4.4	8.5	3.8	4.1	8.1	3.5	3.8	7.4	3.6	4	7.7
Southern	2	0.9	2.7	3	1.4	4.2	3.1	1.4	4.4	2.9	1.6	4.4	2.7	1.5	4
outside Sudan	0	0	0	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2

Sources: Own calculation based on (a-b) Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009), (c) Sudan Ministry of higher education educational survey statistics (2000-2001) cited in ministry of education educational statistics (2001-2002:49).

Table 10- Regional distribution and share of main regions in total number of students enrolled in public and private basic and secondary schools and the share of students enrolled in public and private tertiary education institutions defined by gender in Sudan (1993/1994-2009) (%)

(a) Basic	Public						Private					
	2001	2002	2006	2007	2008	2009	2001	2002	2006	2007	2008	2009
All Sudan	95.6%	95.2%	96.4%	96.0%	93.8%	95.7%	4.4%	4.8%	3.6%	4.1%	6.2%	4.3%
Northern	8.0%	7.9%	6.5%	5.9%	5.5%	3.3%	0.2%	0.2%	0.1%	0.1%	0.2%	0.1%
Khartoum	19.9%	19.4%	13.9%	13.8%	13.9%	13.0%	1.0%	1.6%	1.5%	1.9%	1.9%	1.4%
Central	28.5%	28.1%	25.0%	25.3%	24.3%	22.7%	0.7%	0.7%	0.5%	0.5%	2.2%	0.4%
Kordofan	12.1%	13.1%	13.2%	12.7%	12.1%	13.5%	0.4%	0.3%	0.3%	0.4%	0.6%	0.4%
Darfur	13.8%	13.1%	17.3%	17.4%	17.8%	17.2%	0.6%	0.9%	0.7%	0.6%	0.8%	1.0%
Eastern	10.0%	10.4%	9.6%	9.4%	9.5%	8.4%	1.0%	0.6%	0.6%	0.6%	0.6%	0.5%
Southern	3.4%	3.3%	11.0%	11.5%	10.7%	16.0%	0.6%	0.6%	0.0%	0.0%	0.0%	0.0%
(b) Secondary	Public						Private					
	2001	2002	2006	2007	2008	2009	2001	2005	2006	2007	2008	2009
All Sudan	77.7%	77.7%	84.9%	84.0%	83.0%	77.8%	22.3%	22.3%	15.2%	16.1%	17.0%	22.2%
Northern	8.6%	8.6%	7.9%	7.2%	7.2%	6.4%	2.1%	2.0%	0.5%	0.2%	0.2%	0.8%
Khartoum	19.8%	19.1%	16.7%	19.7%	18.2%	14.3%	10.0%	9.6%	6.1%	8.5%	8.4%	12.1%
Central	25.1%	24.6%	28.0%	28.0%	26.2%	26.1%	6.7%	6.4%	1.5%	2.6%	2.6%	3.1%
Kordofan	6.8%	7.0%	8.9%	9.2%	9.2%	8.5%	0.3%	0.5%	0.6%	1.0%	1.2%	0.9%
Darfur	8.7%	9.3%	12.2%	9.2%	12.0%	10.1%	1.7%	2.8%	5.4%	2.5%	3.4%	3.7%
Eastern	7.3%	7.7%	8.2%	7.7%	7.1%	6.5%	2.8%	2.5%	1.2%	1.2%	1.1%	1.6%
Southern	1.4%	1.4%	3.1%	2.9%	3.0%	6.0%	0.4%	0.4%	0.0%	0.0%	0.0%	0.0%
(c) Tertiary	Public						Private					
	1993/1994	1995/1996	2001/2002	2002/2003	2005/2006	2007/2008	1993/1994	1995/1996	2001/2002	2002/2003	2005/2006	2007/2008
Male	89%	93%	83%	98%	92%	94%	11%	7%	17%	2%	8%	6%
Female	79%	92%	79%	82%	91%	93%	21%	8%	21%	18%	9%	7%
Total	84%	92%	81%	83%	91%	93%	16%	8%	19%	17%	9%	7%

Sources: Own calculation based on (a-b) Sudan Ministry of Education: the Annual Educational Statistics Reports Various Issues (2001-2009): (2000-2001: 29-38, 44-49), (2001-2002: 52-54, 63-66, 76-77, 82-83), (2003-2004: 59-62, 70-73, 83-85, 90-91), (2004-2005: 58-61, 73-76, 87-89, 94-96), (2005-2006: 61-64, 73-75, 85-86, 91-92), (2006-2007: 59-62, 75-78, 88-89, 94-95), (2007-2008: 62-65, 75-78, 88-89, 95-96), (2008-2009: 84-87, 96-99, 109-110, 116-117), (c) Sudan Ministry of higher education and scientific research: the Annual Educational Statistics Reports Various Issues (1993/1994-2007/2008).

Table 11 - Regional distribution and share of main regions in technical and vocational education and training and graduates of the apprenticeship programmes in Sudan (1995-2009)

School ^a	Technical education								Vocational education				
	2001	2002	2004	2005	2006	2007	2008	2009	2001	2007	2008	2009	
All Sudan	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Northern	14%	16%	19%	15%	9%	12%	12%	14%	18%	13%	12%	12%	
Khartoum	15%	17%	17%	19%	14%	17%	18%	16%	24%	20%	21%	19%	
Central	25%	23%	22%	35%	42%	30%	27%	35%	39%	49%	46%	42%	
Kordofan	8%	8%	12%	7%	8%	7%	7%	6%	0%	0%	0%	0%	
Darfur	19%	18%	15%	14%	11%	13%	14%	10%	6%	4%	6%	8%	
Eastern	15%	17%	13%	11%	15%	16%	18%	17%	12%	13%	14%	20%	
Southern	5%	4%	0%	0%	0%	3%	3%	3%	0%	0%	0%	0%	
Students ^a	Technical education								vocational education				
	2001	2002	2004	2005	2006	2007	2008	2009	2001	2007	2008	2009	
number of students													
All Sudan	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Northern	8%	8%	12%	9%	6%	7%	9%	11%	8%	5%	6%	7%	
Khartoum	30%	30%	27%	30%	23%	27%	22%	22%	47%	56%	37%	45%	
Central	23%	24%	30%	31%	45%	24%	26%	25%	26%	25%	41%	27%	
Kordofan	4%	4%	7%	7%	6%	8%	8%	8%	0%	0%	0%	0%	
Darfur	12%	12%	9%	8%	9%	14%	14%	12%	5%	3%	5%	7%	
Eastern	19%	19%	14%	12%	12%	16%	17%	18%	14%	9%	10%	14%	
Southern	3%	2%	0%	0%	0%	3%	3%	3%	0%	0%	0%	0%	
Number of teachers ^a	Technical education								Technical education				Vocational education
									trained		untrained		2009
	2001	2002	2004	2005	2006	2007	2008	2009	2008	2009	2008	2009	2009
All Sudan	100%	100%	100%	100%	100%	100%	100%	100%	86%	59%	14%	41%	100%
Northern	8%	8%	10%	10%	10%	10%	8%	3%	8%	8%	0%	9%	17%
Khartoum	28%	28%	29%	39%	25%	16%	15%	83%	15%	18%	0%	0%	18%
Central	23%	24%	30%	29%	33%	41%	40%	1%	35%	18%	6%	6%	25%
Kordofan	7%	6%	8%	7%	6%	6%	6%	2%	6%	5%	0%	6%	10%
Darfur	17%	17%	21%	14%	12%	11%	16%	0%	13%	7%	2%	6%	12%
Eastern	12%	12%	16%	11%	16%	18%	15%	9%	9%	5%	6%	13%	18%
Southern	4%	4%	0%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Training and graduates of the apprenticeship programmes ^b	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	1995-2006
All Sudan	100	100	100	100	100	100	100	100	100	100	100	100	100
Khartoum	63.1	61.7	61.2	60.5	61	57.3	59.5	58.3	57.2	58.4	60.1	80.8	61.2
Central	18.1	19.3	15.5	16	24.9	24.2	22.8	19.8	22.1	21.1	21.4	0	19.1
Darfur	0	0	3.6	2.4	2.3	1.8	0.9	1.3	0.5	0	0	0	1
Kordofan	0	0	0	3.8	1.8	1.8	2.1	2.2	1.7	1.8	5.8	4.5	2.3
Eastern	18.7	19	19.7	17.4	10	11	12	14	13.9	12.8	2	0	11.9
Southern	0	0	0	0	0	0	0	0	0	0	2.1	2.9	0.4
Other	0	0	0	0	0	4	2.8	4.3	4.5	5.9	8.5	11.7	4

Sources: Own calculation based on (a) Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009); (b) Sudan Ministry of Labour statistics on enrolment various issues reports (1995-2006)

Table 12- Regional distribution, share and value of main regions in urbanization, economic, MDGs, demographic and education indicators in Northern Sudan (2005-2009)

(a) Urbanization, Economic and MDGs Indicators ^{a, b}												
	Urbanization ^a	Actual Per capita Federal Allocation ^a	Poverty ^b				MDG 2.3. Literacy rate of 15-24 years-olds ^b					
			Proportion of population below poverty line		Poverty gap ratio		Total	Men	Women			
	2005	2005	MDG 1.1		MDG 1.2		(15-24)	(15-24)	(15-24)			
			2009	2009	2009	2009	2009	2009	2009			
Total			46.5		16.2		77	84	71			
Northern	27	9068	33.7		9.4		88	91	86			
Khartoum	88	8497	26		6.4		94	96	92			
Central	29	4872	45.4		13.8		77	84	70			
Kordofan	29	3765	58.7		23.1		69	79	61			
Darfur	20	2732	62.7		24.6		74	85	64			
Eastern	43	2553	46.3		17.7		63	68	57			
(b) Education and Demographic indicators ^{b, c, d}												
	Net enrolment rate in primary education ^b	Primary education ^c		Secondary education ^c		Tertiary education ^d		Female enrolment				
		Students (6-13)	Population (6-13)	Students (14-16)	Population (14-16)	Students (16-20)	Population (16-20)	Primary ^c (6-13)	Secondary ^c (14-16)	Tertiary ^d (16-20)		
	2009	2008	2008	2008	2008	2008	2008	2008	2008	2008		
Total	67	100%	100%	100%	100%	100%	100%					
Northern	83	5%	4%	7%	4%	9.5	4.5%	84%	52%	9.5%		
Khartoum	85	15%	10%	26%	12%	30.9	13.6%	88.5%	55.8%	30.9%		
Central	67	38%	29%	29%	19%	30.4	19.3%	69%	30%	30.4%		
Kordofan	60	14%	12%	9%	10%	7.5	10.1%	55%	19%	7.5%		
Darfur	62	18%	22%	14%	21%	9.8	20.0%	56%	15%	9.8%		
Eastern	57	9%	12%	8%	12%	7.7	12.2%	48%	21%	7.7%		

Sources: (a) Elbadawi and Suleiman (2008:107) (b) the Sudan Central Bureau of Statistics (2011: 12), (c) own calculation based on Sudan Ministry of Education, the Annual Educational Statistics Reports (2008/2009), (d) own calculation based on Sudan Ministry of higher education statistics (2007/2008).

Table 13- Correlation between education indicators, urbanization, MDG, demographic and economic indicators in Northern Sudan (2005-2009)

Independent Variable	Coefficient (t-value)					Constant	R ²	N
	Proportion of population below poverty line	Poverty gap ratio	Per capita income	Urbanization	Share of population (2008)			
Dependent Variable	MDG 1	MDG12						
Enrolment in Basic Education (MDG2:)	-0.993** (-3.103)					111.881 (7.403)	0.707	6
		-2.000** (-3.717)				98.419 (10.642)	0.775	6
			0.007** (7.801)			37.278 (8.831)	0.938	6
				0.260* (1.274)		58.780 (6.339)	0.289	6
					1.163** (4.516)	-0.008 (-0.172)	0.836	6
Enrolment in Secondary education	-0.002 (-0.697)					0.258 (1.684)	0.108	6
		-0.006 (-0.910)				0.242 (2.341)	0.172	6
			0.00001 (0.448)			0.116 (1.209)	0.048	6
				0.002 (1.014)		0.086 (1.102)	0.204	6
					0.844* (1.289)	0.045 (0.488)	0.294	6
Enrolment in Tertiary education	-0.445* (-1.313)					36.205 (2.261)	0.301	6
		-0.970* (-1.588)				31.326 (2.985)	0.387	6
			0.002 (0.926)			7.186 (0.678)	0.177	6
				0.267* (1.442)		5.460 (0.648)	0.342	6
					84.099 (0.951)	4.796 (0.379)	0.185	6
Female enrolment in basic education	-0.754* (-1.658)					101.039 (4.703)	0.407	6
		-1.415* (-1.575)				88.798 (5.835)	0.383	6
			0.006** (7.801)			37.278 (8.831)	0.938	6
				0.347* (1.223)		53.103 (4.116)	0.272	6
Female enrolment in secondary education	-0.640 (-1.192)					61.261 (2.412)	0.262	6
		-1.213 (-1.157)				51.042 (2.874)	0.251	6
			0.006** (8.917)			0.687 (0.174)	0.952	6
				0.434* (1.565)		15.059 (1.194)	0.380	6
Female enrolment in tertiary education	-0.693** (-3.300)					47.517 (4.783)	0.731	6
		-1.268** (-2.736)				35.727 (4.551)	0.652	6
			0.002 (0.926)			7.186 (0.678)	0.177	6
				0.267* (1.442)		5.460 (0.648)	0.342	6
Female literacy rate	-0.858** (-3.229)					110.689 (8.813)	0.723	6
		-1.692** (-3.547)				98.449 (12.012)	0.759	6
			0.005** (7.137)			46.620 (11.888)	0.927	6
Male literacy rate	-0.382* (-1.323)					101.200 (7.417)	0.304	6
		-0.806* (-1.520)				96.591 (10.600)	0.366	6
			0.003** (2.807)			69.303 (11.981)	0.663	6
Total population Literacy rate MDG 2	-0.636** (-2.404)					106.409 (8.514)	0.591	6
		-1.277** (-2.689)				97.714 (11.978)	0.644	6
			0.004** (4.885)			57.778 (12.808)	0.857	6

Correlation is significant * at the 0.05 level (one-tailed) ** at the 0.01 level (one-tailed)

Table 14- The quality of education in Sudan and regional distribution and share of main regions in Sudan government basic education defined by the percentage of repetition, transition and dropouts (%) (1995 - 2009)

(a) Repeaters (%)	2006			2007			2008			2009		
	M	F	MF	M	F	MF	M	F	MF	M	F	MF
All Sudan	3.2%	2.9%	2.7%	6.6%	6.4%	6.5%	5.4%	5.2%	5.3%	4.4%	4.2%	4.3%
Northern	7%	6%	3%	10%	8%	9%	8%	7%	8%	12%	8%	10%
Khartoum	1.30%	1.1%	1.2%	0.9%	0.7%	0.8%	0.9%	0.6%	0.7%	0.9%	0.7%	0.8%
Central	3%	2%	2%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Kordofan	9%	8%	5%	10%	10%	10%	10%	10%	10%	6%	7%	6%
Darfur	0%	0%	0%	9%	10%	9%	6%	6%	6%	3%	3%	3%
Eastern	5%	4%	2%	12%	14%	13%	10%	11%	10%	8%	8%	8%

(b) Dropouts (%)	2006			2007			2008			2009		
	M	F	MF	M	F	MF	M	F	MF	M	F	MF
All Sudan	1.6%	1.4%	1.4%	3.4%	3.2%	3.3%	2.7%	2.5%	2.6%	1.4%	1.2%	1.3%
Northern	1%	1%	1%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Khartoum	1.2%	1.2%	1.2%	0.3%	0.5%	0.4%	0.3%	0.4%	0.4%	0.3%	0.4%	0.4%
Central	2%	1%	1%	2%	3%	3%	2%	2%	2%	1%	1%	1%
Kordofan	3%	2%	2%	4%	3%	4%	3%	3%	3%	2%	2%	2%
Darfur	0%	0%	0%	6%	6%	6%	4%	4%	4%	2%	2%	2%
Eastern	1%	1%	1%	8%	8%	8%	7%	7%	7%	2%	2%	2%

Sources: Own calculation based on Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009): (2005-2006: 39-42), (2006-2007: 38-41), (2007-2008: 40-63), (2008-2009: 62-65).

Table 15- The percentage of success in Sudan basic education certificate defined by gender and main regions and Sudan secondary school certificate defined by secondary education type in Sudan (1996/1997-2009)

(a) Sudan basic education certificate basic results percentage of successors (%) by sex and state (2000/2001-2008/2009)	2001			2006			2007			2008			2009		
	M	F	MF	M	F	MF	M	F	MF	M	F	MF	M	F	MF
All Sudan	73.1	72.9	71.9	71.4	72.7	74.5	73.7	72.9	80.4	76.4	73	73.5	74.9		
Northern	76	78	66	93	86	92	89	92	96	94	92	97	95		
Khartoum	68.5	74.2	71.4	65.3	65.3	59.4	62.8	75.2	82.8	79	63.8	71.1	67.3		
Central	76	72	74	76	74	78	76	75	76	75	78	78	78		
Kordofan	67	62	64	73	70	70	70	74	73	74	74	74	74		
Darfur	75	67	72	60	73	69	72	67	59	64	67	60	64		
Eastern	72	64	68	62	66	72	68	63	69	65	68	74	71		
Southern	75	80	77												

Source: Own calculation based on Sudan Ministry of Education, the Annual Educational Statistics Reports Various Issues (2001-2009): (a) (2000-2001: 22), (2001-2002: 32), (2003-2004: 26), (2004-2005: 24), (2005-2006: 23), (2006-2007: 23), (2007-2008: 25), (2008-2009: 45), and (b) (2000-2001: 24), (2008-2009: 48).

Table 16- Regional distribution and share of main regions in total number of training centers, capacity, trained work force and internal and external training in Sudan (2004-2009) (%)

(a) Number of training centers, capacity and trained work force	Total number of training centers		Share in total number of training centers		Total capacity of training centers		Total number of training centers/total capacity of training centers		Trained work force/total labour force (2008-2009) (%)		
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	Change (2008-2009)
All Sudan	64927	65929	100%	100%	74984	78318	86.59%	84.18%	16.12%	17%	0.88%
Northern	15	17	0.023%	0.026%					64%	70.00%	6%
Khartoum	64864	65864	99.903%	99.901%		65864		100%		13.06%	
Central	29	29	0.045%	0.044%	7000	10234	0.41%	0.28%	2%	2.90%	0.9%
Kordofan	15	15	0.023%	0.023%	1050	1050	1.43%	1.43%	6.09%	4.65%	-1.44%
Darfur	2	2	0.003%	0.003%	720	720	0.28%	0.28%	3.22%	3.37%	0.15%
Eastern	2	2	0.003%	0.003%	350	350	0.57%	0.57%	5.3%	8.00%	2.7%

(b) Internal and external training	Internal training				External training				Total internal and external training			
	Short t run		Long run		Total		Short run		long run		Total	
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
All Sudan	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Northern	3%	6%	0%	0%	3%	5%	4%	13%	22%	16%	10%	14%
Khartoum	55%	58%	0%	31%	55%	57%	10%	23%	54%	54%	26%	40%
Central	23%	15%	28%	10%	23%	15%	17%	35%	14%	10%	16%	22%
Kordofan	10%	7%	49%	15%	11%	7%	28%	10%	10%	5%	22%	7%
Darfur	1%	3%	1%	7%	1%	3%	9%	10%	0%	0%	6%	5%
Eastern	8%	12%	22%	12%	8%	12%	8%	9%	0%	0%	5%	4%

Source: (a) Sudan Ministry of Federal Government and the General Secretariat of the National Council for strategic planning. (2009) "Performance Digital Reports of the Northern States (2009) -". p. 471. (b) Sudan Ministry of Federal Government and the General Secretariat of the National Council for strategic planning. (2009) "Performance Digital Reports of the Northern States (2009) -". pp. 446-447.

Table 17- Regional distribution and share of main regions in the coverage of health insurance by main regions in Sudan (2001-2006) (%)

All Sudan	2001	2002	2003	2004	2005	2006
Northern	7.6	10.0	20.0	20.0	24.2	46.3
Khartoum	11.5	13.7	28.2	28.2	36.5	
Central	6.1	7.3	16.3	16.3	23.4	55.5
Kordofan	4.0	5.2	8.2	8.2	18.2	61.0
Darfur	4.8	7.7	9.2	9.2	14.5	50.0
Eastern	4.5	7.6	15.3	15.3	20.1	47.2
Northern Sudan regionss	5.7	7.8	14.9	14.9	21.2	52
All Sudan	7.1	8.3	15.9	15.9	23.1	25.5

Sources: Sudan Ministry of Finance and National Economy - Annual Economic Report (2001), pp. 19-20. Sudan Ministry of Finance and National Economy - Annual Economic Report (2002), p. 17. Sudan Ministry of Finance and National Economy - Annual Economic Report (2003), p. 20. Sudan Ministry of Finance and National Economy - Annual Economic Report(2004), p. 34. Sudan Ministry of Finance and National Economy - Annual Economic Report (2005), p.20. Sudan Ministry of Finance and National Economy- Annual Economic Report (2006), p. 56. Sudan Ministry of Finance and National Economy- Annual Economic Report (2007), p. 20.

Table 18- Regional distribution and share of main regions in the distribution of population, health Institutions, total number of beds, total number of hospital and bed / per 100.000 Population and share of main regions in the distribution of health units Health Institutions and beds distribution by main regions in Sudan (1996-2008).

(a) Regional distribution and share of main regions in the distribution of population and Health Instutuations																	
	No. of Pop.			No. of Hospitals													
	2004	2005	2007	2003	2004	2005	2006	2007	2005	2005	2007						
Northern	5%	5%	5%	10%	17%	18%	9%	18%	17%	14%	17%						
Khartoum	19%	19%	20%	58%	14%	8%	14%	8%	14%	27%	13%						
Central	26%	26%	26%	13%	34%	38%	40%	37%	36%	27%	35%						
Kordofan	14%	13%	13%	3%	12%	12%	13%	13%	11%	11%	12%						
Darfur	23%	23%	23%	6%	8%	8%	9%	10%	8%	8%	9%						
Eastern	14%	14%	14%	9%	15%	15%	14%	14%	14%	13%	14%						
Northern Sudan regions	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%						
(b) Regional distribution and share of main regions in the distribution of total number of beds, total number of hospital and bed / per 100.000 Population																	
	No. of Beds					Share in total					Beds per 100.000		Hospital per 100.000				
	2003	2004	2005	2006	2007	2003	2004	2005	2006	2007	2007	2004	2005	2007	2004	2005	2007
Northern	82	3002	3147	1545	3289	7%	14%	16%	7%	16%	13%	196.7200	5203.13	6	3.5	3.5	
Khartoum	822	5752	2230	5973	2230	70%	27%	12%	27%	11%	25%	103.6107	98.5	0.8	0.7	0.7	
Central	42	5829	6216	6524	6455	4%	27%	33%	30%	32%	26%	74.9	79.5	80.1	1.5	1.5	1.6
Kordofan	40	2472	2525	2685	2717	3%	11%	13%	12%	13%	11%	60.2	60.9	65.3	0.9	0.9	1
Darfur	50	1684	1920	1986	2507	4%	8%	10%	9%	12%	10%	26.9	29.4	36.5	0.4	0.4	0.4
Eastern	133	2946	3040	3091	3263	11%	14%	16%	14%	16%	13%	84.3	86	85.5	1.4	1.4	1.2
Northern Sudan regions	1169	21685	19078	21804	20461	100%	100%	100%	100%	100%	100%	74.4	76.7	1	1	1	76.3
(c) Regional distribution and share of main regions in the distribution of Health Institutions (hospitals and health centers)																	
	Total number of hospital																
	2008	2007	2006	2005	2005	2003	2002	2001	1998	1996							
Northern	60	56	26	54	48	47	27	47	16	41							
Khartoum	29	25	43	25	38	38	31	28	14	18							
Central	133	117	123	112	103	88	92	54	45	68							
Kordofan	43	43	41	36	23	27	35	16	2	19							
Darfur	38	33	28	25	30	31	14	21	8	18							
Eastern	62	46	44	45	42	43	41	40	29	28							
Northern Sudan regions	365	320	305	297	284	274	240	206	114	192							
Total number of health centers																	
Northern	250	311	241	233	45	29	22	39	81	153							
Khartoum	445	156	196	144	99	66	141	59	60	83							
Central	388	413	453	282	146	79	236	61	50	210							
Kordofan	199	199	148	126	62	38	69	19	9	39							
Darfur	96	70	141	51	58	37	12	20	6	33							
Eastern	195	172	155	131	64	51	29	49	46	62							
Northern Sudan regions	1573	1321	1334	967	474	300	509	247	252	580							
Share in total number of hospital																	
Northern	17%	18%	9%	18%	17%	17%	11%	23%	14%	21%							
Khartoum	66%	8%	14%	8%	13%	14%	13%	14%	12%	9%							
Central	5%	37%	40%	38%	36%	32%	38%	26%	39%	35%							
Kordofan	7%	13%	13%	12%	8%	10%	15%	8%	2%	10%							
Darfur	2%	10%	9%	8%	11%	11%	6%	10%	7%	9%							
Eastern	3%	14%	14%	15%	15%	16%	17%	19%	25%	15%							
Northern Sudan regions	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%							
Share in total number of health centers																	
Northern	16%	24%	18%	24%	9%	10%	4%	16%	32%	26%							
Khartoum	28%	12%	15%	15%	21%	22%	28%	24%	24%	14%							
Central	25%	31%	34%	29%	31%	26%	46%	25%	20%	36%							
Kordofan	13%	15%	11%	13%	13%	13%	14%	8%	4%	7%							
Darfur	6%	5%	11%	5%	12%	12%	2%	8%	2%	6%							
Eastern	12%	13%	12%	14%	14%	17%	6%	20%	18%	11%							
Northern Sudan regions	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%							

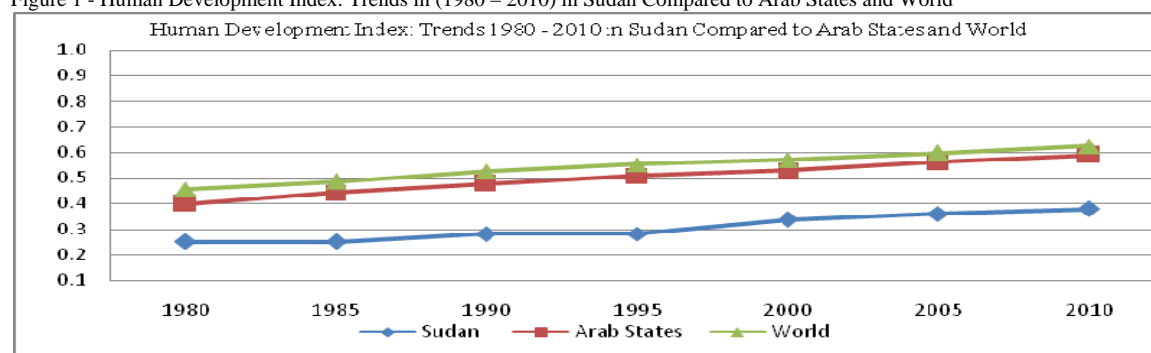
Sources: Own calculation based on : (1) data for 2007 Sudan Federal Ministry of Health- National Health Information Centre, (2008) "Annual Health Statistics Reports 2008", pp. 27, 30-31, 35, 51, (2) data for 2006: Sudan Federal Ministry of Health- National Health Information Centre, (2007) "Annual Health Statistics Reports 2007", pp., Sudan Federal Ministry of Health- National Health Information Centre, (2006) "Annual Health Statistics Reports 2006" pp. 37,52 (3) data for 2005: . Sudan Federal Ministry of Health- National Health Information Centre, (2005) "Annual Health Statistics Reports 2005", pp. 22, 30, 44. (4) Data for 2004: Sudan Federal Ministry of Health- National Health Information Centre, (2004) "Annual Health Statistics Reports 2004", pp. 12, 16. (5) Data for 2003: (6) data for 2002: (7) data for 2001: (8) data for 1998: (10) data for 1996: Sudan Ministry of Finance and National Economy - Annual Economic Report (1997), p.26, Sudan Ministry of Finance and National Economy - Annual Economic Report (1998), p.38. Sudan Ministry of Finance and National Economy - Annual Economic Report (2001), pp. 19-20. Sudan Ministry of Finance and National Economy - Annual Economic Report (2002), p. 17. Sudan Ministry of Finance and National Economy - Annual Economic Report (2003), p. 20. Sudan Ministry of Finance and National Economy- Annual Economic Report(2004), p. 34. Sudan Ministry of Finance and National Economy - Annual Economic Report (2005), p.20. Sudan Ministry of Finance and National Economy- Annual Economic Report (2006), p. 56. Sudan Ministry of Finance and National Economy- Annual Economic Report (2007), p. 20.

Table 19- Regional distribution and share of main regions in the distribution of health manpower by main regions in Sudan (1996-2007).Doctors / 100,000 Population.

Total number of doctors															
	Specialists				Dentist				Total doctors						
	2004	2005	2006	2007	2004	2005	2006	2007	2004	2005	2006	2007			
Northern	58	59	84	84	15	17	17	14	250	253	441	386			
Khartoum	701	787	861	884	206	116	114	107	3083	2764	3083	3035			
Central	203	213	257	253	37	32	45	38	843	927	1010	872			
Kordofan	48	59	49	61	6	9	9	8	220	213	255	217			
Darfur	36	37	43	61	5	4	4	7	159	214	195	291			
Eastern	66	94	102	118	14	17	20	22	344	457	495	547			
Northern Sudan regions	1112	1249	1396	1461	283	195	209	196	4899	4828	5479	5348			
Share in total number of doctors															
	No. of Pop.			Specialists			Dentist			Total doctors					
	2004	2006	2007	2004	2006	2007	2004	2005	2006	2007	2004	2005	2006	2007	
Northern	5%	5%	5%	5%	6%	6%	5%	9%	8%	7%	5%	5%	8%	7%	
Khartoum	19%	19%	20%	63%	62%	61%	73%	59%	55%	55%	63%	57%	56%	57%	
Central	26%	26%	26%	18%	18%	17%	13%	16%	22%	19%	17%	19%	18%	16%	
Kordofan	14%	13%	13%	4%	4%	4%	2%	5%	4%	4%	4%	4%	5%	4%	
Darfur	23%	23%	23%	3%	3%	4%	2%	2%	2%	4%	3%	4%	4%	5%	
Eastern	14%	14%	14%	6%	7%	8%	5%	9%	10%	11%	7%	9%	9%	10%	
Northern Sudan regions	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Specialist and Doctors / 100,000 Pop.															
	Specialists					Dentist					Total doctors				
	1996	2004	2005	2006	2007	1996	2004	2005	2006	2007	1996	2004	2005	2006	2007
Northern	2.1	3.7	3.7	5.1	5	0.9	1	1.1	1.1	0.9	7.3	16.1	16.1	26.3	22.8
Khartoum	8.6	12.6	13.7	14.4	14.3	3.5	3.7	2	1.9	1.7	27.9	55.5	48	51.6	48.9
Central	1.5	2.3	2.5	2.9	2.9	0.3	0.4	0.4	0.5	0.4	5.1	9.8	11	12.2	15.2
Kordofan	0.7	1.1	1.4	1.1	1.4	0.3	0.1	0.2	0.2	0.2	2.8	5.3	5.1	6	5.2
Darfur	0.4	0.6	0.6	0.6	0.9	0.1	0.1	0.1	0.1	0.1	1.5	2.6	3.7	1.7	4.1
Eastern	2.1	2	2.9	3	3.3	0.8	0.4	0.5	0.6	0.6	6.5	9.5	12.9	13.7	14.3
Northern Sudan regions	2.6	3.7	4.1	4.5	4.6	1	1	0.7	0.7	0.7	8.5	16.5	16.1	18.6	18.4

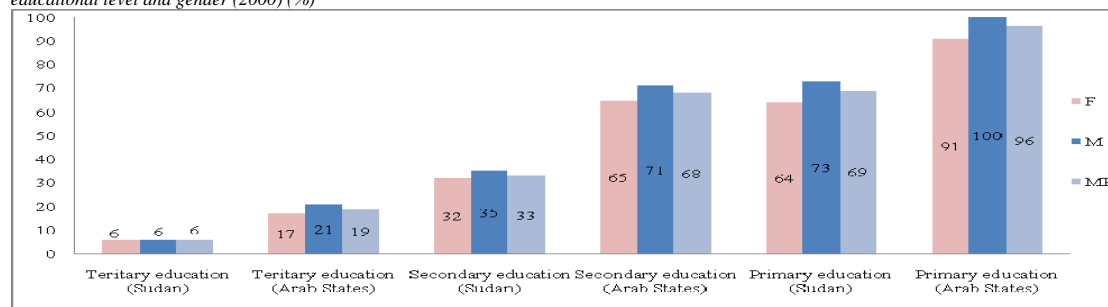
Sources: Own calculation based on : (1) data for 2007 Sudan Federal Ministry of Health- National Health Information Centre, (2008) "Annual Health Statistics Reports 2008", pp. 27, 30-31, 35, 51, (2) data for 2006: Sudan Federal Ministry of Health- National Health Information Centre, (2007) "Annual Health Statistics Reports 2007", pp., Sudan Federal Ministry of Health- National Health Information Centre, (2006) "Annual Health Statistics Reports 2006" pp. 37,52 (3) data for 2005: . Sudan Federal Ministry of Health- National Health Information Centre, (2005) "Annual Health Statistics Reports 2005", pp. 22, 30, 44. (4) Data for 2004: Sudan Federal Ministry of Health- National Health Information Centre, (2004) "Annual Health Statistics Reports 2004", pp. 12, 16. (5) Data for 2003: (6) data for 2002: (7) data for 2001: (8) data for 1998: (10) data for 1996: Sudan Ministry of Finance and National Economy - Annual Economic Report (1997, p.26, Sudan Ministry of Finance and National Economy - Annual Economic Report (1998), p.38. Sudan Ministry of Finance and National Economy - Annual Economic Report (2001), pp. 19-20. Sudan Ministry of Finance and National Economy - Annual Economic Report (2002), p. 17. Sudan Ministry of Finance and National Economy - Annual Economic Report (2003), p. 20. Sudan Ministry of Finance and National Economy- Annual Economic Report(2004), p. 34. Sudan Ministry of Finance and National Economy - Annual Economic Report (2005), p.20. Sudan Ministry of Finance and National Economy- Annual Economic Report (2006), p. 56. Sudan Ministry of Finance and National Economy- Annual Economic Report (2007), p. 20.

Figure 1 - Human Development Index: Trends in (1980 – 2010) in Sudan Compared to Arab States and World



Source: UNDP Sudan Country profile of Human Development Indicators (2010)²²

Figure 2- Enrolment ratios in basic, secondary and tertiary education in Sudan compared to the average for the Arab countries defined by educational level and gender (2000) (%)



Source: Arab Knowledge Report (2009: 279)

²² See UNDP (2010): <http://hdrstats.undp.org/en/countries/profiles/SDN.html>, accessed on December 22, 2010.

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