

**Final Report for African Economic Research Consortium
(AERC) Collaborative Research Project on
Impact of China-Africa aid relations: the case of Sudan**

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1. Introduction

This project focuses on China-Africa Aid Relations and aims to examine the nature, characteristics and implications of China-Africa aid relations, with particular reference to the case of Sudan. This section provides an introduction and shows the statement of research problem, objectives, questions and the structure of the research.

1.1 Problem Statement:

As in most other typically developing and African economies, Sudan's economy has relied heavily on a large influx of foreign aid. Since long, there is a significant amount of foreign aid to Sudan from different sources including the U.S., EU (e.g. the Netherlands, Italy, and Germany), Arab countries (e.g. Saudi Arabia, Kuwait, and UAE), China, the World Bank, International Monetary Fund (IMF), United Nations, Arab Fund for Economic and Social Development and Organization of Petroleum Exporting Countries (OPEC). Since 1970s, China also started to offer aid and development assistance to Sudan. During the late 1970s and 1980s the large inflow of foreign aid to Sudan was mainly offered by the International Monetary Fund (IMF) and the World Bank. Since the mid- 1990s, following the large drop in the inflow of foreign aid from the traditional western donors, Sudan looked for other alternative sources of foreign aid and development assistance from the emerging donors, mainly China. This policy is incidentally consistent with China's increasing economic interests in Sudan as a new resources - oil -rich economy.

Consequently, in the last two decades, China has increased foreign aid and development assistance to Sudan and some other African countries such as Cameroon, DRC, Ethiopia, Ghana, Mali, Senegal, Togo, Rwanda, Guinea and Uganda. The Chinese aid to Sudan as in many other resource-rich African countries is essentially motivated and intended to accomplish broader strategic objectives and achieve mutual interests. For this reason the share of Sudan, Angola, Mozambique, Nigeria and Zimbabwe represents over 80% of the total Chinese concessional loans to Sub-Saharan Africa. In Sudan, for example, China accounted for 58% of total contracted loans and grants over the period (2005-2007)- see Table 5 below. Different from other foreign donors to Sudan, Chinese aid is characterising by offering little programme aid and mainly focusing on project aid including technical assistance and training. In addition, the Chinese aid has the relative potential to be utilised in financing grandiose or prestigious projects and buildings (e.g. presidential palaces, Friendship Hall, etc.) that are unsupported and perceived as “unproductive” investments by the traditional donors. In addition the Chinese aid to Sudan is offered with little political conditionality. But from economic perspective, the effectiveness of the Chinese aid to Sudan is undermined by the fact that it is typically ‘tied’ to oil, to purchase of Chinese goods and services and to implementation of the Chinese aid projects by Chinese companies utilizing

Chinese inputs and labour. Apart from offering tied aid, the Chinese aid constitutes one of the key channels through which the impacts of China economic growth are transmitted to Sudan economy and other African economies.

Based on the above insights, this project provides an in-depth case analysis of Chinese aid and development assistance as well as international aid to Sudan and explains that aid constitutes one of the key channels through which the impact of China economic growth are transmitted to Sudan as a case of African economy. Therefore, it would be useful to examine the motives and effectiveness of Chinese aid and development assistance to Sudan.

1.2 Research Objectives and Questions

Based on the above, this study aims to address the following issues: a detailed and comparative review of international aid to Sudan (size and sectoral distribution), the key features of and the significance of Chinese aid against aid from other donors over the period (1997-2007). A detailed analysis of the disciplinary focus of Chinese training and scholarship programmes paying attention to the relative influence of national authorities and Chinese authorities in determining the disciplinary focus of such assistance, i.e., the extent to which the assistance is demand or donor driven. A detailed analysis of Chinese aid-assisted construction of buildings and other infrastructures, the presence of implicit capacity building and the implication for project maintenance programme, the nature and extent of implicit technology transfer; the sources of material inputs used and the short and long term implications. A detailed analysis of technical assistance with special emphasis on the presence or otherwise of training of local staff/counterparts necessary to ensure that the local staff will be competent enough to sustain activities at the end of the technical assistance; the presence of otherwise of implicit transfer of technology. Analysis of the risks of initiating another round of high indebtedness on account of Sudan aid relations with China most of which are in the form of concessional loans and articulation and analysis of the policy responses necessary to optimize aid relations with China if and when China acquires the attributes of an advanced industrialized economy and the associated changes in the features and pattern of its aid relations with Sudan.

Concerning the research objectives, the main reason of this research project is to tackle a comprehensive analysis of China-Sudan aid relations as a case of Sub-Saharan African countries. Hence, the objectives of this research project include:

- Identification and analysis of the importance of Chinese aid and development assistance to Sudan compared to the international aid and development assistance from other countries transmitted to Sudan economy over the period (1997-2007).
- Qualitative and quantitative evaluation of the nature, dimensions and magnitudes of the Chinese aid to Sudan over the period (1997-2007).

- Identification and analysis of the distribution of the Chinese aid and development assistance transmitted to the Sudan sector- specific over the period (1997-2007).
- Articulation and analysis of the impacts of Chinese aid and development assistance to Sudan over the period (1997-2007) and analysis of the policy responses and overall development strategies for maximizing the benefits and confronting the challenges emanating from the development assistance and aid relations with China.
- Finally, within Sudan, the project seeks to analyze sectoral distribution by focusing on the following key sectors: services and infrastructure (building and construction, electricity and water supply) over the period (1997-2007).

Based on the above objectives this research aims to answer the following questions:

- How important is the channel of Chinese aid and development assistance to Sudan economy over the period (1997-2007)?
- What are the nature, dimensions, magnitudes and distribution of the Chinese aid and development assistance transmitted to the Sudan sector- specific over the period (1997-2007)?
- What are the effects and impacts of Chinese aid and development assistance to Sudan over the period (1997-2007)?
- How important, and in what ways, is Chinese aid related to the main trade and FDI channels of the importance of oil to Chinese economy?

1.3. Organization of the Report

This research report includes six sections, it will be organized in the following way: section 1 provides introduction and shows research objectives; questions and structure; section 2 gives background and the context of the research; section 3 provides the literature review on aid and review of other literature on aid to Sudan from other countries; section 4 shows the research methodology; data and justification for the selected cases; section 5 gives the empirical analysis, findings, policy implications and assessment of Chinese aid to Sudan over the period (1997-2007); and finally section 6 provides the conclusion and policy recommendations.

2. Background and the Context of the Research

This project is motivated by the observation that the extremely rapid and sustained expansion of the giant economy of China has been associated with a robust and increasing intensification of its economic relations with Sudan and Sub-Saharan African countries, and that these relationships are, in turn associated with both opportunities and challenges for Sudan and African countries. Based on the above and before reviewing literature and discussing methodology and analysis, it is useful to start this section with background and context of the

research, we explain the motivation, overview of Sudan economy, growth structure, trend and distribution of Chinese aid, Chinese aid policy towards Sudan, Sudan's foreign aid policy towards China and other countries, institutional arrangements and context of the policies.

2.1. Motivation and Overview of Sudan Economy

One stylised fact on the case of Sudan is that Sudan is large by regional standards, but its economy is small in global terms. According to World Bank and United Nations classification and definition, Sudan is classified among Sub-Saharan African countries and amongst the poor and low income and highly indebted countries. For instance, Table 1 below shows the low GDP per capita income in Sudan which is in excess of only least developing countries, but less than all other World regions. Despite the high and increasing inflow of Foreign Direct Investment (FDI) to Sudan, but different from other World regions, Sudan suffered from the high increase in debt services both as percentage of GDP and as percentage of exports over the period (1990-2004). Moreover, Tables 2.A-2.B indicates that Sudan is amongst the top ten recipients of gross Official Development Assistance (ODA) over the period (1990-2007).

Table 1- GDP Per capita, Inflow of Foreign Direct Investment (FDI), Private capital and Debt services in Sudan Compared to other World regions (1990-2005) (US\$ Millions) .

Country and Regions	GDP Per capita	Official development assistance (ODA) received (net disbursements)				FDI		Private Capital		Debt services			
		Total (US\$ millions)	Per capita (US\$)	As % of GDP		% GDP		%GDP		% GDP		% Exports	
				1990	2005	1990	2005	1990	2005	1990	2005	1990	2005
Sudan	2,083	1,828.6	50.5	6.2	6.6	-0.2	8.4	0.0	0.2	0.4	1.4	8.7	6.5
Developing countries	5,282	86,043.0	16.5	1.4	0.9	0.9	2.7	0.5	1.5	4.4	4.6	15.6	13.0
LDCs	1,499	25,979.5	33.9	11.8	9.3	0.3	2.6	0.5	0.8	3.0	2.3	16.9	7.0
Arab countries	6,716	29,612.0	94.3	2.9	3.0	0.5	1.5	n.a.	1.8	n.a.	n.a.	21.3	8.5
Asia and the Pacific	6,604	9,541.6	4.9	0.8	0.2	1.7	3.4	n.a.	n.a.	n.a.	n.a.	9.9	2.6
Latin America and the Caribbean	8,417	6,249.5	11.3	0.5	0.3	0.8	2.9	0.5	1.2	4.0	6.6	23.7	22.7
South Asia	3,416	9,937.5	6.3	1.2	0.8	n.a.	0.8	0.3	1.2	2.3	2.6	22.8	15.4
Sub-Saharan Africa	1,998	30,167.7	41.7	5.7	5.1	0.4	2.4	0.3	1.7	n.a.	n.a.	10.5	5.8
Central and Eastern Europe	9,527	5,299.4 T	13.1	n.a.	0.3	n.a.	4.0	n.a.	4.4	n.a.	n.a.	n.a.	n.a.
OECD	29,197	759.4	n.a.	n.a.	n.a.	1.0	1.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
High Income countries	33,082	n.a.	n.a.	n.a.	n.a.	1.0	1.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Middle Income countries	7,416	42,242.2	13.7	0.7	1.3	0.9	3.1	0.4	2.2	4.5	5.5	20.3	14.3
Low Income countries	2,531	44,123.0	18.2	4.1	3.2	0.4	1.4	0.3	1.0	3.7	3.1	27.1	13.7
World	9,543	106,372.9	16.3	0.3	0.2	1.0	1.9	n.a.	2.0	n.a.	5.1	n.a.	n.a.

Source: UNDP- HDR (2007) pp. 231-232, 392-293. Note: (n.a.) means that data and information are not available

Table 2.A. Top Ten Recipients of Gross Official Development Assistance (ODA) (USD Millions)

Country	ODA Amount (US\$ Million Dollars) (2006) ^a
Iraq	12,924.00
Nigeria	3,160.00
China	2,682.00
Afghanistan	1,946.00
Indonesia	1,867.00
India	1,785.00
Ghana	1,394.00
Egypt	1,319.00
Vietnam	1,312.00
Sudan	1,163.00

Source: OECD, DAC 2006, www.oecd.org/dac

Table 2.B- Official development assistance (ODA) and official aid offered to Sudan (1990-2007) (current in US\$)

Year	(ODA) Amount (US \$ Millions)
1990	813130000
1991	867000000
1992	536310000
1993	447600000
1994	407600000
1995	237020000
1996	217680000
1997	138450000
1998	209390000
1999	242950000
2000	220390000
2001	180530000
2002	343300000
2003	612670000
2004	991700000
2005	1829060000
2006	2051820000
2007	2104190000

Source: The World Bank- World Development Indicators Database (WDI) (April 2009).

Since long, Sudan economy has been characterized by low GDP per capita income, presence of high rates of poverty, unemployment and inequalities. Therefore, according to World Bank classification, Sudan was classified amongst the least developed and highly indebted economy, but in recent years following the improvement in the economic performance, Sudan turned from a low income economy into a lower medium income economy according to the World Bank classification. Over the past decades, Sudan suffered from weak economic performance and an uneven growth until recent years. Since the late 1990s economic reform policies, there are significant improvements in most macro indicators and impressive real growth and rapid increase in per capita incomes. Despite the recent impressive real growth and rapid increase in per capita incomes but emerging vulnerabilities and little progress in social indicators still exist. This is evidence from the recent UNDP (2007) statistics on Human Development Indicators which indicates Sudan is classified amongst the bottom of developing countries in terms of HDI, as it ranked 147 out of 177 developing countries. Since long, the structure of Sudan economy is characterised by small share of manufacturing and high share of agriculture and services sectors in GDP and employment- See Table 3 below.

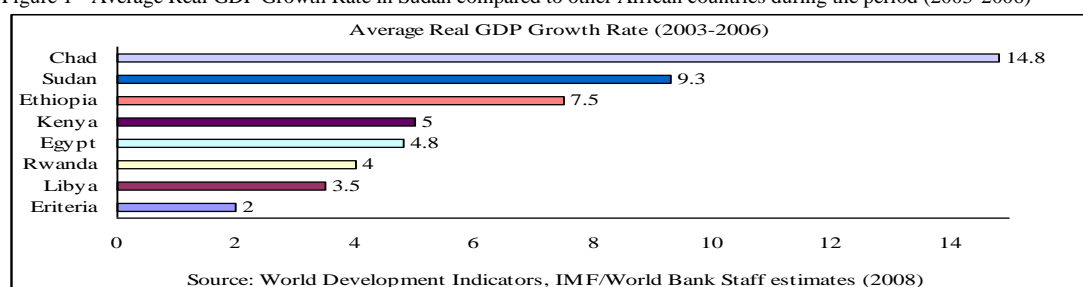
Table 3- Structural Change in Sudan Economy (1990-2007)

Year	GDP	GDP Growth Rate	Inflation Rate	Exchange Rate	Balance of Trade			Structure of Sudan Economy (share of sectors in GDP)		
					Exports	Imports	Balance	Agriculture	Industry	Services
1990	244.7	5.4	41	0.45	374	618.4	-244.4	30.3	15.4	54.4
1991	276.8	7.5	62.7	0.69	308.7	890.3	-581.6	28.7	17.6	53.9
1992	4327.8	6.5	105.4	9.7	319.3	820.9	-501.6	33.7	17.1	49.1
1993	5862.1	4.5	115	16.1	417.3	944.9	-527.6	37.9	17.4	44.5
1994	6351.2	1	96.3	29.6	535.6	1059.6	-524	40.1	16.4	43.5
1995	9880.7	5.9	177.2	55.9	555.7	1184.8	-629.1	43.1	15.8	41.1
1996	8259.3	5.9	76.3	125	620.3	1504.5	-884.2	44.9	14.5	40.6
1997	10684.8	6.3	52.6	156.9	594.2	1421.9	-827.7	47.6	15.1	37.2
1998	11513.7	6.4	28.2	198.8	595.7	1732.2	-1136.5	48.6	15	36.2
1999	10325	6.7	6.4	252	780.1	1256.2	-476.1	49.8	15.8	34.4
2000	11242.2	8	8.5	257.2	1807	1553	254	46.4	21.4	32.2
2001	12596.5	6.7	4.8	257.3	1547	1457	90	45.6	22.8	31.6
2002	3924	6.5	8.3	236	1949	2179.22	-230.11	46	23.2	30.9
2003	4549	6	7.7	261	2542.2	2536.1	6.07	44	24.1	30.3
2004	5278	7.2	8.5	258	3777.75	3586.18	191.57	40	28.0	32.0
2005	6283	8	8.5	245.6	4824.3	5945.9	1121.7	39.0	28.0	32.0
2006	22,217.0	10.0	7.2	2,0248	5,656.6	7,104.7	-1,448.1	36.8	27.5	35.7
2007	24,553.1	10.5	8.1	2,0308	8,879.2	7,722.4	1,156.8	35.3	30.6	34.1

Sources: (1) Ministry of Finance and National Economy, (2) Central Bank of Sudan (3) Central Bureau of Statistics.

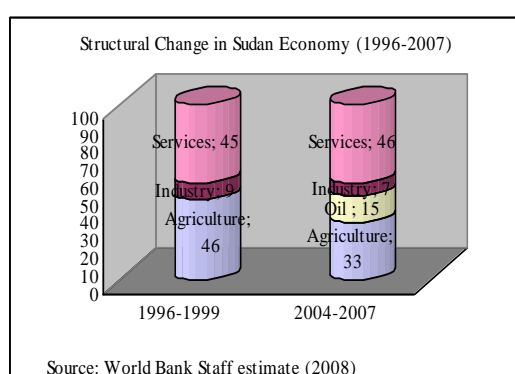
Sudan economy is characterised by dependence on primary exports, since long the economy was dependent on the exports of agricultural products, in recent years after the exploitation of oil Sudan economy become increasingly dependent on oil exports, and the economy turned into an oil dependent economy. Sudan's non-oil exports are diversified across a wide range of products, but most of these exports are concentrated in few countries (WB-DTIS, 2008). Sudan's real growth of trade of 25% in 2007 represents the second highest growth in the world for that year among all countries (WB-DTIS, 2008). In recent years the increasing dependence on oil leads to sound economic growth. Consequently, Sudan's real economic growth averaged about 9% during (2005-2006), putting Sudan among the fastest growing economies in Africa (WB, 2008)- see Figure 1 below. According to the World Bank (2008) Sudan is one of the newest significant oil producing countries in the World; Sudan is the third largest oil producers in Sub Saharan Africa (SSA) behind Nigeria and Angola. As a result, in recent years, the structure of the Sudanese economy has shifted over time, from predominantly reliant on agriculture for growth and exports, to its current reliance on the oil sector (WB, 2008)- See Figures 2-3 below. But the increasing dependence on oil leads to increasing debate for and against the incidence of the Dutch Disease in Sudan economy.

Figure 1 - Average Real GDP Growth Rate in Sudan compared to other African countries during the period (2003-2006)



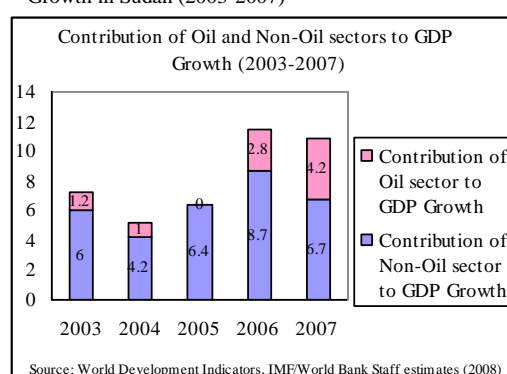
Source: The World Development Indicators (WDI)/ IMF/World Bank Staff Estimate (2008)

Figure 2- Structural Change in Sudan Economy (1996-2007)



Source: The World Development Indicators (WDI)/ IMF/World Bank Staff Estimate (2008)

Figure 3- Contribution of Oil and Non-Oil Sectors to GDP Growth in Sudan (2003-2007)



Moreover, like most African countries, Sudan's economy has relied heavily on a large influx of foreign aid from different sources as we will explain below.

2.2. Sudan's Foreign Aid Policy towards China and other Countries

This section gives an assessment of Sudan's foreign aid policy towards China and other countries (1999-2007). In particular, it provides a comparative review of the size, distribution and significance of international aid to Sudan from China and other donors during (1999-2007). We use the data from the Central Bank of Sudan Annual Reports (1999-2007).²

As in most other African economies, since long, Sudan's economy has relied heavily on a large influx of foreign aid from different sources. For example, the U.S., EU (e.g. the Netherlands, Italy, Germany), Arab countries (e.g. Saudi Arabia, Kuwait), China, World Bank, International Monetary Fund (IMF), United Nations and Organization of Petroleum Exporting Countries (OPEC) have supplied most of Sudan's economic assistance. Since 1970s, China also started to offer aid and development assistance to Sudan. During the late 1970s and 1980s, the International Monetary Fund (IMF), World Bank, had been the largest sources of development loans and key donors to Sudan. However, since 1989 many donors in Europe, the U.S., and Canada have suspended official development assistance; and since 1993 the IMF and the World Bank suspended their assistance to Sudan due to accumulation of Sudan's debt and deterioration in the relationship with the international financial institutions.

China Sudan aid relation started in 1970s, among the communist countries, China had been the most important aid donor to Sudan. Chinese aid to Sudan continued into the 1980s. Since the mid- 1990s, following the large drop in the inflow of foreign aid from the traditional western donors, Sudan looked for other alternative sources of foreign aid and development assistance from the emerging donors, mainly China. This policy is incidentally consistent with China's increasing economic interests in Sudan as a new resources - oil -rich economy.

The period (1999-2002) was characterized by persistently low inflows of foreign aid loans and grants. But the total inflows of foreign aid loans and grants increased over the period (2002-2007) as a result of Sudan government open and outward looking policy and persistent efforts to improve the relations with donors from different countries, regional and international organizations and institutions in order to finance infrastructure and other projects. We observe that over the period (1999-2007) total loans and grants offered by several donor countries and international institutions increased from 77304 in 1999 to 1506749063 in 2007- see Table 4 below. For instance, loans are offered by China, IFAD, Islamic Development Bank, Saudi development Fund, Abu Dhabi fund, Kuwaiti Fund, Arab Fund for Social and Economic Development, Oman, OPEC Fund, India, Iran, Netherlands, Arab Monetary Fund and Fund Donors. Whereas grants are offered by China, Islamic Development Bank, World food program (W.F.P), Arab Fund for Social and Economic

² See the Central Bank of Sudan Annual Reports (1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006 and 2007).

Development, IFAD, France, China, Multi Donor Trust Fund, United Nations Population Fund, African Development Fund and Japan- see Table 4 below.

Table 4- Total Foreign Aid (loans and grants) offered by China and other Aid Donors to Sudan (1999-2007) (US\$ Millions)

	1999	2002	2003	2004	2005	2006	2007
(a) Grand Total loans and grants Amount (US\$ Millions)	77.304	701.00	131.77	249.92	1075.8	727.6	1506749063
(b) Donors countries and institutions (US\$ Millions)							
Islamic Development Bank	53604	34.47	42.76	23.00	63.7	42.4	17817832698.92
Saudi Arabia Fund for Development		150.00	8.43				100000000.00
Abu Dhabi Fund for Development		100.00	50.00				
Kuwait Fund for Development		100.00					
Arab Fund for Economic and Social Development		150.00	11.35	131.50	84.3	11.6	300358.55
Arab Monetary Fund					45.0		
OPEC Fund			12.00				20600000.00
Oman		106.00	29.26				
Republic of China	13.200	50.7	1.20	18.40	815.2	174.7	1104921672.00
Indian Finance Facility				50.00		981.4	100000000.00
France				0.40	0.4		
Netherlands					21.5		
Iran					18.5		
Japan							750000.00
African Development Bank				0.50			14300000.00
International Fund for Agricultural Development (IFAD)	10.500		0.08	25.00	25.5		24800000.00
Multi Donor Trust Fund						107.1	
Fund Donors							56400000.00
World Food Program,		9.83	5.58	1.62	1.2	2.87	
United Nations						162.88	

Sources: Adapted from the Central Bank of Sudan Annual Reports (1999-2007); Ministry of International Cooperation and Ministry of Finance and National Economy.³

According to the Central Bank of Sudan annual reports (2000-2005) the share of the Arab Fund for Social and Economic Development loans comprised 65% of total contracted loans, whereas, the share of China in both loans and grants in 2000 and 2001 is zero. The Saudi Fund and the Arab Fund for Economic and Social Development (AFESD) loans and grants contracted represent 21.7% of the total from each, 15.3% from Oman, Abu Dhabi and Kuwait funds 15.3% from each, China and the Islamic Development bank loans and grants represent 7.3% and 5.1% of the total loans and grants contracted in 2002 respectively. According to the Central Bank of Sudan annual report (2003) as for the distribution and share of donors in total loans, Abu Dhabi Fund loans represented 43.73%, Islamic Bank for Development 37.03%, the OPEC Fund 10.49%, and China 8.75% out of the total loans contracted during 2003. The Arab Fund for Economic and Social Development represented 54.1%, International Fund for Agricultural Development 10.2%, Islamic Development Bank 9.9%, China 6.1%, and India 20.6% of total loans contracted in 2004. China constituted 75.9%, from the Arab Fund for Economic and Social Development, 6.4%, Islamic Development Bank, 4.9% and the Arab Monetary Fund, 3.4% of the total loans contracted in 2005.

So, Sudan aid policy with China is improved because of flexibility and easy conditionality of Chinese aid compared to Western donors, Sudan perceives Chinese aid as important alternative to Western aid conditionality as we explain below.

³ See the Central Bank of Sudan - Annual Report 1999; 2000; 2001: Chapter X Flow of External Resources. See also the Central Bank of Sudan - Annual Reports: 2002; 2003; 2004; 2005; 2006 ad 2007: Chapter 10: Foreign Loans and Grants.

2.3. Growth, Structure, Trend and Distribution of Chinese Aid to Sudan:

This section provides an assessment of growth, structure, trend and distribution of Chinese aid to Sudan over the period (1997-2007). We first show the importance of the Chinese aid and development assistance to Sudan and then examine the trend, nature, dimensions, magnitudes, composition and sectoral distribution of the Chinese aid and development assistance transmitted to Sudan over the period (1997-2007).

To explain the importance of the Chinese aid and development assistance to Sudan compared to the international aid and development assistance from other countries transmitted to Sudan, we use quantitative secondary data to provide detailed investigation of the share of Chinese aid and development assistance to Sudan relative to (as percentage of) total foreign and international aid and development assistance from other countries transmitted to Sudan economy over the period (1997-2007). For instance, the data in Table 5 shows the total Chinese aid (measured by loans and grants) to Sudan over the period (1999-2007) and implies an irregular and considerable fluctuation in Chinese aid (loans and grants) to Sudan. For instance, the share of China in total loans and grants offered to Sudan show a declining trend over the period (1999-2004), the share of China in total foreign aid (loans and grants) to Sudan declined from 17% in 1999 to 0%, 0%, 7%, 8% and 7% in 2000, 2001, 2002, 2003 and 2004 respectively. But the share of China in total foreign aid (loans and grants) to Sudan dramatically and rapidly increased to 76% in 2005, the share declined once again to 24% in 2006 but it increased again to 73% in 2007. One possible explanation of this changing trend is that the rapid increase in the share of China in total foreign aid (loans and grants) to Sudan in 2005 and 2007, is probably attributed to China's consistent policy to increase cooperation and involvement of China in Africa by increasing aid, investment and trade with African countries including Sudan. Moreover, another interpretation is that the implementation of peace agreement accord in 2005, probably have encouraged China to increase her involvement in offering aid and development assistance to Sudan. Another justification is the increase of China involvement in oil sector in Sudan. On the other hand the declining trend in 2006 probably due to the policy of China government to reduce her development assistance and aid to developing and African countries, including Sudan, another interpretation is probably due to general decline in Chinese grant to Sudan from 36% in 2005 to 14% in 2006, the year which witnessed rapid increase in the share of grants in total foreign aid offered by all foreign donors to Sudan from 0.3% in 2005 to 19% in 2006. Our findings fulfil the first objective regarding the high and significant share of Chinese aid and development assistance to Sudan compared to international aid and development assistance from other countries transmitted to Sudan economy as a case study of African economy over the period (1997-2007). We observe the rising share and significance of the Chinese aid and development assistance to Sudan from 33% to 45% and 58% during the periods (2002-2007), (2004-2007) and (2005-2007)

respectively- see Table 5. The findings in this section are consistent with the stylized facts which indicate the rising share and significance but irregular and considerable fluctuation in the Chinese aid and development assistance to Africa over the period (1999-2007).

Table 5- The Distribution, Trend and Share of China in total loans and grants offered to Sudan (1999-2007) (US\$ Millions)

	1999	2000	2001	2002	2003	2004	2005	2006	2007
China Total loans	12000	0	0	50,7	10	14,8	814	155,2	1104921672
China Total grants	1200	0	0	0	0	3,6	1,2	19,5	0
China Total loans and grants	13200	0	0	50,7	10	18,4	815,2	174,7	1104921672
% of Chinese grant	9%	0	0	0	0	20%	0.1%	11%	0
% of Chinese loan	91%	0	0	100%	100%	80%	99.1%	89%	100%
Grand Total loans	76104			691,17	114,35	243,2	1072,5	589,5	1491113704
Grand Total grants	1200			9,83	17,42	6,72	3,3	138,2	15635358,55
Grand Total loans and grants	77304			701	131,77	249,92	1075,8	727,6	1506749063
% of grant in total	2			1	13%	3%	0.3%	19%	1%
% of loan in total	98%			99%	87%	97%	99.7%	81%	99%
% of China in total loans	16%	0%	0%	7%	9%	6%	76%	26%	74%
% of China in total grants	100%	0%	0%	0%	0%	54%	36%	14%	0%
% of China in total loans and grants	17%	0%	0%	7%	8%	7%	76%	24%	73%
% of China in total loans and grants (2002-2007)				33%					
% of China in total loans and grants (2004-2007)						45%			
% of China in total loans and grants (2005-2007)							58%		

Sources: Adapted from the Central Bank of Sudan Annual Reports (1999-2007); Ministry of International Cooperation and Ministry of Finance and National Economy.

To discuss and evaluate the magnitudes and trend of the Chinese aid and development assistance transmitted to Sudan economy over the period (1997-2007) we use quantitative data to reflect the change in the aggregate structure and volume or magnitude of aid flows from China to Sudan. In particular, we use and compare the magnitude or quantitative volume and share of Chinese aid and development assistance to Sudan (1970-2008), Table 6 shows the large quantitative volume or magnitude of Chinese total financial aid (loan and grants) over the period (1970-2008) that amounted to US\$ 2488.6 million. The trend of overall incidence of the Chinese aid and development assistance to Sudan varies significantly over the period (1970-2008). For instance, we observe the rapid increasing trend of China financial aid, loans and grants to Sudan from US\$ 22.5 million to US\$ 66.8 million and finally US\$ 2399.3 over the periods (1970-1979), (1980-1989) and (1990-2008) respectively. The distribution of overall incidence of Chinese aid and development assistance to Sudan varies significantly over the period (1970-2008). For instance, of total financial aid, loans and grants that amounted to US\$2488.6 million the distribution is 1%, 3% and 96% for the periods (1970-1979), (1980-1989) and (1990-2008) respectively. This implies a rapid increasing trend of China financial aid, loans and grants to Sudan over the past 18 years, since the incidence of majority of financial aid, loans and grants to Sudan occurred during the period (1990-2008)- see Table 6 below.

Table 6- China Government Total Financial Aid, Loans and Grants to Sudan Government (1970-2008 in million US\$)

Period (1970-2008)	China Total Financial Aid, Loans and Grants	Distribution of the share in total (%)
1970-1979	22.5	1%
1980-1989	66.8	3%
1990-2008	2,399.3	96%
Total 1970-2008	2,488.6	100%

Source: Sudan Ministry of Finance and National Economy (2008) - Unpublished Report (2008).

Regarding the nature and dimensions of China financial aid, loan and grant to Sudan (1990-2008), Table 7 shows the differences in the composition, nature and distribution of China financial aid defined by different forms or types including loans and grants offered to Sudan during the period (1990-2008). For instance, of total Chinese financial aid (loans and grants) the share of grants, technical and commodity aid, loans without interest rates, preferential loans and commercial loans as follows 2%, 3%, 5%, 3% and 87% respectively. This composition indicates that the majority of Chinese financial aid (loans and grants) offered to Sudan over the period (1990-2008) were in the form of commercial loans (87%). This composition also implies that of total Chinese financial aid (loans and grants) offered to Sudan over the period (1990-2008) the share of total grants and technical and commodity aid (5%) is less than the share of total loans (95%). This finding is consistent with the observation that over the period (2005-2007) the majority of aid offered for the establishment of the new presidential palace (CNY 260 million) was offered in the form of loans without interest rate (CNY 240 million, i.e. 92%), while very little offered in the form of grants (CNY 20 million, i.e. 8%). These results are also consistent with the results in Table 5 above which indicates that the range of the share of Chinese grants (0%-20%) is less than Chinese loans (100%-80%). These findings probably indicate that the composition of China- Sudan aid relations is by nature motivated by or based on mutual economic and commercial benefits and interests.

Table 7 – The Composition, Nature and Distribution of China financial aid, loan and grant to Sudan (1990-2008)

Form and kinds	Number	Value (US\$ millions)	Distribution and Share in total %
Grant	13 grants	US\$40.1 million	2%
technical and commodity aid		US\$56.7 million	3%
Total grants		96.8	5%
Loans without interest rates		US\$89.4 millions	5%
Preferential loans	3		
Preferential loans		US\$18.0 million	1%
Preferential loans		US\$12.1 million	1%
Preferential loans		US\$19.5million	1%
Total			3%
Commercial loans		US\$1649.1 million	87%
Grand total			100.00%

Source: Sudan Ministry of Finance and National Economy, Sudan Ministry of National Cooperation-Unpublished Report (2008).

To show the feature related to fragmentation in sectoral distribution of the Chinese aid and development assistance transmitted to Sudan economy over the period (1997-2007), we use quantitative data on the distribution of the Chinese aid and development assistance to different sectors in Sudan. We observe the biased nature towards specific sectors particularly, services and infrastructure: building and construction, electricity and water supply over the period (1997-2007). For instance, Table 8 below show the concentration and biasness of

Chinese aid and development that directed toward specific infrastructure sectors, for instance, electricity and water supply. For example, an unpublished data from Sudan Ministry of Finance and National Economy on the sectoral distribution of China aid and development assistance to Sudan over the period (1997-2008) indicates that of total aid amounted to US\$ 3427.2 millions the distribution between the main sector as follows: Electricity amounted to US\$ 1473.7 millions, Water and Irrigation amounted to US\$ 877.3 millions, Merowe Dam amounted to US\$ 520 millions, Khartoum Refinery amounted to US\$ 319 millions, others sectors amounted to US\$ 102 millions, Agriculture mounted to US\$ 88.6 millions and Roads and Bridges mounted to US\$ 46.6 millions, which implies that their share represents about 43%, 26%, 15%, 9%, 3%, 3% and 1% respectively. Using the same data from Sudan Ministry of Finance and National Economy on the sectoral distribution of China aid and development assistance to Sudan (1997-2008) and after considering the adjustment of the separate fund offered to Merowe dam and related projects within the total aid amounted to US\$ 3427.2 millions, the result indicates that the share and distribution between the main sectors as follows: Electricity amounted to US\$ 1473.7 millions, Water and Irrigation amounted to US\$ 877.3 millions, Merowe Dam amounted to US\$ 603.1 millions, Khartoum Refinery amounted to US\$ 319 millions, others sectors amounted to US\$ 102 millions, Roads and Bridges mounted to US\$ 36.6 millions and Agriculture mounted to US\$ 15.1 millions, which implies that their shares represent about 43%, 26%, 18%, 9%, 3%, 1% and 0.45% respectively.

Table 8 – The Sectoral Distribution of China financial aid, loan and grant to Sudan (1997-2008)

Sector	Total (US\$ million)	Share (%)	Sector	Total (US\$ million)	Share (%)
Electricity	1473.7	43%	Electricity	1473.7	43%
Water and Irrigation	877.3	26%	Water and Irrigation	877.3	26%
Merowe Dam	520	15%	Merowe Dam and related projects	603.1	18%
Khartoum Refinery	319	9%	Khartoum Refinery	319	9%
Other Sectors	102	3%	Other Sectors	102	3%
Agriculture	88.6	3%	Agriculture	15.5	0.45%
Roads and Bridges	46.6	1%	Roads and Bridges	36.6	1%
Total	3427.2	100%	Total	3427.2	100%

Source: Sudan Ministry of Finance and National Economy, Sudan Ministry of National Cooperation-Unpublished Report (2008).

Our result support the stylised fact related to fragmentation in sectoral distribution of the Chinese aid and development assistance transmitted to Sudan economy over the period (1997-2007). For instance, the sectoral distribution of the Chinese aid to Sudan implies that considerable amount of Chinese aid is allocated to Energy sector. For instance, Khartoum Refinery is established and constructed in accordance with the partnership agreement project implemented jointly between Sudan government represented by Sudan Ministry of Energy and Mining, namely, SUDAPET (50%) and China National Petroleum Corporation (CNPC) (50%). According to the contractual agreement each partner paid and owned 50% for specific time period, Sudan Ministry of Energy and Mining paid US\$ 320 millions (50%) and China CNPC offered loan equivalent to US\$ 320 millions (50%) of the total initial cost was

equivalent to US\$ 640 millions for the establishment of the refinery. Moreover Chinese aid contributed to implementation of several projects related to electricity sector. For instance, China is the first foreign country that has involved in contractual agreement and cooperation in electricity generation and transmission that has contributed to benefit the improvement and increasing electricity generation in Sudan. Harbin is the first Chinese and foreign company that contributed to electricity generation projects in Sudan and it has succeeded in implementing and achieving Garri 1 and Garri 2 and now progressing to implement Garri 3. CMAC which is considered one of the largest Chinese companies is the second Chinese company that contributes to the implementation and transmission of Merowe electricity transmission lines; it also contributes to implementation of Garri 4 and extension of Khartoum North (Khartoum Bahri) thermal electricity with capacity equivalent to 200 MW. Chinese aid and cooperation in electricity generation and transmission lines significantly contributed to shorten gap and increase availability and stability of electricity services in Sudan. For instance, Dan Large (2009) indicates that energy sector activity by Chinese corporations has also been central to recent economic relations. Initiated by the Sudanese Ministry of Energy and Mining and Sudan National Electricity Corporation, the Elgaili Power Station gas and oil-fired power plant epitomises the positive contribution to developing Sudan's energy sector and improving livelihoods. Lu Hua, manager of the Harbin Power Engineering Company's second phase extension of the Elgaili power station argued the project had answered the need for power: 'The local people lovingly refer to Chinese and Sudanese workers taking part in the project as "bringers of light."⁴ The first phase of the project came online in August 2004 with a capacity of 200,000 kW or what was cited as accounting for approximately one third of Sudan's national total generation capacity.⁵

A small amount of Chinese aid is utilised in agriculture, for instance, Chinese loan equivalent to US\$ 15.5 millions was used by Chinese company CAMC for implementation of Sondis project in Sudan in 1997. Moreover, Chinese loan equivalent to US\$ 37.9 millions and US\$ 35.2 millions were used by Chinese company CWE for implementation of New Amri and Mikabrab agricultural projects in Sudan in 2003 and 2004 respectively. In addition, an unpublished data and information from Sudan Ministry of International Cooperation indicate that during the visit of Sudan vice president to China in June 2008, China and Sudan signed an agreement of grant of total amount equivalent to CNY 30 million that will be allocated for the establishment of agricultural centre and Chinese hospital in Damazine. According to Dan Large (2009) agriculture is a final area of current cooperation that rests upon future growth. A programme of agricultural cooperation has expanded, with fresh agreements signed in 2008. For Sudan and China, mutual benefit is operative in this sector too: Khartoum looks to China

⁴ Sudanese minister commends energy cooperation with China', Xinhua (domestic service), Beijing, 15 July 2007.

⁵ See Dan Large (2009), pp.8-9.

for technology and technical assistance, and Beijing looks to Sudan as a potential ‘breadbasket of Africa’ or ‘the hope of a hungry Arab world’. Under new agreements signed in 2008, China will establish an ‘agro-technology’ demonstration centre in al-Gezira State and looks set to expand its programme of agricultural cooperation in a more systematic manner. Such is the keen level of current interest that agriculture is even touted as having the potential to become an even more important cooperation area than oil. China is in the process of reinventing the older notion of Sudan as the breadbasket of Africa.⁶

The sectoral distribution of Chinese aid to Sudan indicates that a small amount of Chinese aid is utilised in water supply and irrigation sector. For instance, China offer aid in the form of water irrigation equipment equivalent to US\$0.6 millions in 1997 and aid for Elobeid water equipment equivalent to US\$4.5 millions offered and implemented by Chinese SHOGO Company in 1999. In addition to aid to rural-urban irrigation project equivalent to US\$9.3 millions implemented by Chinese CMIC Company in 2000 and aid for water stations project equivalent to US\$10.0 millions in 2003. Further to aid offered to Nyala water project equivalent to US\$49.0 millions, Eldali and Mazmoum water project equivalent to US\$25.1 millions and drinking water equipment equivalent to US\$9.9 millions to be implemented by Chinese CMIC Company in 2004. Further to aid for digging and irrigation public corporation equipment equivalent to US\$13.3 millions and Port Sudan water project equivalent to US\$467.0 millions, Gadarif water project equivalent to US\$67.2 millions, Fashir water project equivalent to US\$32.5 millions to be implemented by Chinese CAIMC Company in 2004, 2004, 2005 and 2005 respectively. In addition to aid in the form of irrigation water equipment equivalent to US\$12.4 millions, irrigation equipment equivalent to US\$9 millions and for digging 50 under ground water stations in northern Kordfan state equivalent to US\$3.7 millions to be implemented by Chinese BOSHAN Company in 2004, 2005 and 2005 respectively. Further to aid to Dongle water project equivalent to US\$34.1 millions, Almatama Abuohamid Aldaba water project equivalent to US\$26.5 millions and for digging 150 under ground water stations equivalent to US\$9.2 millions to be implemented by Chinese TIANJIN Company in 2005. In addition to aid for Madani water project equivalent to US\$28.9 millions and Kosti water project equivalent to US\$29.9 millions to be implemented by Chinese CAMCO Company in 2005.

The sectoral distribution of Chinese aid to Sudan indicates that part of Chinese aid is utilised in construction, transport and infrastructure sector for the establishment of dams, railway line, roads and bridges. For example, China offer Sudan loan equivalent to US\$520 millions for building the Merowe dam, the contractor of dam’s body is composed of a Chinese Consortium called the CCMD, which comprises two giant joint venture Chinese

⁶ See Dan Large (2009), pp.8-9.

engineering companies: the China International Water and Electric Corporation CWE and the CWHEC Company. In addition, the Chinese company Sinohydro sent a large number of international high skilled and efficient engineers to Sudan for the implementation of Merowe dam, rehabilitation of Roseires dam, study, design and implementation of new dams in Southern Sudan. Furthermore, in 2004 China offered loans to Sudan equivalent to US\$24.2 millions were used by the Chinese company POLY for the establishment of Rofa bridge project US\$10.6 millions and Eldowaim bridge project US\$13.6 millions. Moreover, in a project accompanied the establishment of Merowe dam project, China (CNPC-Jilin) offered grant for the establishment of the Friendship Bridge, the total cost for the establishment of the friendship bridge is equivalent to US\$ 14 million, the Chinese (CNPC) grant equivalent to US\$10 millions, which represents 71%, while the contribution of the Sudan government was only 29% of the total capital and costs offered for the establishment of the bridge. Moreover, Harbin-Jilin earlier contributed to the construction of Senja bridges, built Alingaz bridge in the White Nile, supervises Manshia bridge and others small bridges, Merowe Bridge, Kosti port road for facilitating trade between Kosti and Southern Sudan.

The sectoral distribution of Chinese aid to Sudan indicates that a small amount of Chinese aid is utilised in health sector. For instance, Chinese grant equivalent to US\$ 7.7 millions was utilised for establishment of Chinese Friendship Omdurman Hospital in Sudan in 1984. Further grants were offered for reforming of Chinese Friendship Omdurman Hospital and Radio Therapy Hospital equivalent to US\$ 0.2 millions in 1995, for medical equipment equivalent to US\$ 1.0 millions in 1996, for reforming of Chinese Friendship Omdurman Hospital and Radio Therapy Hospital equivalent to US\$ 0.2 millions in 1999. In addition, an unpublished data and information from Sudan Ministry of International Cooperation indicate that during the visit of Sudan vice president to China in June 2008, China and Sudan signed an agreement of grant of total amount equivalent to CNY 30 million that will be allocated for the establishment of agricultural centre and Chinese hospital in Damazine. Moreover, China offers Sudan grant equivalent to US\$ 2.9 millions to be utilised for the establishment of Southern Sudan Romaik hospital in November 2008.

The sectoral distribution of Chinese aid to Sudan include training and education sector. Direct allocation of Chinese aid to education is very limited, for instance, during the Chinese president visit to Sudan in February 2007 China offer grant for implementation of rural schools, China sent the design for two schools which was sent to ministry of education for study. In addition to direct internal and external training to improve and contribute to capacity building in Merowe dam, the Chinese company Harbin-Jilin offered a grant equivalent to US\$ 10 millions to support Merowe technological faculty in June 2008. The Chinese grant will be allocated for the purchase of the special equipment that is required especially for the workshops of the college. The structure of China aid to Sudan implies that

in addition to aid in the form of financial capital, another form of Chinese aid and development assistance include Chinese technical assistance in the form of scholarship. Most of Chinese aid to education sector comes in the form of technical assistance training and scholarship. For instance, according to unpublished information from Sudan Ministry of Higher Education and Scientific Research, in 2006, to activate the cultural agreement signed on 1970, Sudan and China signed cultural agreement that implemented during the period (2006-2008). Following the expiry of the agreement in 2008, new agreement is just prepared and expected to be signed to enhance the cultural including technical cooperation for the period (2009-2010). The cultural agreement and protocol signed in 2006 between Sudan and China implies the commitment of China to offer Sudan with 30 scholarships annually by substitution system over the period 2006-2008. The 30 annual scholarships are offered for post graduate, mainly, Ph.D. degree for some specialization fields including engineering fields such as petroleum engineering, biotechnology, technical education, environment and any other different fields of specializations based on agreement between the two sides. The agreement indicates the exchange of universities professors and researchers and giving lectures and conducting joint research and acquisition of experience between Sudanese and Chinese universities. The agreement indicates the establishment of Chinese technical college in Sudan and offer of scholarship and grant for M.Sc. in technical education. The agreement also indicates that Sudan offer some scholarships to Chinese who are interested to study for instance, Arabic language in Sudan.

According to unpublished data and information from Sudan Ministry of Higher Education and Scientific Research, China offers Sudan with four different kinds of technical assistance in the form of scholarship. For instance, this includes, first, annual scholarship, notably, 30 scholarships annually based on substitution system for post graduate, mainly doctoral degree in different fields of specializations. This is based on the cultural agreement and protocol signed in 2006 between Sudan and China. Second, one-sided unilateral scholarships, for instance in 2008, the distribution of Chinese one-sided unilateral scholarships offered directly to be allocated in the following way, 5 scholarships for Darfour, 5 scholarships through the Chinese embassy in Sudan, 5 scholarship offered for technical education and 8 scholarships offered for Southern Sudan State. Third, scholarship offered by Chinese companies, for instance in 2008 one Chinese Engineering Company for Port offered Sudanese 10 full scholarships for postgraduate M.Sc. degree. Fourth, scholarship offered directly to some Sudanese universities in the context of the direct agreements signed between some Chinese and Sudanese universities, for example, Khartoum University and other Sudanese universities. Coordination, implementation and determination of the disciplinary focus of these scholarships programmes are determined jointly with shared influence and in

close cooperation between the recipient Sudanese national authorities and the Chinese donor authorities.

Over the period (1999-2009), the numbers of Chinese scholarships offered to post graduate Sudanese students to study in China are: 1, 3, 10, 8, 9, 11, 20, 14, 42 and 81 in 1999, 2000, 2001, 2002, 2003, 2004, 2008, 2009, (1999-2004) and (1999-2009) respectively. The distribution of these scholarships over the period (1999-2004) implies that few are offered (9%) in the period (1999-2000), whereas, majority (91%) are offered in the period (2001-2004), this implies that Chinese scholarships to Sudanese students increased rapidly from 9% in the period (1999-2000) to (91%) in the period (2001-2004). The distribution of these scholarships implies that majority of them are offered for students of Ph.D. degree (34=81%) and few are offered for students of M.Sc. degree (8=19%). Over the period (1999-2004) these scholarships (42) are offered in different specialization fields including Engineering (17), Geophysics (2), Math (4), Physics (4), System (1), Geography (1), Chemistry (2), Botany (1), Genetic (2), Agriculture (1), Public health (1), Geochemistry (1), Chinese language (1), Science (1), Economics- African and Asian Studies (1), Geology (1) and Animal Production (1). The distribution of these scholarships (42) between different specialization fields implies that majority of them are offered for specialization fields in Engineering (17=40%); followed by Science and related fields (22=53%) and finally few are offered for Arts, Social Science and related fields (3=7%). Notably, majority are offered for specialization fields of Engineering, Science and related fields (39=93%); whereas few are offered for fields of specialization in Arts, Social Science and related fields (3=7%)- see Table 9 below.

Table 9– Numbers, trend, share, distribution and fields of specialization of Chinese postgraduate scholarships offered to Sudanese academic universities staff (1999-2009)

Years	1999-2009		Fields of specialization	1999-2004	
	Total Number	%		Total Number	%
1999	1	2%	Engineering	17	40%
2000	3	7%	Geophysics	2	5%
2001	10	24%	Math	4	10%
2002	8	19%	Physics	4	10%
2003	9	21%	System	1	2%
2004	11	26%	Geography	1	2%
1999-2004	42	100%	Chemistry	2	5%
1999-2009	81	100%	Botany	1	2%
2008	20	25%	Genetic	2	5%
2009	14	17%	Agriculture	1	2%
1999-2004	42	52%	Public health	1	2%
M.Sc. (1999-2004)	8	19%	Geochemistry	1	2%
Ph.D. (1999-2004)	34	81%	Chinese Language	1	2%
Total	42	100%	Science	1	2%
			Economics- African and Asian Studies	1	2%
			Geology	1	2%
			Animal Production	1	2%
			Grand Total	42	100%
			Engineering	17	40%
			Science and related fields	22	53%
			Engineering, science and related fields	39	93%
			Arts, social science and related fields	3	7%

Source: Sudan Ministry of Higher Education and Scientific Research

Apart from the nature, dimensions, magnitudes, composition and sectoral distribution of the Chinese aid and development assistance transmitted to Sudan over the period (1997-2007) it is useful to examine the potential effect of the recent Global Financial Crisis (GFC) on China-Sudan aid relations. There is increasing debate in the literature regarding the various potential implications in the global economy, notably, the incidence of significant impact of the recent GFC on the inflow of aid from donors to recipient developing countries. On the one hand, the recent GFC is expected to have a negative impact and to cause a decline in the flow of aid from donors to recipient countries. While on the other hand, the recent GFC might not have significant effect in the inflow of foreign aid from donors to recipient countries but rather increased the commitment of the international community to maintain the inflow of foreign aid from donors to assist the recipient countries to cope with the negative impacts of the crisis.⁷ The incidence of the GFC in recent time implies inadequate availability of relevant and sufficient data and information that constitutes a limitation in our attempt to critically assess the effect of the recent GFC on China aid to Sudan. The limited data indicate that despite the recent global financial crisis that affected the Chinese, Sudanese and World economies, but it seems that China has maintained its aid to Sudan as the inflow of the Chinese aid and development assistance continues to Sudan during (2008-2009). The evidence is that for instance, an unpublished data and information from Sudan Ministry of International Cooperation indicate that during the visit of Sudan vice president to China in June 2008, China and Sudan signed an agreement of loan without interest rate of total amount equivalent to CNY 70 million, in addition to an agreement of grant of total amount equivalent to CNY 60 million that directed and allocated for humanitarian aid and materials for Darfur states. In addition, Chinese offered humanitarian assistance grant for Darfur equivalent to US\$8.8 millions in 2006, 2007 and 2008. Further to an agreement of grant of total amount equivalent to CNY 30 million that will be allocated for the establishment of agricultural centre and Chinese hospital in Damazine. Further evidences appear that despite the global financial crisis Chinese aid and development assistance to Sudan continues. For example, an unpublished data and information from Sudan Ministry of International Cooperation indicate that in October 2008 to fulfil earlier commitment China offered Sudan grant in the form of humanitarian aid in kind equivalent to total amount of US\$ 8,201,000 million. The government of Sudan suggested a proposal for allocation of this grant in the following way: for the establishment of 30 complete water stations (amounted to US\$ 4 millions), 16 health centres (amounted to US\$ 1,664,000 millions), 15 schools (amounted to US\$ 1,680,000 millions), 1000 irrigation pumps (amounted to US\$ 428,000 millions), 1000 spray pumps (amounted to US\$ 428,000 millions). Further evidence is that in November 2008 China offers

⁷ See for instance, Sarah Cook and Wing Lam (2009) "The Financial Crisis and China: What are the implications for low income countries?" Institute of Development Studies, University of Sussex: pp. 5-7; 11-15.

Sudan grant equivalent to US\$ 2.9 millions to be utilised for the establishment of Southern Sudan Romaik hospital. Additional evidence is that an unpublished data and information from Sudan Ministry of Finance and National Economy indicate that on the 2nd of October 2009 the Chinese Boshan Machinery and Equipment Import and Export Corporation signed three contracts with Sudan Ministry of Finance and National Economy to finance and implement projects for Sudan National Electricity Corporation. The three contracts imply importation of water tanks amounted to US\$ 10 millions, importation of tubes or pipes amounted to US\$ 20 millions and digging of 800 wells amounted to US\$ 52.4 millions in different Sudanese States. This implies that China has reaffirmed its commitment to fulfil earlier commitments and to maintain further aid and development assistance to Sudan. The implications from the above evidences suggest that China is expected to continue commitment to a win-win policy and is likely to continue offering tied aid to Sudan to maintain strategic economic opportunities and interests of its engagement in Sudan and its access to oil. Hence, it is useful to discuss Chinese aid policy towards Sudan as we explain below.

2.4. Chinese Aid Policy towards Sudan

This section provides an assessment of Chinese aid policies towards Sudan over the period (1997-2007). Explaining Chinese aid policy towards Sudan is both interesting and significant because of the increasing importance of Sudan economy in African economy and Sudan is the fastest growing country in Africa. The significant economic relations between Sudan and China apparent from the fact that for instance, Sudan is ranked first compared to African countries in terms of volume, share and growth rate of trade (exports) and number of Chinese workers in the period (2001-2005). Furthermore, China is the largest foreign investor in Sudan's oil sector and contributes by 48% of total investment in Sudanese oil sector, moreover, China is Sudan's main trade partner, as 86% of total Sudanese oil exports is exported to China and this equivalent to 10% of Chinese imports from oil resources, this implies that Sudan is the major oil supplier to China, in addition China aid and development assistance to Sudan over the period (1970-2008) is equivalent to US\$2488.6 millions.⁸ This confirms the stylised fact that China policy towards Sudan is channelled through aid, investment and trade.

One feature of the of the Chinese aid policies towards Sudan is that as a share of the overall development support to Sudan, the amount of foreign aid given by China to Sudan is small prior to 1990s after that in 1990s this has substantially increased, especially in recent years. The profile of China's aid to Sudan has risen over time, with aid increasingly utilized to achieve China's strategic objectives. Sudan is reported to receive a large quantity of aid from

⁸ See for instance, Sudan Ministry of Finance and National Economy, and Central Bank of Sudan.

China. According to official estimates, total loans and grants provided by China during the period 2002-2006 amounted to US\$ 1.1 billion, which represented about 37% of the US\$ 2.8 billion of the total loans and grants received by Sudan from various sources during the period. In 2005 when Chinese loans represented over three-quarters (75.9%) of the total loans received by Sudan in that year, the median interest rate on these loans was about 4% while the median repayment period was 6 years. However, it is not possible to judge the magnitude of other charges involved and borne by Sudan from the official reports, and which may raise the cost of Chinese finance.⁹

Another feature of the Chinese aid and development assistance offered to Sudan is that it is utilised to finance several activities. These include debt relief, technical assistance (e.g. Chinese doctors working in Chinese built hospitals), scholarship and training programs, and gifts of buildings, equipment and other capital goods. One feature of the Chinese aid and development assistance offered to Sudan is that China aid to Sudan mainly provides project aid although some of the aid is utilized for technical assistance and training. There is little programme aid except for debt relief through China's contribution to international organizations. China does not give assistance in the form of programme or budget support as prescribed in the Paris Declaration on Aid Effectiveness (Paris High-Level Forum, 2005). Consequently, Chinese aid is irregular, varying considerably over time and across projects.

An unpublished report by the Sudan Ministry of Finance and National Economy (2008) highlights the rapid growth and development of Sudan and China aid relations over the period (1980-2008). For instance, according to the report China aid policy towards Sudan was characterized by its significant contribution in development and improvement in important and strategic fields such as petroleum, electricity, water, roads and bridges during the period (1980-2008). The composition of China aid and development assistance transmitted to Sudan over the time period (1980-2008) is by nature diversified and include many forms such as grants, loans without interest rate, preferential loans, commercial loans and debt exemption. One kind of Chinese aid to Sudan is related to offer of grants, for example, until the end of the year 2008, China offered Sudan 13 grants of total value equivalent to CNY 272.8 million (equivalent to US\$ 40.1 million), that allocated to many projects including White Nile Bridge project, reform of Omdurman Friendship Hospital and Radio Therapy Hospital, reform of ministry of foreign affairs halls, friendship hall, and grant offered for Darfur. In addition, China offered Sudan government technical and commodity aid of total value equivalent to US\$ 56.7 million. Another form of Chinese aid to Sudan is related to offer of loans without interest rates, for example China government offered Sudan government several loans without

⁹ Several studies emphasize the paucity and fragmentation of data on China's aid to Africa. China is not a member of DAC-OECD and hence does not publish the amount and the terms of its aid. .. It is also difficult to distinguish Chinese foreign aid and investment because of the closely coordinated nature of the financed activities as well as the strategic nature of China's foreign aid.

interest rates of total value equivalent to US\$ 89.4 millions that were used in financing some important infrastructure projects including roads and bridges projects, small industry projects, establishment of technical training centre, electricity projects and small electric machines for electrification of rural and small urban cities in different states in Sudan.

One feature of the Chinese aid and development assistance offered to Sudan is that Chinese aid policy towards Sudan is based on giving aids without interference in terms of allocation of aid and development assistance this implies that Sudan government has the freedom to decide regarding the utilisation, allocation and distribution of aid and development assistance in different projects or sectors. The selection of the projects was decided by the recipient government of Sudan, and the repayment of the loans is not less than 10 years and sometimes extended to 20 years. Moreover, another form of Chinese aid to Sudan is related to offer of preferential loans, in light of China government's regulations and policies for economic cooperation with the developing countries that adopted in 1979, China offered preferential loans through Chinese companies and enterprises that required some guarantees from the side of the government of the recipient country of China's loans. These preferential loans are characterized by low cost of finance and repayment period that last between 6-15 years after the grace period of 3 years. For instance, China offered three of these preferential loans to Sudan government. The first preferential loan was offered in 1996, it is total value equivalent to CNY 150 million that is equivalent to US\$ 18.0 million, and it was used in project of exploration and exploitation of Sudanese oil and exploration of gold. The second preferential loan was offered in 1999 with total amount equivalent to US\$ 12.1 million, it was allocated to the Red Sea fish project, but later the amount was transferred to fund the National Capital Electricity Project in 2001.¹⁰ The third preferential loan was offered in 2006 with total amount equivalent to US\$ 19.5 million and it was allocated for the second stage of the National Capital Electricity Project.

Another feature of Chinese aid and development assistance to Sudan is that China dynamic aid policy to Sudan has extended and turned to include a more diverse engagement beyond a primary focus on natural resources via enhanced humanitarian aid programmes to respond to the recent need for humanitarian assistance in Sudan. For instance, before the rise of Darfur crisis from 2004 and the CPA in 2005, routine Chinese aid cooperation, including medical assistance, continued. Aid, narrowly defined as that designated humanitarian or developmental, as opposed to grants or forms of concessional financing, remains a limited part when contextualised in the scheme of the overall Chinese engagement. However, it has acquired disproportionate importance in China's wider diplomacy on Darfur as part of its diplomatic response to international criticism, as well as in its relations with Southern

¹⁰ This probably implies the presence of the phenomena of fungability in aid allocation between projects.

Sudan..... China's previous aid programmes in Sudan were far less visible or, indeed, controversial. Designated humanitarian, China's aid for Darfur was first announced in 2004 but became a more salient, public part of Chinese diplomacy from 2007. Largely due to intensified fighting, China's aid would not resume until May 2007 through 5 batches of aid. Chinese offered humanitarian assistance grants for Darfur equivalent to US\$2.4 millions, US\$7.2 millions and US\$8.8 millions in 2006, 2007 and 2008 respectively. Moreover, an unpublished data and information from Sudan Ministry of International Cooperation indicate that during the visit of Sudan vice president to China in June 2008, China and Sudan signed an agreement of grant of total amount equivalent to CNY 60 million that directed and allocated for humanitarian aid and materials for Darfur states. China cited increased humanitarian assistance as part of an integrated policy on Darfur in a 2007 statement to the UN Security Council. Chinese corporations work on aid and development programmes in Darfur would also be publicly and more regularly identified by the Chinese government as part of its Darfur response, especially from 2007, cited as performing much-need work to enable UNAMID to function (water supply) as well as providing wider services (health, education, infrastructure) bearing additional 'economic development' benefits. Being flexible and, unlike other Western donors, willing to fund recovery operations in Darfur, Chinese aid is seen by Khartoum as an important alternative to Western aid conditionality.

One feature of Chinese aid and development assistance to Sudan is that China dynamic aid policy to Sudan extended to go with the recent development in Sudan. For instance, since 2005, China has also turned to Southern Sudan as a strategically important political relationship in view of the CPA's provision for a referendum on Southern Sudanese succession in 2011. The process of improved official ties between the Governments of Southern Sudan and China was confirmed by the establishment of a new Chinese consulate in Juba, which was formally inaugurated by Assistant Foreign Minister Zhai Jun on 1 September 2008. This move formalised the new diplomatic axis of official relations between Juba and Beijing. China has expanded its aid programme in Southern Sudan, sending a needs assessment team to Juba in 2007 after which a new aid programme was announced. Beijing acted in part to address its unpopularity in Southern Sudan, as well as gain a more strategic political foothold there. China's actions impressed elements within GOSS by swift, effective delivery of infrastructure, a contrast to the slow-turning wheels of multilateral assistance framework. Southern Sudan has also seen the growth of a new Chinese economic presence. Chinese construction work was most prominent in Juba. Moreover, China offers Sudan grant equivalent to US\$ 2.9 millions to be utilised for the establishment of Southern Sudan Rombaik hospital in November 2008. In addition, the Chinese company Sinohydro sent a large number of international high skilled and efficient engineers to Sudan for design and implementation of new dams in Southern Sudan.

Another feature of China aid policy towards Sudan includes cancellation of Chinese debts for Sudan. For example, another type of Chinese aid to Sudan is related to offer of debt exemption, for instance, an unpublished data from Sudan Ministry of Finance and National Economy indicate that China exempted 62% of its loans without interest rates and some commercial loans on Sudan government until December 2000. Now Sudan is making regular repayment of Sudan's obligations toward China's government. Moreover, an unpublished report from Sudan Ministry of Finance and National Economy indicate that during the Chinese president visit to Sudan a protocol for exemption of Sudan's debt to China was signed in February 2007, the protocol implies exemption of 80% of Sudan's debt to China.

One feature of China aid policy toward Sudan is that Chinese aid policy towards Sudan has a revealed preference for grandiose and prestigious projects. While Chinese aid to Sudan finances diverse projects, it has been relatively directly towards grandiose and prestigious buildings (e.g. friendship hall and presidential palaces) which few traditional donors would be willing to finance. Sudanese leaders highly appreciate these highly visible projects for their own political reasons. This finding is consistent with our observations from unpublished data from Sudan Ministry of International Cooperation which imply that for instance, over the period (2005-2007) China offered loans and grants of total amount equivalent to CNY 260 million for the establishment of the new presidential palace. The composition includes total grants of total amount equivalent to CNY 20 million in 2005 and total loans without interest rate of total amounts equivalent to CNY 240 million over the period (2005-2007: CNY 40 million in 2005 and CNY 200 million in 2007).

Another feature of China aid towards Sudan is that the Chinese assistance and aid policy towards Sudan comes with little political conditionality: The only conditionality is on the issue of Taiwan, with China's desire to be seen as the only legitimate representative of China under the "One China Policy". China stubbornly sticks to the dogma of national sovereignty, leading to the accusation that its assistance might undermine transparency, accountability and good governance in the recipient countries. Sudan government gratefully appreciate this lack of stringent political conditionality, but as a result of little political conditionality, China is faced with the challenges and increasing pressures from the traditional western donors countries to reduce its economic investment, aid and development assistance to Sudan because of the incidence of crisis and conflict in Darfur the western region of Sudan.

Important feature is that China aid policy towards Sudan is based on a win-win deal, China-Sudan aid relations is built on the principle of mutual interests. For instance, the most important form of Chinese aid to Sudan is related to offer of commercial loans, for instance, until the end of the year 2008, China government offered Sudan commercial loans of total value equivalent to US\$ 1649.1 million, for the implementation of several projects in different

strategic fields such as petroleum, electricity, irrigation and irrigation equipment. Chinese aid policy towards Sudan, implies that China government offers Sudan tied aid in the form of commercial loans upon satisfaction of specific characteristics or conditionality requirements. First, the projects should be implemented by the Chinese companies or enterprises for the benefit of the recipient government's public and private sector. Second, the repayment period of the loans lasts for 4-10 years, determined according to the cost of finance that prevalent in the market, with the grace period last between one to five years. Third the payment of insurance or guarantee fees that may reach 5% from the value of the loan, and it insured at the insurance company for China loan, the insurance fees do not exceed 4%. Fourth, Sudan as a recipient side of loan pays advancement money that equal between 10%-15% of the total loan value. Finally, Sudan government pay insurance or give some guarantees for obtaining these loans, and these are represented by some guarantees from the Central Bank of Sudan and petroleum guarantees.

Hence our results imply that despite the rise in the profile and improvement of China's aid policy to Sudan over time, but China is offering tied aid and increasingly utilising aid notably, to achieve China's strategic economic and commercial objectives. This implies that Chinese tied aid is undermining the effectiveness of Chinese aid as we will explain below in the next sections.

2.5. Institutional arrangements and context of the policies

Different from the systematic framework of traditional western donors, where NGOs actively involved in aid policy, one feature of aid from China is that the institutional arrangements and context of the policies is based and channelled directly through government institutions. In particular, it is mainly channelled by the Chinese government, notably, China's Import-Export Bank (EXIM) is playing a predominant role as it provides export credits, finances both Chinese private investors and joint venture projects with private foreign firms, and grants concessional loans on behalf of the Chinese government. In addition, the increasing presence and involvement of the Chinese public and private companies often occurs within the Chinese government foreign policy context and direction for implementing Chinese aid projects on behalf of their government, or by directly bidding for these projects. On the other hand, on the side of Sudan as a recipient country of Chinese aid, the Chinese bilateral aid is channelled through government institutions, in particular, Sudan Ministry of Finance and National Economy, Sudan Ministry of International Cooperation and the Central Bank of Sudan that seems to be the most important institutions through which the Chinese aid is channelled in Sudan. This implies that the institutional arrangements and context of China and Sudan bilaterally aid relation can be perceived as mainly based on governmental institutions. The evidence for this nature of institutional arrangement appears from the reported observation by

Sudan Ministry of International Cooperation which indicate that most of the Chinese aid and development assistance are offered either during the official visit of the officials Chinese and Sudanese governors to Sudan and China or during the meeting of the ministerial committees between Sudan and China. Little aid and development assistance are offered outside this institutional context or framework and only in other circumstances.

Different from the well defined and organized systematic framework of traditional western donors to monitor and assess the performance of aid policy through conditionality and interference policies, one feature of aid from China is the lack of well defined and organized systematic framework to monitor and assess the performance of aid policy. Although China's aid to Sudan takes various approaches and tied closely to major investment projects based on the principle of non-interference; its aid delivery system is complex and lacks a systemic framework in deciding, management and monitoring the aid. Chinese institutions still have limited capacity to implement and monitor these expenditures and their impacts, to ensure the intended social outcomes. While China's recent development assistance appears to focus more strongly on poverty reduction, social infrastructure and social sectors (particularly health and education), the weak institutional arrangements and context of the policies imply that there is little systematic monitoring of the poverty reducing, social and environmental impacts; and issues related to human rights and governance.

The findings in this section fulfil the first part of the second objectives concerning the rapid increasing trend in Chinese aid and development assistance to Sudan over the period (1997-2007). The findings in this section fulfil the second part of the second objective that the Chinese aid and development assistance to Sudan are biased towards specific sectors (services and infrastructure: building and construction, electricity and water supply) over the period (1997-2007).

3. Literature Review on the Impacts and Effectiveness of Foreign Aid

Based on the above background on the importance of foreign aid to Sudan, this section first explains the literature on the impacts and effectiveness of foreign aid and next shows the literature on foreign aid to Sudan.

3.1. Literature Review on the Impacts and Effectiveness of Foreign Aid

Since long there is increasing interest and debate in the literature on utilization, allocation and effectiveness of foreign aid in achieving their assigned economic growth objectives in the recipient developing countries. For instance, several studies in the literature find that foreign aid caused mixed positive and negative impacts. Notably, foreign aid caused positive impact by offering huge external aid flows to developing countries to achieve two objectives: to

reduce poverty and accelerate economic growth. However, foreign aid caused negative impact by causing the debt problem and therefore, adversely affecting the public expenditure.¹¹

At the aggregate macro-economic level the effectiveness of aid has been approached from different perspectives and the impact of aid interpreted in the context of justification for aid in the first place. The evolution of the conceptualization and justification of aid has reflected the changing perspectives of different development paradigms and theories that have been associated with different interpretation and broadening the role, position and ways of conceptualising the impact of aid on development.¹²

At the macro-level assessments have provided somewhat inconclusive and mixed empirical results often failing to find significant positive growth effects (cf. Mosley, 1980; Burnside and Dollar, 1997). But at the micro level assessments have found positive impacts of aid (e.g. Cassen et al., 1986).¹³ For instance, at a micro level, all donor agencies regularly report the success of most of their projects and programs. This contrast is known as the micro-macro paradox. For instance, Mosley (1987) observes the 'micro-macro paradox' in effectiveness of foreign aid and indicates the difficulty of confirming significant correlation between aid and growth rate of GNP in developing countries because of the possible fungibility and the leakage of the aid into unproductive expenditure in the public sector.¹⁴ Boone (1994; 1996) confirms Mosley's result on the micro-macro paradox and finds that aid is ineffective because it tends to finance consumption rather than investments. The micro-macro paradox has also been attributed to inadequate assessment practices.¹⁵

A well-known stylized fact in the literature is that donors often offered aid funds either through providing aid directly related to specific projects (project aid), or through providing support to the recipient government's budget (budget support, or project financing) while imposing conditionality on how to allocate the available resources. There is a large debate in the literature on the effectiveness and preference of either form of the two instruments of foreign aid, some studies show evidence in support of project aid and in opposition to budget support, whereas, other studies show evidence in support of budget support and in opposition to project aid. For instance, Cordella and Dell' Ariccia (2001)

¹¹ For detailed literature review on aid effectiveness and allocation and positive and negative impacts see for instance, Lancaster (1999), White (1992), Griffin (1970), Wangwe (2007), Ali *et. Al.* (1999) Fosu (1996; 1999), Corden (1984); Cassen et. al., (1986); Killick, (1991) and Nyoni (1997). Some studies support the argument that aid to developing countries is fungible, see for example, Heller (1975); Khilji and Zampelli (1991; 1994); Njeru (2003); Pack and Pack (1993). Others studies find that foreign aid is non-fungible, see for instance, Levy (1987); McGuire (1978; 1987); Gang and Khan (1990); Pack and Pack (1990). Feyzioglu et al. (1998) and Devarajan et al. (1998) have joint both macro and micro data and found that aid to be non-fungible at national levels but fungible across sectors.

¹² See for instance, Tarp (2000), Thorbecke, (2000), Robinson and Tarp (2000) and Hansen and Tarp (2000)

¹³ See for instance Mavrotas and McGillivray (2009), Ali *et. al.* (1999), Riddell (1987), Mosley et al. (1987), Durbarry, Gemmell and Greenaway (1998) and White (1992). Some studies find negative impact of aid on growth (cf. Griffin, 1970; Griffin and Enos, 1970; Voivodas, 1973; Azam and Fouda, 1998) or no impact on either investment or income growth (cf. Boone, 1996). Other studies find positive and significant impacts of aid on growth (cf. Papanek, 1973; Dowling and Hiemenz, 1983; Levy 1988; Hadjimichael et al., 1995).

¹⁴ Mosley, P. (1987), "Foreign Aid: Its Defense and Reform". University Press of Kentucky. ISBN 0813116082. Retrieved December 7, 2009

¹⁵ Faust, Jörg (2009), "Reliable Evidence of Impact", *Development and Cooperation* (Frankfurt am Main: Societäts- Verlag) 36 (1): 14–17.

compare the effectiveness of conditional budget support and project aid in poverty reduction programs. They find that project aid is a better (worse) instrument to alleviate poverty than budget conditionality when aid programs are relatively large (small) with respect to the recipient's country resources and recipient governments are relatively less (more) socially committed.¹⁶ van de Walle and Ren Mu (2007) discuss the Fungibility and the flypaper effect of project aid and provide micro-evidence for Vietnam. They find evidence that, although project aid impacts on rehabilitated road kilometers were less than intended, more roads were built in project areas. Their results suggest that there was fungibility within the sector, but that aid largely stuck to that sector.¹⁷ Ouattara (2004) examines the impact of project aid and programme aid inflows on domestic savings in the case of Côte d'Ivoire for the period of 1975-1999. He finds that in the long run project aid affects negatively domestic savings while the impact of programme is positive; in the short run, programme aid inflows are associated with increases in domestic savings, whilst the impact of project is negative but insignificant.¹⁸

3. 2. Literature Review on Foreign aid to Sudan

As noted earlier as in most other African countries, Sudan's economy has relied heavily on a large influx of foreign aid from different sources such as the U.S., EU, Arab countries, China and international institutions and organizations (e.g. United Nations).¹⁹

The U.S. Government is the leading international donor to Sudan; in particular, the U.S. Government through USAID programmes focus on humanitarian assistance includes USAID large contribution to the U.N. World Food Programme (WFP) for food aid to Sudan. In addition to U.S. the European Commission has remained the second humanitarian donor to the Sudan, after the US. According to European Commission (2007) between 1992 and 2002, the EC disbursed approximately €450 million, two aid instruments have played a significant role in responding to crises in the Sudan, Food Aid and ECHO funded programmes, of which food aid quantitatively represented the most important part of the humanitarian response. According to Norwegian Ministry of Foreign Affairs annual report (2007) Sudan was the largest recipient of Norwegian development assistance in 2007. According to the report most of the Norwegian assistance to Sudan is provided through two multi-donor trust funds administered by the World Bank (MDTF National and MDTF South Sudan) and Norwegian efforts were primarily focused on humanitarian work, the peace process and agreement.

¹⁶ Cordella, Tito and Dell' Ariccia, Giovanni (2001) "Budget Support versus Project Aid: a Theoretical Appraisal", IMF - Research Department, November 16, 2001.

¹⁷ van de Walle, D. and Ren Mu (2007a), "Fungibility and the flypaper effect of project aid : micro-evidence for Vietnam" World Bank Policy Research Working Paper WPS 4133, February 2007. van de Walle, D. and Mu, Ren, (2007b) "Fungibility and the flypaper effect of project aid: Micro-evidence for Vietnam," Journal of Development Economics, Elsevier, vol. 84(2), pages 667-685, November. See also Mosley, P. (1986) "Aid-effectiveness: the micro-macro paradox". *Ids Bulletin / University of Sussex, Institute of Development Studies* 17:22-35.

¹⁸ See Ouattara, B. (2004) "The Impact of Project Aid and Programme Aid Inflows on Domestic Savings: a Case Study of Côte d'Ivoire", *School of Economic Studies Discussion Paper Series 0406*, University of Manchester, UK.

¹⁹ US Library of Congress Country Studies (1991) "Sudan - Foreign Aid" *Data as of June 1991*: http://www.photius.com/countries/sudan/economy/sudan_economy_foreign_aid.html: accessed February 03, 2009.

Sudan is amongst the Arab countries that are recipient of Arab aid from the Arab donors since the 1970s.²⁰ For instance, Van den Boogaerde (1990) observes that in the 1970s following increases in world petroleum prices, the Arab oil-producing states also became significant aid donors and suppliers of development capital through bilateral loans and Arab international institutions, most of Arab aid tended to flow to other Arab recipient countries. After the peace agreement was signed in 2005 there was huge inflows of Arab funding into Sudan. Moreover, Villanger (2007) indicates that in 2006-2007 both Saudi Arabia and the Arab Fund planned to start several large new aid projects in Sudan to support peace process.

El-Sayed (1998) presents a historical overview of foreign aid and their impacts on Sudan's economy over the period 1958-1996. He indicated that over the period (1958-1980) in terms of both the number and total value of loans offered to Sudan, the group of the Western European countries, the International Development Agency (IDA), the three Arab countries governments together with the three Arab funds, the group of the communist countries (including China and Romania) occupied the first, second, third and fourth places respectively. During the period (1990-1996) the total value of foreign aid that offered to Sudan substantially declined. During the two years (1995-1996), Sudan managed to obtain foreign aid from only two sources included the OPEC Fund and China. El-Sayed (1998) finds that the inflow of foreign aid lead to mixed positive and negative impacts in Sudan during the period (1958-1996). As for the positive impact, the inflow of loans and grants from the other countries and international and regional funding institutions had effective contribution to partially complement the shortage of domestic capital to offer fund to cover the need for hard currencies that required for implementation of development projects. As for the negative impact the expansion in foreign aid and loans lead to increase in total debt obligations.²¹

Few studies in the Sudanese literature focus on the impacts of projects aid, notably, the impacts of the Chinese projects aid. For instance, Abulagasim (2007) discusses the Sudanese Chinese economic Cooperation and shows the positive impacts on development of electricity sector in Sudan, focusing on the case study of Garri Electricity Project.

Based on the survey of the above studies, the literature covers the reliance of Sudan on different donors during different time periods. Since the impact and effectiveness of Chinese aid and development assistance, notably Chinese project aid has not been adequately covered in the literature. Therefore, it is interesting and important to fill this gap in the literature and to discuss the effectiveness of Chinese aid and development assistance to Sudan, especially, at project level as we will explain in section 6 below.

²⁰ The Arab donors institutions are the Islamic Bank, the Abu Dhabi Fund, the OPEC Fund, the Saudi Fund, the Arab Fund for Economic and Social Development (AFESD), the Kuwait Fund, the Arab Bank and the Arab Monetary Fund. The Coordination Secretariat has the following lists of recipients: Algeria, Bahrain, Comoros, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauretania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, U.A.E. and Yemen.

²¹ See El-Sayed (1998).

4. Conceptual and Theoretical Frameworks

Based on the above background on the importance of foreign aid to Sudan, this section explains the conceptual and theoretical frameworks and motives of foreign aid.

According to the UNDP, the concept of foreign aid is often defined in relation to the concept of Official Development Assistance (ODA).²² The substantial inflow of foreign aid has occurred in the period following the end of the Second World War (WWII) (Ali et. al., 1999). Several studies in the literature discuss the different methodological approaches that are often used in assessing the allocation and effectiveness of foreign aid. The literature often uses economic measures of development to assess the effectiveness of aid.

The motivation or rationale for donors to give foreign aid to different recipient countries can be interpreted from different developmental, economic (commercial) and political perspectives. The literature discusses many reasons or motives behind giving aid. The first conventional motive is altruistic motives for giving foreign aid, the definition of ODA implies that the donor's sole purpose to help improvement of economic development and welfare in the recipient country, but this definition does not prevent a mutual benefit for both aid donors and aid recipients.

The second conventional motive is that foreign aid is offered to enhance the economic relations, commercial interests and mutual benefits for both aid donors and recipients. This implies that the motive of donors in offering foreign aid is importantly tied to support and promote their own economic and commercial interests. For instance, since long, Western donors, the U.S., Arab aid donors and emerging active donors such as China have been pursuing tied aid and giving more aid to recipient countries to which these donors' countries export their goods. More recently, Western donors have reduced the promotion of their own economic interests in aid-giving through the reduction of the costly tying of aid to purchases from the donors' countries, for instance, the OECD-DAC has made a successful effort to eliminate tied aid to the least developed countries, as 92% of DAC countries' aid was untied by 2005 and only the U.S. is now presumed to keep the bulk of its aid tied (OECD 2007).²³ Neumayer (2003) indicates that the pattern of untying aid does not imply, however, that Western countries refrain from using ODA to support their own commercial interests.

²² According to UNDP definition: Official development assistance (ODA), net Disbursements of loans made on concessional terms (net of repayments of principal) and grants by official agencies of the members of the Development Assistance Committee (DAC), by multilateral institutions and by non-DAC countries to promote economic development and welfare in countries and territories in part I of the DAC list of aid recipients. It includes loans with a grant element of at least 25% (calculated at a discount rate of 10%). Official development assistance (ODA), include untied Bilateral ODA for which the associated goods and services may be fully and freely procured in substantially all countries and that is given by one country to another. Official aid Grants or loans that meet the same standards as for official development assistance (ODA) except that recipient countries do not qualify as recipients of ODA. These countries are identified in part II of the Development Assistance Committee (DAC) list of recipient countries, which includes more advanced countries of Central and Eastern Europe, the countries of the former Soviet Union and certain advanced developing countries and territories.

²³ The US has not report the share of tied aid since the OECD-DAC exerted pressure towards untying aid. However, the US has traditionally tied three-quarters of its aid.

The third conventional motive is the interference motive, i.e. the conditionality or meeting specific domestic policy requirements. For instance, since long Western donors have been developing aid policies that aim to influence the recipient country's domestic policies more or less separated from the actual main motive for giving aid. For example, the US usually demands democratic reform in the country receiving US aid at the same time that the aid may be used to promote US firms in the country, for example, through giving American grain as food aid. Different from U.S. and Western donors, both Arab donors and China are less interested in conditionality-interference motive as they perceive that recipient countries should be allowed to choose their own development path and not be hindered by interference policies from donor countries.

The fourth conventional motive is the political motive for giving aid with the purposes to reward or create allies on political issues and strategic considerations rather than the economic needs or policy performance of the recipients, such as the voting in the UN General Assembly. For instance, Alesina and Dollar (2000) indicate that France, Great Britain, Japan, the US and Germany allocate more aid to recipients that vote in tandem with them in the UN. In addition, Neumayer (2003) and Villanger (2007) indicate a similar pattern for Arab aid donors.

The fifth motive recently become more popular among Western OECD donor countries and the World Bank implies focusing aid more towards the beneficiaries of poor to contribute towards achieving the UN Millennium Development Goal (MDG) of halving the share of people living in poverty by 2015. The examination of foreign aid offered by donors to poor countries implies that Western donors are more likely to increase offering aid to poorer countries, they are increasingly and more directly concerned with aid to poverty than Arab donors (Neumayer, 2003; 2004; Villanger, 2007).

Apart from of the main motives of giving foreign aid, over the past decades, donors countries indeed played important role by offering huge external aid flows to developing countries to achieve two objectives: to reduce poverty and accelerate economic growth. For the majority of Sub-Saharan Africa countries, foreign aid represents a vital external source of finance that was often used to close the resources gap; supplement internal resources; complement low savings; enhance economic growth and to accelerate achievement of MDGs.

5. Research Methodology, Data and Justification of Selection of Cases Studies

Several studies in the literature discuss the different methodological approaches that are often used in assessing the allocation and effectiveness of foreign aid. The literature often uses economic measures of development to assess the effectiveness of foreign aid at the macro and micro levels and at project level using the cases studies.

Considering the research objectives, questions and hypotheses presented above, it is now useful to explain the research methodology: method of analysis and data collection. This research uses the descriptive, comparative and quantitative methods of analysis and use a combination of the most suitable primary (qualitative) and secondary (quantitative) data to fulfil research objectives, answer research questions to examine the case of Sudan regarding the effectiveness of Chinese aid. The Secondary data will be used for the quantitative analysis and will be obtained from various relevant local institutions (for example, Sudan's Ministry of Finance and National Economy, Ministry of Investment, Ministry of International Cooperation, Ministry of Higher Education and Scientific Research, National Electricity Corporation, Merowe Dam, Dams Implementation Unit, etc.). In addition to data from other relevant international institutions dealing with aid and development assistance flows from China to African and Sudan in particular (For example, UNDP, World Bank, World Development Indicators, etc.) and publications of the selected projects. For example, we use quantitative data on aid and development assistance (measured by the share of Chinese aid and development assistance relative to international aid and development assistance in capital investment allocated to the selected projects in Sudan (1997-2007)). The primary data will be used for the qualitative analysis and will be collected using seven in-depth face-to-face interviews with the managers of the key selected Chinese aid projects implemented in Sudan over the period (1997-2007).

It would be useful to provide a discussion of the data collection instrument and how the data collected will be utilized to achieve the study's objective. To realize the third objective which focuses on the effectiveness, notably, the positive and negative impacts of Chinese aid and development assistance to Sudan over the period (1997-2007) we will use quantitative and qualitative data to assess the impacts of Chinese aid and development assistance to Sudan focusing on the most important Chinese aid and development assistance offered to projects implemented in Sudan over the period (1997-2007). As for the positive impacts we will be using the following indicators: increase or growth in production, increase in employment opportunities, increase in skill level and increase in knowledge and technology transfer for the key selected Chinese aid and development assistance projects implemented in Sudan over the period (1997-2007). In addition to reflect the view of the managers regarding the importance of Chinese aid and development assistance to Sudan, we use the results of the interview questionnaire to provide qualitative assessment of the extent of the growth of China aid and development assistance transmitted to Sudan.

As for assessment of the negative impact, we will use the increase in total loans and debt to Sudan as a result of the Chinese aid and development assistance to Sudan over the time period (1997-2007). We are aware of the fact that loans and debt are not the only negative impacts, and assessment should include adverse side effects of aid, notably,

unemployment, environmental impacts, displacement of people, waste disposal, wages, incomes, poverty, in addition to other negative impacts as a result of the aid conditionality set between the two governments in the agreements signed which sometimes indicate the level to which China will be using its own inputs. In particular, it is useful to provide assessment and cost-benefit analysis of the impacts of aid on the environmental impact. But due to practical problems related to inadequate availability of accurate and reliable data and information it is somewhat problematic to cover all these issues in this project. So, we leave that for more in-depth future study when adequate, accurate and reliable data and information are available. Therefore, we limit our assessment of the negative impacts to available data on the negative impact of the increase in total loans and debt to Sudan as a result of the Chinese aid and development assistance to Sudan over the period (1997-2007).

Since the Chinese aid policy toward Sudan is mainly based on giving aid and development assistance to projects. This stylised fact implies that the best assessment of the effectiveness of Chinese aid is through assessment of the effectiveness: positive and negative impacts at project level. Therefore, the next section will use primary data from the interview with the managers of the selected cases studies of eight projects to examine the effectiveness or impacts of Chinese aid and development assistance in Sudan over the period (1999-2007). The selection of these cases is based on the findings in section 2.3 above which implies that the Chinese aid and development assistance to Sudan are biased towards specific sectors (services and infrastructure: building and construction, electricity and water supply) over the period (1997-2007). For instance, the share of electricity projects, Khartoum refinery project and Merowe dam and related projects represent 70% of the total Chinese aid and development assistance offered to Sudan over the period (1997-2007)- see Table 8 above. Therefore, based on this finding, it is useful to examine the implications of eight cases including four fully completed projects: Merowe Dam Project, Merowe-Karima Friendship Bridge Project, Khartoum Refinery Project and Elgaili-Garri 2 Electricity Project. In addition to two projects in which 95% of the work is almost completed: Garri 4: Petroleum Charcoal Electricity Project and White Nile Grids: Rabak-Obied Third Circuit Elroseires-Khartoum Electricity Project. Further to two proposed projects in which the work is recently started: Al Fula Electricity Power Plant Project and Dongla-Wadi Halfa Electricity Transmission Line Project.

6. Empirical analysis, findings and policy implications of the effectiveness of China aid and development assistance to Sudan (1997-2007)

This section provides the empirical analysis and assessment of the effectiveness of the Chinese aid to Sudan over the period (1997-2007) based on projects assessment.²⁴ This section first discusses the positive impacts then shows the negative impacts of Chinese aid and development assistance to Sudan during the period (1999-2007).

6. 1. Effectiveness and Positive Impacts of Chinese Aid and development assistance in Sudan over the period (1999-2007): Selected cases studies of eight projects:

This section uses primary data from the interview with the managers of the selected cases studies of eight projects to examine the impacts of Chinese aid and development assistance in Sudan over the period (1999-2007). The results of the interviews with these managers of the projects indicate the effectiveness and significant contribution of China in the implementation of their projects and imply that it is more appropriate to describe and judge the aid relation between Sudan and China as has been largely successful in some fields/sectors over the period (1997-2007). In particular, in these projects the percentage share of the contribution of the Chinese in total aid offered for implementation of these projects is important as can be seen from many important indicators. For instance, the share of China in total capital and finance (71%-100%), increase availability of machines and equipment (70%-100%), improve training and capacity building in the project (50%-100%), increase in technology transfer and knowledge transfer (50%-90%), increase employment opportunities (26%-100%) and increase availability of raw materials (5%-100%). Therefore, Chinese aid and development assistance offered for implementation of these projects has been extremely important for creating many positive impacts in the following important indicators. For instance, increase availability of the services (100%), increase in skill level (100%), increase or growth in production (88%), increase in transfer of knowledge (88%) increase availability of machines, equipment and raw materials (75%), increase in employment opportunities (75%), improve capacity building in the project (75%) and increase in technology transfer (63%). For example, the Chinese aid and development assistance offered for implementation of these projects has been extremely important for creating many positive impacts in the following important indicators. For instance, increase or growth in production (12%-120%), increase availability of the services (60%-120%), increase in technology transfer (50%-100%), increase in the transfer of knowledge (30%-100%), increase in skill level (25%-100%), increase availability of machines, equipment and raw materials (20%-100%), improve

²⁴ Although it is difficult to distinguish between the classification of aid and investment projects which the Chinese implemented in Sudan, but the case studies discussed in this section as classified by Sudan's ministry of finance and national economy and Sudan's ministry of international cooperation and the central bank of Sudan are project implemented with Chinese loans and grants and as such are classified as projects implemented within Chinese aid and development assistance to Sudan.

capacity building in the project (10%-100%) and increase in employment opportunities (5%-70%). One important implication for capacity building is the increase of training (internal and external), for example, many of the Sudanese workers in these projects are trained within the Chinese aid and development assistance for implementation of these projects, this includes labours, technicians and engineers in different fields or disciplines related to the Chinese aid and development assistance for the implementation of these projects. The training of the Sudanese workers in these projects trained within the Chinese aid and development assistance for the implementation of majority of these projects has been mainly demanded and driven by the management department in these project (75%) and in three cases is less demanded and driven jointly by the management department in these project together in close cooperation with the Chinese companies implemented these projects (38%).²⁵ - See Table 10 below.

Table 10- The share and impacts of the Chinese aid and development offered for the implementation of the selected projects

Selected projects and selected indicators	Merowe	Merowe-Karima	Garri 2	Garri 4	White Nile	Al Fula	Dongla-Halfa	Range for all projects
a) The share of the Chinese in total (%)								
Capital and finance	50%	71%	85%	85%	100%	90%	75%	71%-100%
Employment	80%	26%	30%	100%	30%	90%		26%-100%
Training	80%	100%	80%		50%	90%		50%-100%
Increase in knowledge transfer	90%	50%	75%			50%		50%-90%
Increase in technology transfer	90%	50%	90%			50%		50%-90%
Improve capacity building in the project	90%	100%	80%			50%		50%-100%
Increase availability of machines	100%	100%	95%			70%		70%-100%
Increase availability of equipment	100%	100%	90%	75%		70%		70%-100%
Increase availability of raw materials.	60%	100%	5%			10%		5%-100%
(b) The positive impacts of the Chinese aid (%)								
increase or growth in production	120%	100%	60%	80%	12%	50 - 70%	More than 50%	12%-120%
Increase availability of the services	120%	100%	100%	80%	15%-60%	70%	70%	60%-120%
increase in employment opportunities	50%	30%	By 170	5%-40%	70%	20%	5%-70%
increase in skill level	100%	100%	75%		25%-55%	50%	70%	25%-100%
increase in knowledge	100%	85%	75%		30%	50%	70%	30%-100%
increase in technology transfer	100%	85%	95%		--	50%	60%	50%-100%
Improve capacity building in the project	100%	100	80%		10%	50%	10%	10%-100%
Increase availability of machines, equipment and raw materials.	100%	100%	100%	80%	35%	20%	75%	20%-100%
Training	600 labours and 500 Engineers	some skilled, technicians, 3 engineers	25 engineers, some local labours, 30 technicians engineers	93 persons	23 engineers-45 persons	30 persons	n.a.	some engineers labours, skilled, technicians
Training fields	all civil works, all hydro mechanical works, all power transmission system, irrigation and canalization	skilled, technicians and engineers trained in work related to construction of bridges	In the fields of mechanical, electrical and instrumentation related to electricity fields	mechanical, electrical, control, instrumentation and chemical fields related to electricity	engineering fields related to electricity, erecting the transmission lines, stringing the conductors and in the substations	In all engineering fields related to electricity	n.a.	In all engineering and other fields related to implementation of these projects

Source: own calculations based on the results of Nour (2009): Interviews on China-Sudan Aid Relations. Note: n.a. not available.

²⁵ Although the 100 percent share being attributed to China in the indicators is questionable, but it is worthy noting that the 100% implies that the contribution and share in some indicators are completed attributed to Chinese aid and development assistance to the selected projects, whereas Sudan government and other donors have no contribution and share in some indicators. For instance, other Arab donors contributed to capital and finance only in Merowe dam, and they have no contribution in other selected projects. For all other seven selected projects, China is the only donor contributed to implementation of these projects, in all of these seven selected projects. Because of the shortage of domestic capital these projects are either completely or largely financed by Chinese aid and development assistance.

We are aware of the fact that it would be interesting to benchmark the results on the Chinese aid projects against the non-Chinese aid projects implemented in Sudan. But due to practical problems related to inadequate availability of accurate and reliable data and information it is somewhat problematic to cover all these issues in this project. So, we leave that for more in-depth future study when adequate, accurate and reliable data and information are available. Therefore, we limit our assessment and analysis in this project to compare the key characteristics and features of Chinese aid against aid from other donors in the implementation of the selected projects aid and development assistance to Sudan over the period (1997-2007). The managers of the selected projects indicate several key characteristics and features of Chinese aid against aid from other donors in the implementation of these selected projects. For instance, the Chinese aid is by nature of such contracts is characterized by being unconditioned (political), focused on developmental issues and committed to easy process (Merowe dam project). In addition, the Chinese are characterized by flexibility (Al Fula Power Plant project), offering acceptable prices and making equipments available (Dongla –Wadi Halfa Electricity project) and the Chinese machines, equipment and raw materials are characterized by being: cheapest, suitable and simple for maintenance (Elgaili - Garri 2 project). In addition, the Chinese is characterising by being the only donor completely financing the implementation of the project by offering aid in the form of grant (Merowe Karima Friendship project), in the form of loan (White Nile Grid Project) and in the form of loan focusing on partnership (50%) and based on mutual benefit or entirely commercial relations (Khartoum refinery project). In addition the Chinese is characterising by being also the only source of raw materials and inputs used in the implementation of the project (White Nile Grid Project) and by offering facilitation of initiating the bridge project until completion (Merowe Karima Friendship project).

Our findings imply that Chinese aid seems to be allocated or utilized in their targeted or assigned objectives for the implemented projects in Sudan. Chinese aid to the selected projects is effective because it can be perceived as complementary to local resources to help infrastructure development "to close investment-saving gap". But the effectiveness of Chinese aid to these projects is somewhat undermined by Chinese conditionality of tied aid. For instance, our results find a link between the offer of the Chinese aid and development assistance and satisfaction of specific conditionality requirements. For instance, in the opinion of the managers of these projects, the Chinese aid and development assistance has been extremely importantly tied to trade in oil and export of Sudanese oil to China (75%), tied to the implementation of these projects by the Chinese companies (75%), tied to the purchase of machines, equipment and raw materials from China (88%), it is moderately tied to investment in oil (63%) and to utilization of Chinese inputs and labour (63%) and slightly tied to the purchase of other Chinese goods and services (38%)- See Table 11 below.

Table 11- The importance of the impacts and conditionality tied to Chinese aid and development assistance in selected projects

selected indicators	Unimportant	Slightly important	Moderately important	Extremely important	Extremely + Moderately important
a) The importance of the Chinese aid and development assistance in creating positive impact					
increase or growth in production	0%	0%	13%	75%	88%
Increase availability of the services	0%	0%	0%	100%	100%
increase in employment opportunities	0%	25%	38%	38%	75%
increase in skill level	0%	0%	25%	75%	100%
increase in knowledge	0%	0%	25%	63%	88%
increase in technology transfer	0%	25%	0%	63%	63%
Improve capacity building in the project	13%	0%	25%	50%	75%
Increase availability of machines, equipment and raw materials.	0%	13%	13%	63%	75%
b) The importance of the conditionality tied to the y Chinese aid and development assistance					
Tied to trade in oil and tied to export of Sudanese oil to China	25%	0%	0%	75%	75%
Tied to investment in oil	38%	0%	25%	38%	63%
Tied to Implementation of the project by Chinese companies	13%	13%	25%	50%	75%
Tied to purchase of machines, equipment and raw materials from China	0%	13%	63%	25%	88%
Tied to the purchase of Chinese goods and services,	25%	38%	38%	0%	38%
Tied by utilizing Chinese inputs and labour,	13%	25%	50%	13%	63%

Source: own calculations based on the results of Nour (2009): Interviews on China-Sudan Aid Relations.

Therefore, Our findings are consistent with the stylized facts which implies that Chinese aid and development assistance to Africa is also usually ‘tied’ to oil, purchase of Chinese goods and services, generally by Chinese companies, utilizing Chinese inputs and labour, undermining the effectiveness of Chinese aid to Africa.

Based on the above results of the positive impacts of the Chinese of all the selected projects, it is also useful to examine the negative impacts of the Chinese aid to Sudan as we explain below.

6.2. The negative impacts of Chinese aid and development assistance to Sudan (1999-2007)

While there may be many positive effects of the Chinese aid and development assistance to Sudan, there are also some issues of concern that undermine the effectiveness of the Chinese aid to Sudan. In general it is clear that China's development assistance is closely tied to state sponsored investment projects, while limited information is available to understand the various objectives of such assistance, or to assess its wider impacts, particularly its social and environmental impacts and contribution to poverty reduction. For instance, there is no adequate data to assess the little systematic evidence on the effectiveness of Chinese aid in reducing poverty or improving the distributional impacts of China's engagement and China's labour practices and implications on Chinese labour or the local workers. Moreover, in some cases such assistance is perceived as not having widespread social benefits (such as the presidential palace). In addition to potential negative impact probably related to the requirements of importation of too many unskilled foreign workers from abroad. Hence, it is useful to provide a comprehensive assessment and cost-benefit analysis of all issues related to the effectiveness of the Chinese aid impacts of aid on the environmental impact. But due to practical problems related to adequate availability of accurate and reliable data and information it is somewhat problematic to cover all these issues in this project. So, we will

leave that for more in depth future study when adequate, accurate and reliable data and information are available. Therefore, we limit our assessment of the negative impacts to available data on the negative impact of the increase in total loans and debt to Sudan as a result of the Chinese aid and development assistance to Sudan over the time period (1997-2007).

We realize that the increase in the inflow of foreign loans on the one hand, has some positive impacts by financing development projects, but on the other hand, it has a negative impact by increasing Sudan external obligations and debts. Sudan's debts to international and regional institutions include the debts due to the international financial institutions such as the IMF and World Bank, the debts to regional institutions such as the Arab Monetary Fund, Arab Fund for Economic and Social Development, OPEC Fund and Saudi Fund, in addition to Sudan's debts to Paris Club countries and the non-Paris Club countries.²⁶ In addition to indebtedness to foreign commercial banks which refers to the facilities extended to the Government of the Sudan and to the private sector against government guarantees. Further to the facilities provided by foreign suppliers which refer to the value of goods and services imported for the Sudanese private sector on short-term basis.²⁷ Table 12 below shows the increase in Sudan's total debt to China and other countries during the period (1999-2007), for instance, Sudan's total debt increased from US\$ 8863099 in 1999 to US\$ 8239843.371 in 2007. In particular, Sudan's debt to China increased from US\$ 7738 in 1999 to US\$ 1157697062 in 2007. The share of China in Sudan's total debt increased from 0.9% in 1999 to 13.45% in 2007.

Table 12- Position and growth of Sudan External Obligations to China and other countries (1999-2007) (US\$ millions)

(a) Position of Sudan External Obligations (1999-2007) (US\$ millions)								
Items	1999	2002	2003	2004	2005	2006	2007	Total
Multilateral Creditors	4,361	4,110	4,159	4.50	4,461	4.8	5.1	
Paris Club Bilateral	6,121	655	8,994	8.92	9,664	11.0	11.6	
Non-Paris Club Bilateral	6,750	7,066	7,261	8.57	8,530	9.2	10.3	
Foreign Commercial Banks	2,614	2,918	2,918	3.53	3,505	3.6	3.9	
Foreign Suppliers	700	859	859	0.75	0.845	0.8	0.9	
Total	20,546	23,605	24,191	26.27	27,005	28.4	31.8	
(b) The share and growth rate of China's Debt to total Debt in Sudan (1999-2007)								
	1999	2002	2003	2004	2005	2006	2007	Total
China	7738	7,738.00	782,284.00	702,484.00	51,928.99	1,143,967,062	1,157,697,062	2303216297
Total	8863099	7,029,815.36	7,645,959.00	7,639,824.00	30,539,517.77	8,239,843,371	8,609,533,371	16911094957
% China	0.09%	0.11%	10.23%	9.20%	0.17%	13.88%	13.45%	13.62%
Change	0	774546	-79800	-650555.01	1143915133	13730000	1145519235	
Growth rate	0	100.09641	-0.102009	-0.926078	22028.449	0.012002094	0.98948099	

Source: Central Bank of Sudan (External Debt Unit) and Ministry of Finance and National Economy

²⁶ Paris Club countries include: Austria, Belgium, Canada, Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Spain, Switzerland, United Kingdom and United States. Non-Paris Club countries comprise Arab countries, countries in economic transition and Asian countries such as India, China, Pakistan, Iran and Malaysia.

²⁷ See the Central Bank of Sudan Annual Report 2006 - Chapter 10- Foreign Loans and Grants.

6.2. The policy implications of Chinese aid and development assistance to Sudan (1999-2007)

Our results in this section imply that Chinese aid and development assistance caused mixed positive and negative impacts for Sudan during (1997-2007). Our findings confirm the stylized fact that China aid policy toward Sudan is a winning policy based on the principle of a win-win deal. The major policy implication from a win-win deal is that on the one hand, China seizes the opportunities and utilizes aid to achieve its strategic development objectives; on the other hand, Sudan has the option to seize the opportunities and maximise the benefit from the Chinese aid. In addition China and Sudan need to confront the challenges related with Chinese aid in a way to achieve their strategic development objectives. Hence, based on our results discussed above, it is useful to extend our analysis presented above to explain the related opportunities and challenges for Sudan and the several policy implications of Chinese aid to Sudan.

First, the increased volume of Chinese aid to Sudan, presents many opportunities for Sudan. One policy implication is that Sudan has more policy options and has the opportunity and option to use the Chinese aid to replace or shift away from the traditional donors difficult conditionality. Sudan policymaker has the opportunity to take advantage by utilising the availability of additional complementary temporary resources offered by Chinese aid to meet the growing need to engage in implementation of strategic development programmes that other traditional donors may hesitate to support. Our findings from discussed above, confirm that Sudan has clearly benefited from the transmission of the Chinese aid in different form of grants, loans, debt relief, capacity building technical assistance (scholarships and training), etc. Our results from all selected cases or projects indicate that China's support for these projects has effectively benefited Sudan and contributed to promotion of infrastructure in Sudan. One implication from the selected cases or projects is that the Chinese aid and assistance to these projects provide the opportunities for these projects to close the saving-investment gap and can be seen as complementary to local resources to help infrastructure development. Therefore, for the case of Sudan, the shortage of domestic capital to implement the selected projects implies that the Chinese aid and loans offered for the implementation of the selected project has direct complementary impact to domestic capital and provide the means and motivation for Sudan to utilise Chinese aid through budget support to finance rebuilding of infrastructure and therefore, support Sudan's long-term public investment. Moreover, considering the economic sanctions to Sudan from U.S. and western countries, the Chinese aid to Sudan providing the financing for infrastructural rehabilitation is likely to have no competitive impact on western countries companies and institutions and their potential involvement to influence the economic activities in Sudan. It is observed that China's development aid to Sudan over 2000-2006 was directed to the development of infrastructure in such areas as electricity, water, transport and bridges. These projects would help in

development of manufacturing and other sectors. In addition, water projects, by providing clean and secured sources of drinking water are directly linked, and have a positive impact on health, by reducing the incidence of diseases such as those that afflict children, like diarrhea, and hence contribute to reduction of child mortality. As the electricity and water projects and roads are located in urban areas, they may influence the location of industry to become concentrated in urban centres, and therefore attract labour from rural areas. On the other hand, the increasing Chinese aid to Sudan implies some challenges, for instance, the easy conditionality of the Chinese aid to Sudan, should not hide the potential risk to Sudan economy. In particular, the low cost of Chinese loans along with its easy conditionality motivated Sudan to continue borrowing and seeking of Chinese loans that definitely imply the challenges of potential increase and incidence of another high accumulation of new debt cycle to Sudan caused by Chinese loans to Sudan without taking into account the need for future debt sustainability. Additional challenge is that Sudan's increasing borrowing from China might discourage donors from western countries to maintain the debt relief and heavily indebted poor countries (HIPC) initiative for Sudan. Further challenge for Sudan is that the increasing reliance on Chinese aid implies that Sudan need to prepare strategies to reduce its dependence on continued assistance from China. Such strategies are particularly required to deal with the potential risk of the drop in Chinese aid flow to Sudan due to potential reduction in China's demand for raw materials and strategic interest in Sudan, in response to potential progress in China, and its move towards more technologically intensive industrialised advanced country.

Second, on the one hand our interpretation of the main motives of China aid policy to Sudan is that Chinese is offering aid to Sudan motivated by strategic reasons, notably, the economic and commercial interests. The profile of China's aid to Sudan has risen over time, with aid increasingly utilized to achieve China's strategic objectives. The rapid increase in Chinese economic growth and rapid increasing demand for oil resources in China motivated China to build strategic relation based on economic and commercial interests with Sudan as an emerging oil rich economy. Such strategic economic relation is channelled through aid, investment and trade. So, China seems to be somewhat opportunistic in offering aid to Sudan tied to strategic economic and commercial interests, notably, oil. China seems to have exploited Sudan's need for foreign capital and foreign aid to close the saving-investment gap, mainly due to decline in the inflow of foreign aid following the American economic sanctions and irregular relation with traditional western donors. Certainly, Chinese aid to Sudan helps finance infrastructure projects but it is somewhat opportunistic in giving aid tied to implementation of infrastructure projects by Chinese companies, using Chinese labour, equipments and raw materials. Chinese aid is somewhat opportunistic in giving commercial loans with interest rate tied to petroleum guarantee from the government of Sudan. On the

other hand, we observe that Sudan policy and aid relation with China can be interpreted as motivated by mixed political and economic strategic interests. For instance, the political motive implies that Sudan seeks political support from China in UN in Darfour issue. The economic motive implies that Sudan seeks Chinese aid and development and technical assistance to meet the growing needs for capital for building infrastructure, for capacity building and exploitation of Sudanese oil. The flexibility and easy conditionality of Chinese aid compared to Western donors, motivated Sudan to consider Chinese aid as an important alternative to Western aid conditionality.

Third, China's debt cancellation initiative provides Sudan with both opportunities and challenges. On the one hand, China's initiative to cancel the debts owed by Sudan offers Sudan the opportunity to use and utilise the saved and released resources to invest in pro-poor strategic development programmes. These additional resources could be used and utilized in the context of the HIPC initiatives which implies the use of resources to improve and build basic social infrastructures, improve human capital through education and health services etc. While, on the other hand the major challenges related with this Chinese initiative is the potential risk of motivating Sudan to continue contracting new Chinese loans without consideration of future sustainable debt level. Sudan needs to ensure that a win-win deal of China-Sudan aid relation has benefited both sides without tying Sudan into new high debt cycle.

Fourth, Chinese Aid used for grandiose and prestigious projects offer opportunities and challenges for Sudan. On the one hand, the utilisation of the Chinese aid for grandiose or prestigious projects offers Sudan the opportunity to implement projects related to development of building and construction of grandiose or prestigious projects that are unsupported and perceived as "unproductive" investments by the traditional donors. On the other hand, the major challenges for Sudan related to potential risks that these projects are implemented in isolation from Sudan comprehensive strategic development programme; they come without any transfer of technology and capacity building and without benefit to Sudan economy. In additional to the potential risk of shifting resources away from priority targeted objectives such as poverty reduction and building productive infrastructure.

Fifth, Chinese aid is usually tied provides opportunities and challenges for Sudan. On the one hand, the major opportunity for Sudan is that as China seeks diplomatic support from Sudan through easy aid conditionality, Sudan policymakers has the potential to seize the opportunity to maximise Sudan's benefit from Chinese aid to Sudan. For example, through facilitating Sudan access to and acquisition of cheap Chinese capital goods for Sudan local manufacturing sector, together with local human capital enhancement. On the other hand, the major challenges for Sudan are that the Chinese aid to Sudan is usually tied in the delivery of project, all inputs including labour come from China, and project is executed by Chinese

firms (example of Chinese doctors working in Chinese built hospitals in Sudan). This undermines local capacity development, Sudan policymakers need to make sure that linking Chinese companies to domestic supply systems and outsourcing arrangements including subcontracting with local entrepreneurs are an integral part of the aid package or scheme and to encourage building local capacity. Our analysis and findings from the selected projects in Sudan confirm the stylized fact that the Chinese is tied, this implies that China's aid to the selected cases and projects in Sudan is tied to the purchase of Chinese goods and services and majority of these selected projects are executed by Chinese firms, with imported Chinese labour and some are implemented through turnkey operations which mean that Chinese labour and other inputs are used. This hampers the benefits of Sudan economy from the implementation of macroeconomic policies of cutting purchases and domestic expenditures. From other perspective, the rapid rise in Chinese aid and its focus on infrastructure projects in Sudan can be perceived as a way of promoting and facilitating the internationalisation of the Chinese firms to access new markets. Given the recognition of the international community that the practice of tying aid is one of the main causes of its ineffectiveness, the international community through the Paris Declaration to all donors urged all donors to cease from tying aid. The Chinese tied aid to Sudan implies lack of concern and commitment to the Paris Declaration to all donors, this implies that China as emerging donors needs to confirm commitment to the Paris Declaration to cease from tying aid. Sudan should seize the opportunity to convince China to cease from continue offering tied aid to Sudan in order to maximise the benefit and minimise the loss from Chinese tied aid to Sudan.

Sixth, the Chinese assistance comes with little political conditionality offers opportunities and challenges for Sudan. On the one hand, the major opportunity for Sudan is that Sudan has the potential to take the advantage of China's financial flows through aid only by respecting the policy of China through its single political conditionality (the One China Policy). Sudan has the opportunity to get the technical assistance as well as the additional resources needed to implement its strategic development programme that are not offered and supported through other multilateral and even bilateral development partners. Furthermore, Sudan has the potential opportunity to use the Chinese aid as alternative to aid from traditional western donors to overcome the negative impacts of shortage of foreign capital inflow to Sudan economy due to the difficult conditionality from the traditional western donors and economic sanctions from US to Sudan. On the other hand, the main challenges for Sudan are that in the future with the end of "One China policy era" and the end of threat of Taiwan to China's sovereignty, Sudan may loss the preferential treatment as a reward for respecting the 'One China Policy', moreover, Sudan may face the challenge of responding to new Chinese political conditionality in other areas.

7. Conclusion and Policy Recommendations

This paper discusses and provides an in-depth analysis of Sudan and China aid relation as a case of African economy. We fill the gap in the literature and discuss the effectiveness of Chinese aid and development assistance to Sudan, at project level.

Our findings show that compared to the international aid and development assistance from other countries transmitted to Sudan economy over the period (1997-2007), the Chinese aid and development assistance to Sudan is characterised by high share and significant rapid increase from 17% in 1999 to 73% in 2007. The major policy implication from these findings is that China became not only the major investor in Sudanese oil sector and main trade partner for Sudan but also the major donors offered aid and development assistance to Sudan economy over the period (1999-2007). The other policy implication from these findings is that in addition to investment and trade channels, aid constitutes one of the key channels through which the impacts of China economic growth are transmitted to Sudan as a case of typical African economy. Our findings are consistent with the stylized facts in the African literature regarding the rapid increase in Chinese aid to Africa in the recent years.

We show that despite the rapid increasing trend in Chinese aid and development assistance to Sudan over the period (1997-2007), allocation of Chinese aid seem to be biased towards specific sectors (services and infrastructure: building and construction, electricity and water supply). For instance, the share of electricity projects, Khartoum refinery project, Merowe dam and related projects represents 70% of total Chinese aid and development assistance offered to Sudan during (1997-2007). Our results are consistent with the stylized facts in the African literature regarding the fragmentation of Chinese aid. Our results are consistent with the stylized facts in the African literature, that China mainly provides project aid, some of the Chinese aid is utilized for technical assistance and training. There is little programme aid except for debt relief through China's contribution to international organizations. Thus, Chinese aid is irregular, varying considerably over time and across projects, while Chinese aid finances diverse projects, it has been relatively offered to grandiose and prestigious buildings (e.g. presidential palaces) that are likely unsupported by traditional donors.

A novel element in our analysis in this project is that we use new primary data from the interview with the managers of eight selected cases studies of projects implemented within Chinese aid and development assistance and we examine the effectiveness and positive impacts of Chinese aid and development assistance in Sudan during (1999-2007). The eight cases are Merowe Dam Project, Merowe-Karima Friendship Bridge Project, Khartoum Refinery Project, Elgaili - Garri 2 Electricity Project, Garri 4- Petroleum Charcoal Electricity Project, White Nile Grids: Rabak-Obied Third Circuit Elroseires-Khartoum Electricity

Project, Al Fula Electricity Power Plant Project and Dongla–Wadi Halfa Electricity Transmission Line Project.

Our results from the interviews with the managers of the selected projects indicate the effectiveness and significant contribution of China in funding and implementing of these projects. In particular, the share or the contribution of China in total aid offered for the implementation of these projects is important as can be seen from many important indicators such as total capital and finance and increase availability of raw materials, machines and equipment. Therefore, the Chinese aid and development assistance offered for implementation of these projects has been effective and extremely important for creating many positive impacts, for instance, increase availability of the services, increase in skill level, increase or growth in production, increase in transfer of knowledge, increase availability of machines, equipment and raw materials, increase in employment opportunities, improve training and capacity building in these project and increase in technology transfer. We find that different from other donors Chinese aid concentrates on comprehensive development issues to fulfil multi purposes (e.g. Merowe Dam Project). Chinese aid not only significantly contributed to capital and finance but also significantly contributed to construction or implementation of civil works, provision of mechanical equipments, provision of human capital, and capacity building by offering internal and external training for Sudanese. One important implication for capacity building is the increase of training, for example, many of Sudanese labours, technicians and engineers working in these projects are trained in different fields or disciplines related to implementation of these projects. The training has been demanded and driven mainly by the management department in these projects and in three cases has been demanded and driven jointly by management department together in close cooperation with the Chinese companies implemented these projects. Our findings are consistent with the stylized facts in the African literature regarding the effectiveness of Chinese aid to Africa to provide alternative complementary sources of finance and to complement domestic capital. For the selected cases or projects Chinese aid and assistance to these projects are allocated and utilised in their targeted or assigned objectives and can be seen as complementary to local resources to help infrastructure development to close the saving-investment gap.

Our results imply that the increase in the inflow of Chinese aid and development assistance in the form of loans on the one hand, has some positive impacts by financing development projects, on the other hand, it has a negative impact by increasing Sudan external obligations and debts to China. Using secondary data on debt obligation we explain the negative impact that the increasing inflow of Chinese aid and development assistance lead to increase in the share of China in Sudan's total debt from 0.9% in 1999 to 13.45% in 2007. The main reason behind this negative impact of increasing Sudan's debts to China is probably due to the nature of the composition of Chinese aid. For instance, we find that different from

other donors, China is characterized by offering different forms of aid and development assistance including grants, technical and commodity aid, loans without interest rates, preferential loans and commercial loans. The composition of total Chinese aid (loans and grants) offered to Sudan over the period (1990-2008) implies that the share of total grants and technical and commodity aid (5%) is less than the share of total loans (95%). This composition implies that the majority of Chinese aid offered to Sudan over the period (1990-2008) was in the form of commercial loans (87%). Our results are consistent with the stylized facts in the African literature regarding the negative impact of increasing the Chinese aid in the form of loans with interest rate to Africa in causing increase in the debt problem in Africa.

Moreover, we find that China government offered Sudan these commercial loans upon satisfaction of specific conditionality requirements such as implementation of these projects by the Chinese companies, the payment of advancement, insurance or guarantee fees and Sudan government provision of some guarantees from the Central Bank of Sudan and petroleum guarantees. These results seem consistent with our findings from the interviews which imply that the offer of Chinese aid and development assistance seems to be linked to satisfaction of specific conditionality requirements. For instance, in the opinion of the managers of these projects, Chinese aid and development assistance has been extremely importantly tied to trade in oil and export of Sudanese oil to China, tied to implementation of these projects by the Chinese companies, tied to purchase of machines, equipment and raw materials from China, it is moderately tied to investment in oil and to utilization of Chinese inputs and labour and slightly tied to purchase of other Chinese goods and services. These findings imply that the Chinese assistance to Sudan come with little political conditionality but it is also usually 'tied' to oil, the purchase of Chinese goods and services, implementation of aid projects by Chinese companies, utilizing Chinese inputs and labour and this undermining the effectiveness of Chinese aid to Sudan. Our findings are consistent with the stylized facts in the African literature that the Chinese aid to Africa come with little political conditionality but it is also usually 'tied' to oil, the purchase of Chinese goods and services, implementation of aid projects by Chinese companies, utilizing Chinese inputs and labour which undermining the effectiveness of Chinese aid to Africa.

Therefore, in this project we show that Chinese aid and development assistance to Sudan has caused mixed positive and negative impacts for Sudan economy over the period (1997-2007). Our results imply that the increase in the inflow of Chinese aid and development assistance on the one hand, has some positive impact by providing alternative complementary sources of finance to complement domestic capital and finance development projects. On the other hand, it has negative impacts by increasing Sudan external obligations and debts and by offering tied aid and hence, undermining the effectiveness of Chinese aid to Sudan.

Based on our findings discussed above, the major policy recommendations include improving the effectiveness of Chinese aid and development assistance to Sudan and maximising the benefits from Chinese aid by allocating the Chinese aid and development assistance to more sustainable development projects and reducing the allocation to unproductive projects. In addition to maximising the benefit from Chinese aid and development assistance by putting special emphasis on capacity building and technical assistance for enhancing and upgrading skill levels. Mainly by improving training for Sudanese workers and offering more scholarships for Sudanese students. Further to maximising the benefits from the transfer of technology, knowledge and know how, with special emphasis on the presence of proficient, skilled, well trained local staff competent enough to maintain imported technology, machinery and equipment, sustain activities at the end of the technical assistance and maximise the value added for Sudan's economy. In addition to encouraging China to continue with the debt cancellation initiative and commitment to use and utilise of the saved and released resources to invest in pro-poor strategic development programmes and to improve and build basic social infrastructures, improve human capital through education and health services etc. Further to consideration of future sustainable debt level by reducing the potential risk of increasing Sudan's debt obligations and reducing contracting new Chinese commercial loans with large interest rate. In addition to design of strategies to reduce the potential challenges for Sudan's increasing reliance on Chinese aid to deal with the potential risk of the drop in Chinese aid flow to Sudan due to potential reduction in China's demand for raw materials and strategic interest in Sudan, in response to the potential progress in China, and its move toward more technologically intensive industrialised advanced country. Further to reducing reliance on Chinese tied aid to Sudan, encouraging China to confirm commitment to the Paris Declaration to cease from tying aid and to maximise the benefit and effectiveness and minimise the loss or ineffectiveness from Chinese tied aid to Sudan. In addition to improve the institutional framework and arrangements by improving the management and coordination between different Chinese and Sudanese institutions involved in the design, evaluation and planning policies and strategies for maximising the benefit from Chinese aid and development assistance to Sudan and improving the efficiency in implementation and execution of the contracted loans. Further to ensuring balanced distribution of the Chinese aid and development assistance to different sectors in Sudan's economy. In addition to improve availability of data to improve understanding of the multiple objectives of Chinese aid and development assistance and to enable more comprehensive assessment and evaluation of its wider impacts, particularly its social and environmental impacts and contribution to poverty reduction in Sudan.

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