SUDAN'S OIL INDUSTRY

ON THE EVE OF THE REFERENDUM

FACTS AND ANALYSIS IV

European Coalition on Oil in Sudan

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The European Coalition on Oil in Sudan (ECOS) is a large group of European organizations working for peace and justice in Sudan. ECOS calls for action by Governments and the business sector to ensure that Sudan's oil wealth contributes to peace and equitable development.

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Cover Photo: Oil facilities in Gak Bany, Upper Nile State (2010). Fotocredit: ECOS Archive

Contents

Acronyms and abbreviations

APCO	Advanced Petroleum Company
CNPC	Chinese National Petroleum Corporation
CPA	Comprehensive Peace Agreement
EIA	(US) Energy Information Administration
EIU	Economist Intelligence Unit
GNOP	Greater Nile Oil Pipeline
GNPOC	Greater Nile Petroleum Operating Company
GoNU	Government of National Unity
GOSS	Government of Southern Sudan
IHS	Information Handling Services
IMF	International Monetary Fund
INC	Interim National Constitution
MEM	Ministry of Energy and Mining
NCP	National Congress Party
NISS	National Intelligence Services
NOC	National Oil Company
NPC	National Petroleum Commission
ONGC	Oil and National Gas Corporation; national oil company of India
PDOC	Petrodar Operating Company
RSPOC	Red Sea Petroleum Operating Company
SPLM	Sudan People's Liberation Movement
WNPOC	White Nile Petroleum Operating Company

Recommendations

The post-referendum negotiations on oil arrangements open up the opportunity to make the country's natural resources benefit the people. To accomplish this, ECOS recommends that:

1. **The Sudanese authorities immediately require all oil companies to respect international standards and best industry practices on community relations, human rights, labour rights, transparency, and environmental protection.** Both the Comprehensive Peace Agreement (CPA) and the Interim National Constitution (INC) require the oil industry to apply 'best known' practices in the oil industry, but neither the National Congress Party (NCP) nor the Sudan People's Liberation Movement (SPLM) have specified what those are. The explicit expectation to respect specific standards and practices could be an effective short cut to raise the industry's performance and building its social support basis in anticipation of an adequate legal and regulatory framework.

2. **GOSS takes the initiative to realise the right of victims of the oil wars to be compensated for their losses.** The CPA establishes a right to compensation but this clause has not been adequately implemented. Set in a framework of reconciliation, compensation would create desperately needed peace dividends and contribute to stability in crucial border regions.

3. **Companies thoroughly restructure their community engagement.** The petroleum industry is lacking a satisfactory social support basis and consequently suffers from sabotage and stoppages, adding to its already high-risk profile and discouraging investment. The prominent role that the CPA reserves for community consultations has remained largely ignored. A lack of a social support basis is a deterrent for international investors and severely restricts opportunities for growth.

4. **A post-2011 deal on the oil industry must be an integral and broad negotiation package**. The alternative, many separate agreements, will be time-consuming, incoherent, and eventually disappointing for at least one of the parties. A comprehensive, straightforward and legally sound deal for managing the oil industry must be agreed upon, whatever the outcome of the January referendum.

5. **For successful post-referendum negotiations, NCP and SPLM negotiators all get unlimited access to a full package of information**. This will require establishing a data room, including oil production, calculation parameters, marketing, export and refining, as well as all relevant data on ownership, contractual rights and obligations, money flows, financial arrangements, et cetera. If not realized shortly, post-referendum negotiations will take place on an unequal footing which is tantamount to guaranteeing that their outcome will be disputed. **An agreement that is indecisive or incomplete will lead to future disagreement and gruelling renegotiations.**[1]

6. **A fee-for-service deal about the use of oil infrastructure as part of a comprehensive financial scheme could create the necessary body of common interest between NCP and SPLM to ensure peace**. Continuation of the oil flows is a shared priority, but continuation of the existing revenue sharing formula is not politically feasible. Ownership of infrastructure is irrelevant if there are export guarantees, joint oversight, and sound financial arrangements.

7. **Accelerated recruitment and training for GOSS officials is paramount.** Should secession become a reality, the GOSS will instantly inherit a multi-billion dollar industry and all the rights and duties this entail, without having the necessary human resources, institutions, experience and legal capacity to monitor operations, enforce the law and protect its own rights and interests and that of its population.

8. **Implementation of the Voluntary Principles on Security and Human Rights and demilitarisation of the oil areas would create the level of security and stability that the industry needs.** Current security arrangements for the oil industry are not sustainable. In preparation for the post-referendum era, both SAF and SPLA may reinforce their military capacity in the border areas and the oil fields. In any scenario, the industry will need peace in the border areas and guarantees that its assets and staff will be safe. A post-2011 oil deal will have to include these guarantees. Where they exist, weeding out security agents from oil companies' payrolls, demilitarisation of the oil areas, and mandatory compliance with the Voluntary Principles on Security and Human Rights would be the cheapest and most effective way to ensure the industry's security.

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1. "Post-Referendum Arrangements for Sudan's oil Industry, or: How to Separate Siamese Twins", ECOS, December 2010.

1. The Purpose of this Report

With the elections of April 2010, Sudan passed a major milestone of the 2005 Comprehensive Peace Agreement (CPA). Despite major flaws in the electoral process, the results have been widely recognized by the outside world. The NCP and SPLM remain firmly in power in the North and the South respectively.

The next and even greater challenge ahead lies in the referenda in Southern Sudan and Abyei, scheduled for January 2011. With popular sentiment in the South decidedly in favour of secession, the NCP and SPLM are preparing for a possible break-up of the country. On 6 July, negotiations for post-referendum arrangements started in Khartoum. Finance will play a key role in these negotiations. Sudan's substantial oil industry is the dominant money-maker for the country's two governments and to split it up will be an extremely complex and sensitive operation. Oil has also been a driver of past conflict.[2] However, the significant wealth that oil generates is equally important to both parties and if they agree on a mutually satisfactory formula, oil could be the foundation for a peaceful future. The time is now ripe to seize the opportunity to make the country's natural resources benefit the people.

This report presents an overview of facts and trends in Sudan's petroleum industry and highlights key challenges for the coming period. The aim is to make vital information about the industry publicly available, and to contribute towards a constructive dialogue between the country's national and international stakeholders.

2. Sudan's Peace Process: Where We Stand

Oil dominates the CPA's Wealth Sharing Protocol. Both parties agreed to painful compromises: the NCP lost its exclusive military control over the oil fields, and the SPLM accepted that the Government of National Unity (GONU) received 50% of revenues from oil produced in the South. In addition, under a clause that safeguards existing oil contracts from renegotiation, the SPLM accepted that the industry would continue to function in the manner it had developed during wartime and remain under NCP control. The National Petroleum Commission (NPC), intended to be the forum for shared decision making between SPLM and NCP, has never functioned effectively. The CPA clauses for community consultation and other best practices have not been respected. The NCP has dominated the Ministry of Energy and Mining (MEM), in which the SPLM State Minister was denied all substantial executive powers. With Dr. Lual Deng in charge of the Ministry of Energy and Mining since June 2010, the SPLM might have obtained a say in the oil industry's future, albeit belatedly.

Many of the CPA's oil provisions have been ignored. The CPA is obliging the industry to follow "best known practices in the sustainable utilization and control of natural resources", but did not specify what practices were meant or how they would be enforced. The GONU is primarily to blame for the absence of adequate standards and enforcement, while the Government of Southern Sudan (GOSS) has remained curiously passive in advancing its interests.

The industry's social support basis is dangerously small. The failure to develop healthy relations with the population is illustrated by a GNPOC (Greater Nile Petroleum Operating Company) report from 2008 that calculates the immediate cost of vandalism, theft and related stoppages during the first half of 2008 at US$ 10.7 million.

Against all odds, the CPA has proved to be a safeguard for the country's fragile peace. At first sight, the picture looks discouraging. Its signatories only represent a fraction of Sudan's vast population, and many of its provisions have largely gone unimplemented. In particular, when it comes to the more technical agreements on security, wealth sharing or the political deals for the three areas (Abyei, Blue Nile and Southern Kordofan), the peace deal has proved elusive on many counts. Political representatives from the SPLM in the Government of National Unity have been systematically sidelined,

2. Human Rights Watch, Sudan, Oil and Human Rights, Washington DC: Human Rights Watch/ Africa, 2003; Oral statement by Gerhart Baum, Special Rapporteur on Human Rights in Sudan to UNCHR, March 2001; Harker, John, Human Security in Sudan: The Report of a Canadian Assessment Mission, Ottawa, January 2000, prepared for the Canadian government; ECOS, Unpaid Debt, Utrecht, June 2010.

joint decision-making was often non-existent, and the regulatory process on issues such as elections, border demarcation and the census had contested outcomes.[3] Nevertheless, key provisions such as wealth and power sharing have been respected, albeit imperfectly. With the referendum on Southern independence looming on the horizon, the CPA is facing its last, and arguably most difficult, test.
Sudan's petroleum industry has emerged from the peace process as a winner. Since the security position in Southern Sudan is relatively robust, and since the signatories share an interest in not compromising oil revenues, the oil companies have been able to continue their operations and post massive profits. **The challenge is to sustain oil production and create a conducive post-investment environment to offset a decline in production.** The pervasive secretiveness in the industry and its poor social support basis in the South are major obstacles to achieving this.

Nile Blend vs. Dar Blend
Sudan has two sorts of crude, which are different in quality and price. Sudan's Nile Blend crude is sold at higher prices than Dar Blend crude. Nile Blend is produced in four different Blocks straddling the north-south border in central Sudan, while Dar Blend is found in the Melut Basin east of the White Nile. Due to its poor quality, prices for Dar Blend can be significantly lower than for Nile Blend. Dar Blend is heavy paraffinic and has to be transported at 45-50°C to prevent it from congealing in ship's tanks. This penalizes potential customers, who are in fact scarce, partly as a result of the US embargo. In addition, it is a high acid crude that will erode ordinary refinery metallurgy. Refining this oil involves upgrading refinery equipment. Dar Blend also has a high arsenic content. This is a pollutant for refinery catalysts, rendering it unacceptable for many customers. The fuel content of Dar Blend is high, so some customers blend it with other components in order to sell the blend as fuel oil. These disadvantages mean that trading prices for Dar Blend fluctuate, and are difficult to predict. Up to 2006, the Dar Blend price per barrel ranged from $40 to $1.76. Prices then rose in the 2007 and 2008 boom years, and in the first two quarters of 2009, Dar Blend sales fetched an average of $32.4.[4] In fact, Dar Blend production – in terms of output and revenue – has compensated for the recent decline in Nile Blend production, and has averted a decline in Sudan's overall oil revenue. The reason for this is because more refineries in Asia have started to process Dar Blend, and, according to analysts, it may have been an additional consideration, in addition to soaring construction costs, for Petronas' to reconsider its plans to construct a Dar Blend refinery in Port Sudan.[5]

In an adverse development, on 8 July 2010 Petrochina scrapped plans to process Sudanese crude at its new refinery in Guangxi Zhuang, South China, under pressure from the US. The US has imposed several layers of economic boycotts that serve as powerful deterrents to US-rated companies entering the Sudanese market, hampering development of the industry.

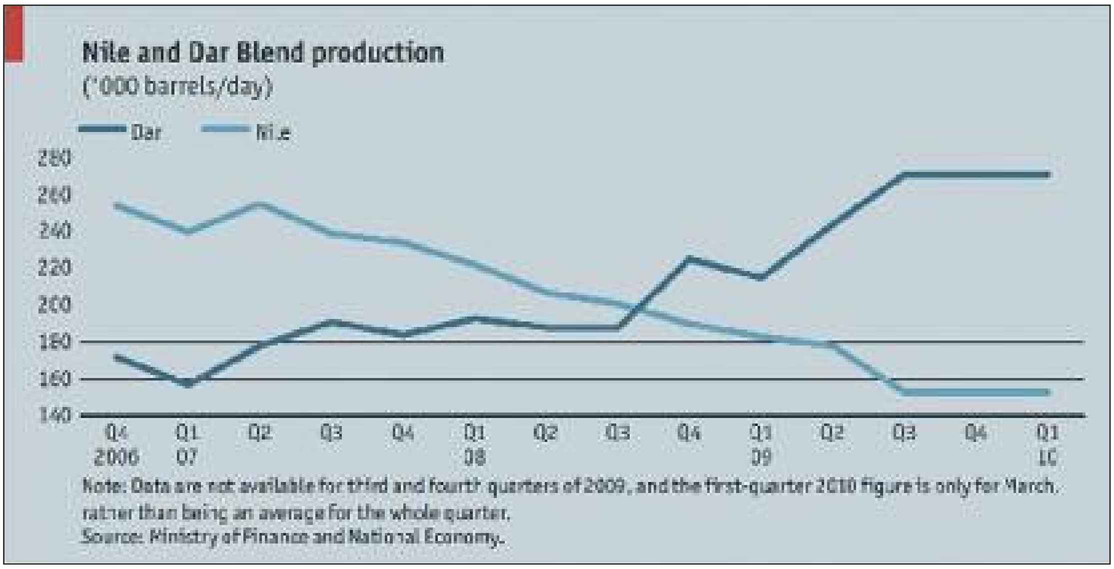


Figure 1: Nile and Dar Blend Production. Source: Economist Intelligence Unit (EIU) June 2010

3. International Crisis Group "Sudan: Preventing Implosion", Africa Briefing 68, December 2009; "Sudan's Comprehensive Peace Agreement: Beyond the Crisis", Africa Briefing 50, March 2008; "Sudan: Breaking the Abyei Deadlock", Africa Briefing 47, October 2007.
4. Ministry of Finance and Economic Planning, GOSS Petroleum Unit Khartoum.
5. Reuters, "Costs delay Sudan refinery project eyed by Petronas", May 27, 2008; Reuters, "Sudan to discuss refinery plans with Petronas – oilmin", January 12, 2009; Interview with industry insider, Khartoum, March 2010.

3. Sudan's Oil Potential

Estimates differ in terms of where Sudan might be heading as an oil producer. The country continues to be under-explored and its potential reserves are poorly documented. Accurate estimates, if they exist, are not publicly available. A key post-referendum challenge will be to maximize exploration and ensure the implementation of the best available technologies to maximize recovery rates.

3.1 Oil Reserves

In January 2009, official EIA estimates for Sudan's oil reserves stood at 5 billion barrels. As some 65% of these reserves are in a limited number of large oil fields, new discoveries are most likely to be made in a multitude of much smaller fields that will be relatively expensive to exploit. Sudan's Ministry of Energy and Mining currently estimates proven recoverable reserves at 1.6 billion barrels. The best hopes for new finds are in Block B in Jonglei and Lakes State, and offshore in the Red Sea.[6]

3.2 Exploration

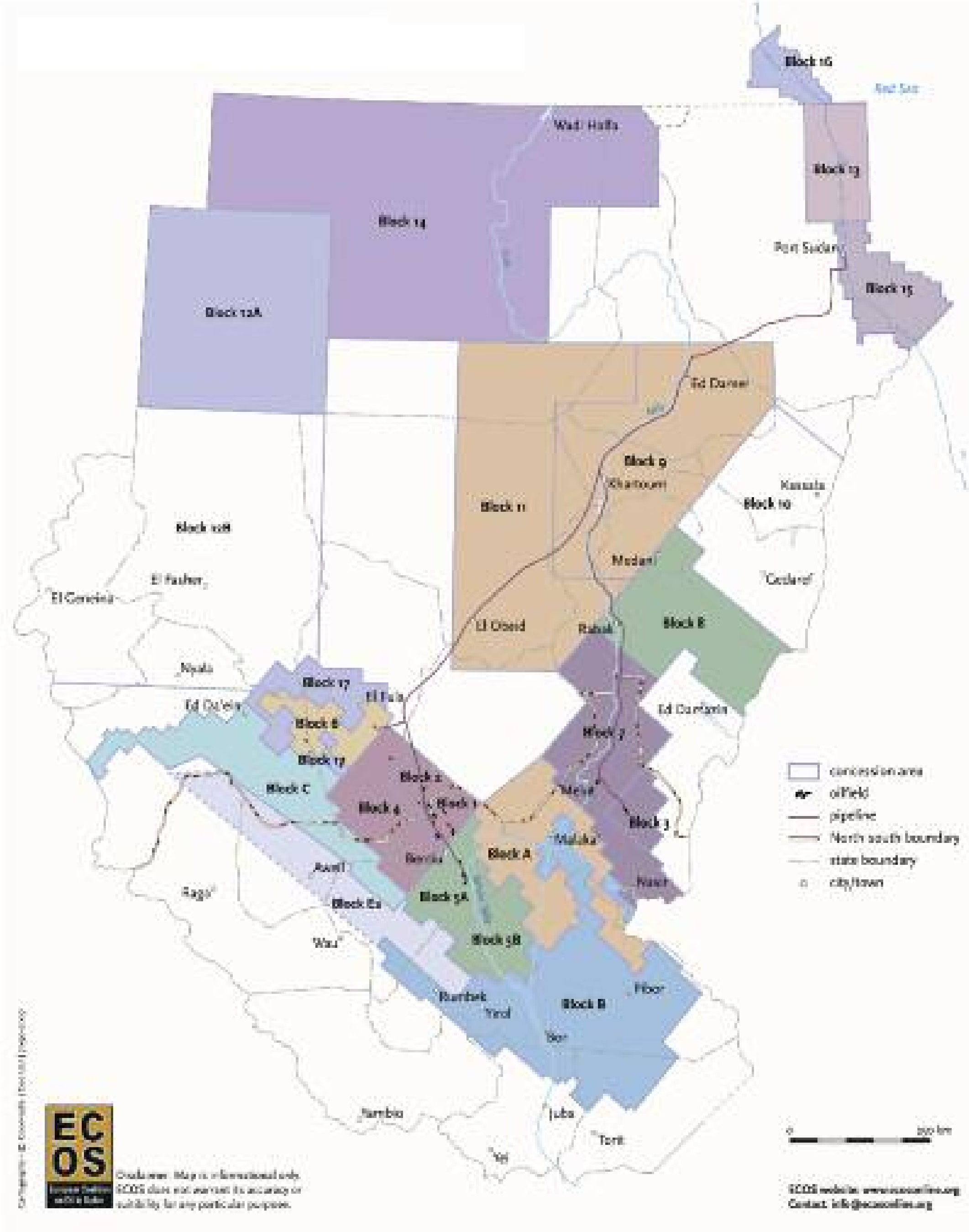
Sudan is divided into 23 prospective Blocks, which are massive in size (averaging 61,000km² compared with 5,700km² for Libya and 1,500km² for Angola and Nigeria). Block B covers 118,000 km², which is about half the size of the UK. Contractually bound to modest exploration obligations, the companies have only concentrated on the most promising areas. As a result, there are only 3 producing consortia in 7 producing Blocks, three of them mainly in the north (2, 4 and 6) and four in the south (1, 3, 5 and 7). Most of the remaining Blocks are leased by marginal and inexperienced companies. Zafir Petroleum, for instance, has a stunning gross acreage of 315,722km² (Blocks 9 and 11), but no previous operator experience.

Exploration results anywhere outside Upper Nile and South-Kordofan have been disappointing. Petronas discovered no oil in the Ethiopian Gambella region or the adjacent Sudanese areas north of the Sobat river and left the areas. The China National Petroleum Corporation (CNPC) relinquished parts of Block 6 in 2005 since prospectivity for the new Block 17 (now ANSAN) was poor. APCO drilled five dry wells in Block C in 2005-6 and then lost its international partner Cliveden Ltd. Expectations are modest for Blocks C, 5B, E, 8, 9, 10, 11, 14 and for the last remaining open Block 12B in Darfur. Current seismic exploration activity in Block 12A involves the extension of an oil-bearing structure in Libya that is not now expected to contain important reserves. SUDAPAK 1 has, to date, failed to discover oil in Blocks 9 and 11. WNPOC-3 in Block 8 has not surpassed Chevron's 1982 small find in Dindir 1. WNPOC-2 relinquished Block 5B after having drilled 3 dry wells, confirming some geologists' suspicions that the further south one goes, the smaller hydrocarbon reservoirs may be. The Moldovan company Ascom, partly financed by

German SET, has drilled three dry wells in Block 5B on the East bank of the White Nile and subsequently closed down its exploration activities. The company's contract does not provide for funding or standards for abandonment and rehabilitation, raising fears that it may leave a foul legacy behind in Jonglei State.[7] The Sudan Tribune, in July 2010 reported that the GONU Energy Minister Dr. Lual Deng, warned Ascom to either regulate its presence or leave.[8] It has been reported that the GONU Energy Minister Dr. Lual Deng considers Ascom's activities to be based on a legally invalid agreement with Nilepet. Ascom's position on this matter is not known.

Sudan's oil exploration prospects seem bleaker today than projected some years ago. In total, Sudan's Muglad and Melut basins reportedly accounted for about 400 new wells in 2008 and 2009.[9] There has not been any exploration activity in Block 5A for years as the output of WNPOC-1 cannot exceed 10% of GNPOC's Unity field production because the existing pipeline cannot transport the type of oil that it produces unless it is mixed with Nile Blend.[10] All the important new fields that came online in 2009 were in Blocks that were already producing, such as the Qamari, Gumry and Moletta fields in Block 3, and the Haraz, Canar, Suttaib and Kaitang in Blocks 1, 2 and 4.[11] In all, they have compensated for the decline of the major fields in Blocks 1 and 2. Additional reserves have been identified in Blocks 3 and 7, at Galdora and Athieng payams in Melut County; and further exploratory drilling has reportedly taken place in Longichuck County.[12] The official expectations are that by the end of 2010 Northern Sudan will produce app. 110,000 bpd, notably 50,000 bpd for the Northern parts of the GNPOC concessions, 60,000 bpd from the Al-Foula field and 5,000-10,000 bpd from the Abu-Jabra field, both in Block 6.[13] For the longer term, Sudanese officials have expressed optimism about new finds soon in Block 8, though they have a track record of communicating inflated expectations.[14] The most promising newly explored Block is 15, along the Red Sea coast, where the RSPOC consortium launched operations at the Tokar-1 field on 1 February 2010.[15]

6. Interviews, February 2010; Global Times, 16 February, 2010



Block 1, 2, 4 – GNPOC
40% CNPC
30% Petronas
25% ONGC Videsh
5% Sudapet

Block 5A – WNPOC-1
68,875% Petronas
24,125% ONGC
7% Sudapet

Block 6 – CNPCIS
95% CNPC
5% Sudapet

Block 9, 11 – SUDAPAK I
85% Zafir
15% Sudapet

Block 3,7 – PDOC
41% CNPC
40% Petronas
10% Sudapet
6% Sinopec
3% Al-Kharafi

Block 5B – WNPOC-2
39% Petronas
13% Sudapet
Ascom

Block 8 – WNPOC-3
77% Petronas
15% Sudapet
8% Hi Tech

Block 10
85% Fenno Cal.
15% Sudapet

Block 12a – Great Sahara
33% Qahtani
20% Ansan
20% Sudapet
15% Dindir
7% Hi Tech
5% A.A.In

Block 12B - free

Block 13 – CPOC
40% CNPC
15% Pertamina
15% Sudapet
10% Dindir Petroleum
10% Express Petroleum
10% Africa Energy

Block 14 – Salima
80% Fenno Caledonian Dongola
20% Sudapet

Block 15 - RSPOC
35% CNPC
35% Petronas
15% Sudapet
10% Express Petroleum
5% Hi Tech

Block 16 – Lundin
100% Lundin

Block 17 – ANSAN
66% ANSAN
34% Sudapet

Block A – SUDAPAK II
83% Zafir
17% Sudapet

Block B - TOTAL
32,5% Total
27,5% Kufpec Sudan
10% Sudapet
10% Nilepet
20% free

Block C - APCO
65% Hi Tech
17% Sudapet
10% Khartoum State
8% Hegleig

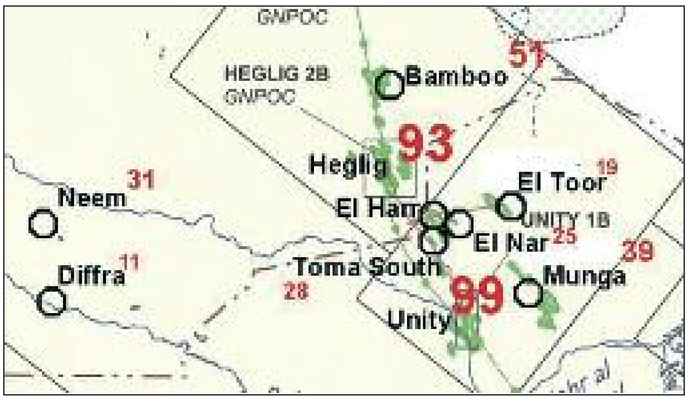
Block E(a)
75% Star Petroleum
20% Sudapet
5% Hamla

While earlier commercial drilling success rates of around 60% have been very high, they have already dropped and may drop even further.[16] The disappointing exploratory drilling results in Block 5B have forced Total to significantly downgrade expectations for Block B, and to modify their work plan. Contrary to Total's earlier plans to combine seismic exploration with drilling exploratory wells, the company now intends to first improve its understanding of the geological structures through additional seismic surveys in its three main prospective areas north of Bor, between Bor and Rumbek, and Est of Pibor town into Pochalla.

Despite the reduced prospects, the Sudanese oil sector continues to attract international attention. Vietnam's state oil company PetroVietnam signed an agreement with the Government in December 2009.[17] India's Petroleum Minister visited Sudan in January 2010 and spoke in favour of intensified cooperation between Sudan and ONGC Videsh Ltd.[18] And in March 2010, Russia's Sudan Envoy Mikhail Margelov met with the then Minister of Energy and Mining, Al-Zubair Ahmed Al-Hassan, to discuss Russian corporate involvement in the oil and gas sector.[19] On the other hand, none of the international private oil companies are showing any interest in actually entering the market, with the exception of marginal and inexperienced companies like Fenno Caledonian and Star Petroleum. Of the oil companies with a track record, only Chinese companies have so far expressed genuine interest in post-referendum investment in Southern Sudan.

The lack of interest from companies other than Chinese companies will oblige the SPLM to suppress the tendencies within the party to avoid doing business with Chinese companies because of China's friendship with Khartoum since 1995. It will be equally difficult to convince local populations that the presence of Asian companies is in their interest. According to Minister Lual Deng "security concerns at the local level" have been a major reason for stagnating oil production figures as "communities ask for compensation, and services etc. to the extent that these moves lead either to some expansion plans being shelved or, even worse, production stoppage."[20] **To ensure the industry's continuity, the GOSS will have to prioritize building a social support basis for the industry.** This will require reparations for past injustices and guarantees that best international practices are applied.

Another challenge for the GOSS is to offer commercially attractive conditions to the industry while, at the same time, ensuring that more advanced technologies are implemented.



Map 1: oil fields (circles) and related number of wells in Blocks 1, 2 & 4 in 2008. The brown dotted line is the North-South border. Source: IHS and GNPOC data.

7. For the full Ascom contract, see www.ecosonline.org.
8. "Total soon to resume oil exploration in Sudan's Jonglei – Minister", by Alsir Sidahmed, in: Sudan Tribune, 8 July 2010.
9. Personal communication with industry insider, Khartoum, March 2010.
10. Personal communication with former CNPC staff member, Khartoum, February 2010.
11. Petronas Annual Report 2009, p.28.
12. Personal communication with UNMIS staff, Upper Nile, March 2010.
13. "North Sudan oil production to reach 110,000 bpd before year end: official" Sudan Tribune, 22 November 2010.
14. EIU June 2010 Report.
15. "CNPC Dives into Sudan's Red Sea", Petroleum Africa, March 2010.
16. "Sudan: Whose Oil? Facts & Analysis", ECOS, 2008.
17. "PetroVietnam Expands into Sudan and Angola", Petroleum Africa, 14 December 2009.
18. Press Trust of India, 25 January 2010.
19. "Darfur conflict is on the backburner, Russian envoy says", Sudan Tribune, 11 March 2010.
20. "Total soon to resume oil exploration in Sudan's Jonglei – Minister", by Alsir Sidahmed, in: Sudan Tribune, 8 July 2010.

4. Infrastructure

With all the producing fields located in central Sudan, the oil sector had to construct a costly export infrastructure, including two refineries, an export terminal in Port Sudan and three main pipelines. Should the South vote in favour of secession in 2011, it would give the North considerable leverage over the South's sole independent source of income.

4.1 Refineries

Sudan has two refineries with a total capacity of 121,700 b/d. One, Al Jalia, is located north of Khartoum, and the second in Port Sudan on the Red Sea near the export terminal. The former was set up as a 50/50 joint venture between the Government and the CNPC and has a refining capacity of 100,000 b/d in 2010. A major upgrade is long overdue, and in 2010 Sudan signed a deal with CNPC to build extra capacity of 50,000 b/d, to be financed by CNPC. Earlier plans to upgrade the refinery by 100% to 200,000 b/d were cancelled, due to Sudan reportedly being unable to pay for its 50% share of the deal. Instead, CNPC decided to finance half of the anticipated upgrade. The Port Sudan facility is Sudan's smallest refinery, with a capacity of 21,700 b/d. Plans for an additional 100,000 b/d refinery in Port Sudan for Dar Blend, planned in 2005, were cancelled in 2009. Petronas eventually decided against this investment, citing the anticipated costs of the project (US$ 5 billion instead of US$ 1-2 billion).

Oil infrastructure in Southern Sudan has so far been limited to oil extraction facilities. However, anticipating a possible yes-vote on secession in 2011, the former GOSS minister, John Luk Jok, announced in October 2009 that his government was planning "to make a refinery (in) Akon, Warap state (which) would process oil produced from Block 5A. The new refinery will serve all the seven states west of the Nile".[21] The public tender for the construction contract was issued in April 2010. Estimated costs are US$ 2 billion, and financing has yet to be secured. Officials from the GOSS Ministry of Energy and Mining consider the Akon refinery project an unlikely option because the location would not make economic sense.[22] In November, the GOSS Minister of Energy and Mining, Diing Akuong, stated that the South would continue using Port Sudan for oil refinery after secession.[23] Jonglei State is set to house a new oil depot along the river near Bor worth 5 million SDG, to be serviced by barges arriving from further north.[24]

Origin	Destination	Miles	Cost
Unity, Heglig and Kaikang fields (Block 1,2 and 4)	Port Sudan	994	$ 1.2bn
Melut Basin (Block 3 and 7)	Port Sudan	870	$ 1.2bn
Thar Jath and Mala fields (Block 5A)	Port Sudan	110	
Fula fields (Block 6)	Khartoum Refinery	460	$ 352m
Khartoum refinery	Port Sudan	500	

Figure 2: Pipelines in Sudan

21. "South Sudan to build its first oil refinery in Warrap state", Sudan Tribune, October 4, 2009.
22. Personal communication with GOSS Official, Juba. October 2010.

4.2 Pipelines

Sudan's pipeline network consists of two major segments. In August 1999, the 28 inch, 1610 km Greater Nile Oil Pipeline was opened, connecting Heglig with Khartoum and Port Sudan at a maximum capacity of 450,000 b/d but never pumping more than 300,000 b/d. It is operated by GNPOC. In 2005 following considerable delay, the 32 inch and US$ 1.2 Billion Melut Basin Pipeline was inaugurated. It runs from Adar Yale to Port Sudan, has an initial capacity of 180,000 b/d and a maximum capacity of 500,000 b/d and is operated by Petrodar. Should commercial quantities of crude ever be discovered in Block B, extending this pipeline may be the most economical way of exporting it. In addition, Block 6 is connected with a 24 inch, 760 km pipeline to the Khartoum refinery, built at a cost of US$ 352 Million and operated by the CNPC with a maximum capacity of 200,000 b/d, but running at 60,000 due to capacity restrictions at the Khartoum refinery.

The SPLM has repeatedly expressed a desire to end its dependency on Northern Sudan by building its own oil infrastructure through Kenya. Kenya itself is keen to develop a combined oil-road-train corridor from Lamu to Sudan and Ethiopia. In early 2010, Japan's Toyota Tsusho Company announced its interest in building a 1,400 km pipeline from South Sudan to an as yet to-be-built export coastal terminal in Lamu on the Kenyan coast, at the cost of US$ 1.5 billion.[25] This scheme would have a capacity of 450,000 b/d. Beijing is reportedly considering backing the project.[26] It is currently believed that there is quite a lot of activity in Kenya from oil-related Chinese companies who, it is assumed, are building financial and organizational structures to prepare for the development of Kenya's oil fields, which would indicate strong confidence in the presence of commercial quantities of oil.[27] If the fields in Northern Kenya are indeed developed, the necessary infrastructure may be partially shared with Southern Sudan, thereby lowering the costs of a Kenyan export alternative for Southern Sudanese crude.

Building an oil pipeline right through the Rift Valley to Sudan would pose serious technical and environmental challenges and may encounter stiff opposition from Kenya and elsewhere. Sudan's newly appointed Minister of Energy and Mining, Dr. Lual Deng declared on 7 July 2010 that a pipeline through Kenya would be uneconomical and expensive. However, a representative of the GOSS Ministry of Energy and Mining told ECOS that this was not the position of the SPLM.[28] Unless oil is found in Northern Kenya and Southern Sudan, the Kenyan route is serving political rather than economic objectives. It will therefore have to find funding among politically motivated financial sources rather than the mainstream financial markets.

Map 2: Main pipeline (thick) and feeder pipelines (thin) in Blocks 1, 2 & 4 in 2008. The brown dotted line is the North-South border. Source: IHS and GNPOC data.

23. Garang Diing Akuong in an interview with Sudan Radio Service, 'GOSS Will Continue Using Port Sudan For Oil Refinery Incase Of Secesion, Says Official', 9 November 2010.
24. Interview with GOSS Minister of Energy and Mining, Juba. May 2010.
25. "Japan group eyes oil pipeline plan", Financial Times, 3 March 2010.
26. APS Review Oil Market Trends, 8 March 2010
27. Personal communication with a senior diplomat, Juba, July 2010.

5. Oil Consortia & Production Volumes

Four consortia currently account for all Sudan's oil production. There are only five international companies holding shares in these consortia, in addition to Sudapet, the Sudanese national oil company.[29] As is typical in Sudan, the Blocks are jointly operated by the members of the consortia through tailor-made operating companies, i.e. GNPOC, WNPOC and Petrodar/PDOC.

5.1 In the Driver's Seat: Asian National Oil Companies

Sudan's second civil war offered a unique opportunity for CNPC and Petronas to acquire assets in an oil-rich area that was out of bounds for the international oil majors. They found partners in Sweden's Lundin Oil, Austrian OMV AG and Canada's Talisman Energy, all three eager for Chevron's discoveries. Chevron had invested US$ 1 billion in the late 1970s and early 1980s and the oil fields that it had found were up for grabs. As fas as we can discern, none of the companies publicly showed concern for the terrible dangers their operations represented for the population in this war-torn country. In 2003, OMV (Austria) and Talisman Energy (Canada) decided to leave Sudan and sold their assets at a considerable profit. ONGC Videsh Ltd. from India bought Talisman's shares, consolidating the dominant position of Asian NOCs in Sudan's oil industry. Lundin Petroleum (Sweden) sold its share in Block 5A also in 2003, but retained its interest in Block 5B until 2009, while still retaining its 100% interest in the inactive Block 16.

5.2 GNPOC (Blocks 1, 2 & 4): Nile Blend

Principally led by the Chinese National Petroleum Company (CNPC), GNPOC is the largest and most experienced oil production company to date in the country. GNPOC developed during wartime when it served as a powerful Government ally during a time when the Government hoped that oil revenues would eventually tip the military balance. Close to the disputed area of Abyei and straddling the, yet to-be defined, North-South border, its operations are still at the heart of the disputes that jeopardise the peaceful end phase of the CPA. In June 2009 the Abyei Arbitration Tribunal of the Permanent Court of Arbitration in The Hague, decided that the major oil fields in Block 2A and 2B (Heglig and Bamboo) were outside the Abyei area.[30] With demarcation of the North-South border close to completion, it seems likely that these two ageing fields will be defined as part of Northern Sudan.

Production Blocks 1, 2 & 4
In September 1999, the first cargo of crude left the export terminal. In 2008, combined production from Blocks 1, 2 & 4 was estimated at just over 210,000 b/d of Nile Blend, reflecting a decline from its peak production of 328,000 b/d in 2005. It is believed that GNPOC's past policy of pumping as much and as quickly as possible may have caused a loss of production potential. The ten fields located in Unity and Heglig (with over 400 wells in 2008) have estimated produced water ratios exceeding 65%, up to 80%. Overall production output in 2008 fell steadily, and is expected to last for another 3-5 years, depending on the company's assessment as to when it is no longer profitable to extract the remaining reserves. GNPOC has reportedly made enhancing operational efficiency a priority, rather than maximizing production by drilling additional wells.

New wells and modern technologies may add 5% to GNPOC's current recovery rate of 25%, shifting the curve towards the right and adding several years to GNPOC's projected existence. To make the required investments commercially attractive, it might be necessary to renegotiate the percentage of future production that goes to the government and the consortium in favour of the latter.

5.3 Petrodar/PDOC (Blocks 3 & 7): Dar Blend

Dominated by CNPC and Petronas, PDOC was Sudan's most lucrative operating company in 2009. When Dubai-based Al-Thani sold its 5% share in March 2008, Sudapet acquired 2%, while selling the

28. Personal communications, Juba, October 2010; "Total soon to resume oil exploration in Sudan's Jonglei – Minister", by Alsir Sidahmed, in: Sudan Tribune, 8 July 2010.
29. CNPC (China), ONGC Videsh Ltd. (India), Petronas (Malaysia), Sinopec (China) and Tri-Ocean (Egypt).
30. Abyei Boundaries Commission ruling, July 2009.

remaining 3% to Kuwaiti company Al-Kharafi, making it currently the only non-Asian company with a share in a producing consortium. Sudapet's share in PDOC is its highest in any producing consortium, effectively raising the GONU's share in overall generated revenues by about 2%.

Production Blocks 3 & 7
Blocks 3 & 7 contain the Adar Yale and Paloich oil fields, with estimated recoverable reserves of 460 million barrels. The PDOC project includes a 300,000 b/d central processing facility at Al-Jabalayan and major production facilities at Paloich. In 2008, production from these two Blocks was approximately 200,000 b/d. Output rose significantly in 2009 thanks to the new Qamari field, which is expected to ramp up production to 50,000 b/d by 2010. Industry insiders say that since its inception, approximately 100 new wells have been added each year, and that Blocks 3 & 7 are close to – or already beyond – the production peak. PDOC expects production to decline from 2013 onwards.[31]

5.4 WNPOC-1 (Block 5A): Nile Blend

In April 2005, the Government of Sudan signed a US$ 400 million agreement with White Nile Petroleum Operating Company (WNPOC-1) for the development of the Thar Jath and Mala fields on Block 5A. Led by Petronas, WNPOC-1 has remained a minor player, currently producing 17,000 b/d. Because of the production restrictions, there has been no exploration since 2005 (see box). The GOSS' plans to build a top-up refinery nearby to serve the national market may make it commercially attractive to explore Block 5A more comprehensively. According to Bloomberg, CNPC and Petronas agreed to swap equity, exchanging some of Petronas' WNPOC-1 shares for some of CNPC's shares in Petro Energy (Block 6).[32] Details of the deal have yet to be made public.[33] This move would increase the mutual dependency of the three major companies.

Block 5A Production
The first oil from Block 5A came online in June 2006 at an initial rate of 38,000 b/d. In 2008, the field was still producing around 25,000 b/d, full capacity is estimated at 60,000 b/d. The Thar Jath crude's quality is poor and has to be mixed with Nile Blend to prevent a price discount.[34] WNPOC-1 cannot produce more than 10% of GNPOC's total output. Increasing the percentage is bound to affect the quality of the Nile Blend. Block 5A's production was therefore in decline for 2008 and 2009, in conjunction with the decrease in GNPOC's production. The SPLM has announced that plans for a refinery in Warap State would meet domestic needs and is meant to receive production from 5A and potentially 5B. This may boost production levels and encourage WNPOC-1 to restart exploration activities.

5.5 Petro Energy (Block 6): Fula Blend

Led by CNPC, this is the only producing Block that is entirely located in the North. Its output is not exported but sent along a 760km pipeline to the Al Jalia refinery in Khartoum. Operating on the border between South Darfur and South Kordofan, Petro Energy has been faced with serious security issues. After the killing of several engineering personnel in May 2008, production temporarily fell by 72%.[35] Unless the Darfur conflict is settled, operations near its border will continue to be a high risk for companies, their staff and the local population. As these operations frequently require a heavy security presence by the Sudanese security forces, there is the continuing danger of violent conflict between Darfuri rebel groups and Government forces. This circumstance requires the companies to carefully assess any risk that they may become legally complicit in international crimes.

Block 6 Production
In November 2004, CNPC brought the Fula field online at a rate of 10,000 b/d. Current output comes from a total of 8 oil fields and stands at 40,000 b/d of highly acidic crude. Further investments are expected, as CNPC reportedly found 36 million barrels of recoverable oil in the western part of the Block. Efforts are under way to boost production in the near future, including two new flow stations and oil storage tanks (each 50,000m³). While the Block's oil goes straight to Khartoum, connecting the field to the Nile Blend pipeline is reportedly being considered.[36]

5.6 Total-led Consortium (Block B)

This consortium is still being formed. Marathon Oil Corp. has been unable to keep its 32.5% interest in the Block because of US sanctions. In 2007, South Sudan's Nilepet obtained 10% and Kuwaiti Kufpec Sudan Ltd. obtained another 2.5%, raising its stake to 27.5%. This compensated for the entry of Nilepet and meant that the private companies in the

31.Interview with PDOC staff, Khartoum, February 2010.
32."Sudan: CNPC swaps asset interest with Petronas and signs oil refining deal", Bloomberg, 20 November 2009.
33."CNPC, Sudan Sign Oil Refining, Asset Swap Agreements (Update2)", Bloomberg, November 20, 2009, http://www.bloomberg.com/apps/news?pid=newsarchive&sid=abhOz4OOU2_s
34.Personal communication with industry insiders, Khartoum, 2010.
35.ECOS calculation, based on data from Ministry of Finance and Economic Planning.

Projected decline in oil production

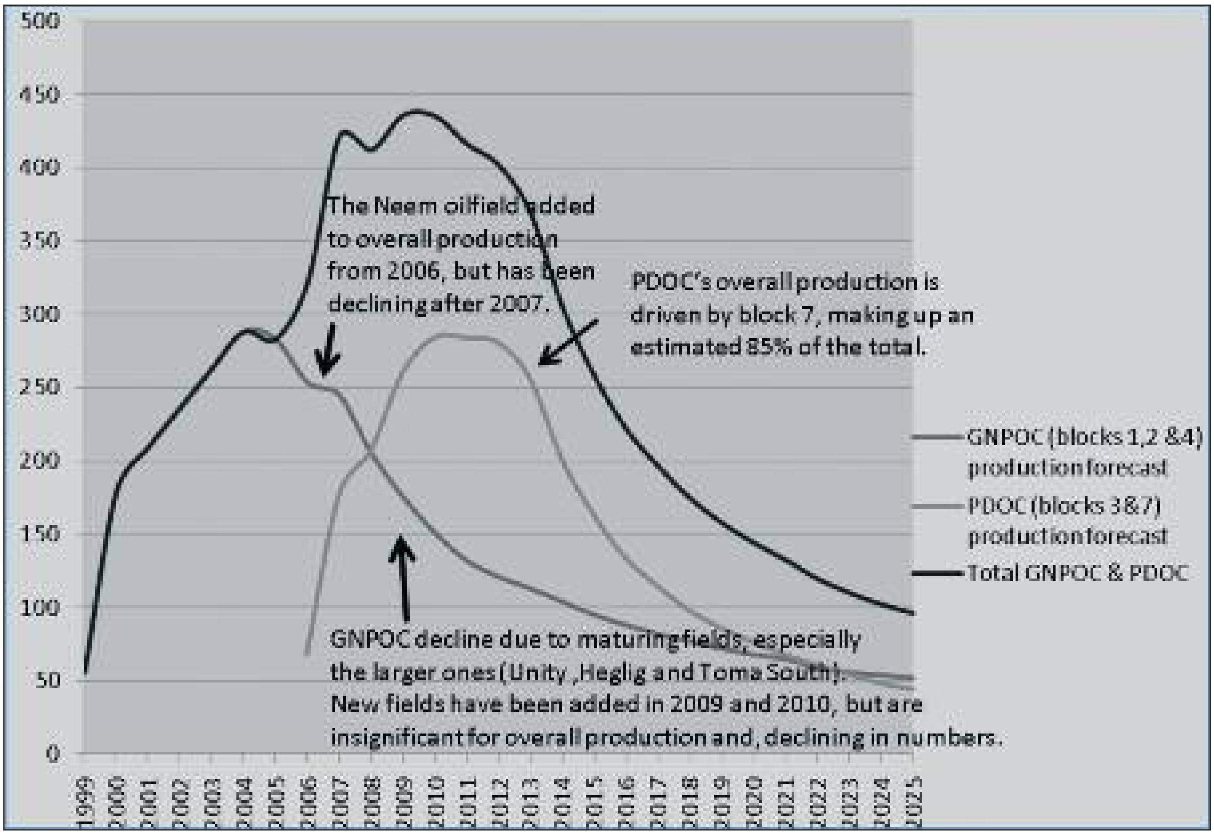


Figure 3: projected decline in production in Blocks 1, 2 & 4, and 3 & 7. Data source: GNPOC and PDOC data (GNPOC 2020-2025 are ECOS' estimations).

consortium must bear 20% instead of 10% of costs, as neither of the state companies are investing any money. The remaining 20% are expected to be offered by Total in a public bid. Currently, Mubadala Development Company, a wholly-owned investment vehicle of the Government of the Emirate of Abu Dhabi, is reportedly likely to acquire an interest in Block B. Completion of the consortium is a pre-requisite for starting operations. The consortium's contractual obligation to carry out operations is currently temporarily suspended as a result of force majeure circumstances. Total's prominent position in the South is disputed because of France's military support for the Government during the civil war.

Senior SPLM officials have on several occasions expressed unhappiness with the excessively large surface areas of the oil concessions, including the 100,000km2 Block B. On 8 July 2010, Total held discussions with the GONU Minister of Energy and Mining, Dr. Lual Deng, in which the company is believed to have sought guarantees that its contract will be respected post-referendum. The company has so far successfully warded off pressure to set a resumption date for its operations. Before investing serious money, the Total-led consortium will need certainty about the post-referendum legal and security environment, including the outcome of a possible contract review process, export guarantees, unambiguous political support from the SPLM leadership, and a definitive solution to the consortium's vacant 20% ownership. The SPLM leadership is unhappy with the virtual monopoly of Asian state oil companies and keeping Total on board is the best available option. Total is arguably the most sophisticated and technologically advanced company in the country and if it decided not to develop its interest, it would damage the prospects of Sudan's oil industry and send a bad message about Southern Sudan's investment climate. This puts Total in a relatively strong negotiating position when the issue of redrawing concession areas comes up.

In 2010, CNPC, Petronas and ONGC account for over 90% of Sudan's petroleum production. Not only are these companies important to Sudan, Sudan is also important to them. Sudan is among the largest overseas operations of all three. They are predominantly state-owned, making them resistant to shareholder activism or public advocacy, and their investment decisions are made on country rather than on company level. Their relations with Sudan are defined not only by economic terms, but also represent geo-strategic investments. China, India and Malaysia have each rolled out diversified investment strategies in Sudan. Together with Gulf state equity, this has resulted in sustained high national economic growth figures. While their investments were highly profitable until 2008, Petronas and ONGC are currently

36.MEES, 1 June 2009.

citing commercial losses in Sudan as drivers for investments elsewhere. In a 2010 management reshuffle, Petronas even announced shifting its investment focus back to domestic exploration.[37] The waning exploration activities in Sudan since 2008 can also be explained by the uncertainty about the end-phase of the CPA and fears that 2011 may see violence in the oil producing areas.
Sudan's oil production output peaked in 2008. National crude oil production averaged an estimated 457,000 b/d in 2007, and in 2008 480,000 b/d, with occasional peaks of 540,000 b/d.[39] In 2009, this

Exploration and Production Agreements
Exploration and Production Sharing Agreements (EPSAs) determine the contractual obligations between the government and the companies. In this type of contract part of the oil produced, so-called 'cost oil', pays for the costs of exploitation, while the remaining part, 'profit oil', is split between the Government and the companies. In principle, this means that higher production rates have an exponential impact on government revenues: the more barrels per day, the greater the share for the public coffers. When negotiating post-2011 arrangements, the SPLM is expected to respect the existing contracts to protect its reputation in international markets.[38]

6. Production Trends

figure declined some 4% to an estimated 459,000 b/d.[40] 2010 is believed to be slightly better with a first 6-months' average output of 514,000 b/d.[41] While the lion's share of that production is exported, national consumption is also increasing slowly, averaging an estimated 85,000 b/d in the period 2005-2009.

International oil prices had just begun to rise by the time Sudan's first fields came on stream in 1999, to peak spectacularly in 2008 at around US$ 150, then fall sharply and currently stabilizing around historically high levels of US$ 75 per barrel. The fall in prices acutely stressed the budgets of both GONU and GOSS, indicating irresponsibly optimistic financial management. The 2008 oil revenues may remain Sudan's all-time high, as demand for oil is not likely to grow strongly and oil investments in Sudan have dropped considerably since 2008. The fact that the Government of Sudan has pulled out of initial offers to finance investments in the oil industry infrastructure projects may indicate that, despite continued pronouncements of high future production levels, it no longer believes in major production increases.

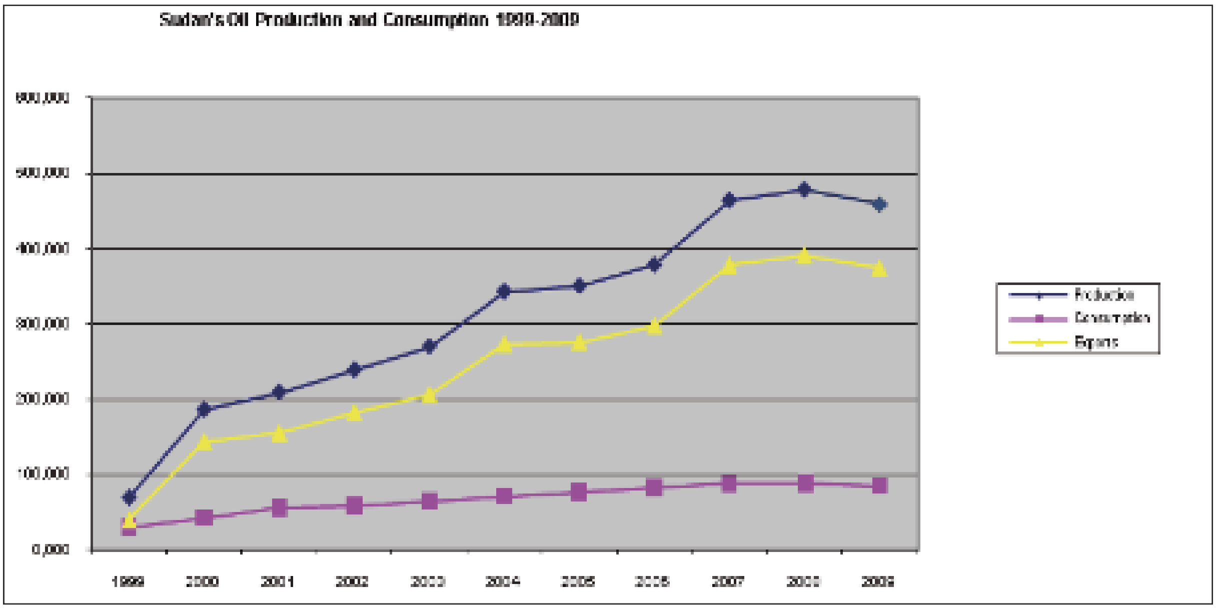


Figure 4: Oil Production, Export and Consumption, 1999-2009. Source: EIA 2009 and Petroleum Unit (GOSS) Khartoum.

37.Business Times, 5 June 2010.
38.Personal communications with GOSS officials, Juba, October 2010.
39.EIA Sudan Country Analysis Brief, 2009; BP Statistical Review 2008.
40.This figure is based on the Sudan Petroleum Unit Report 2009.
41.Petroleum Africa, October 2010.

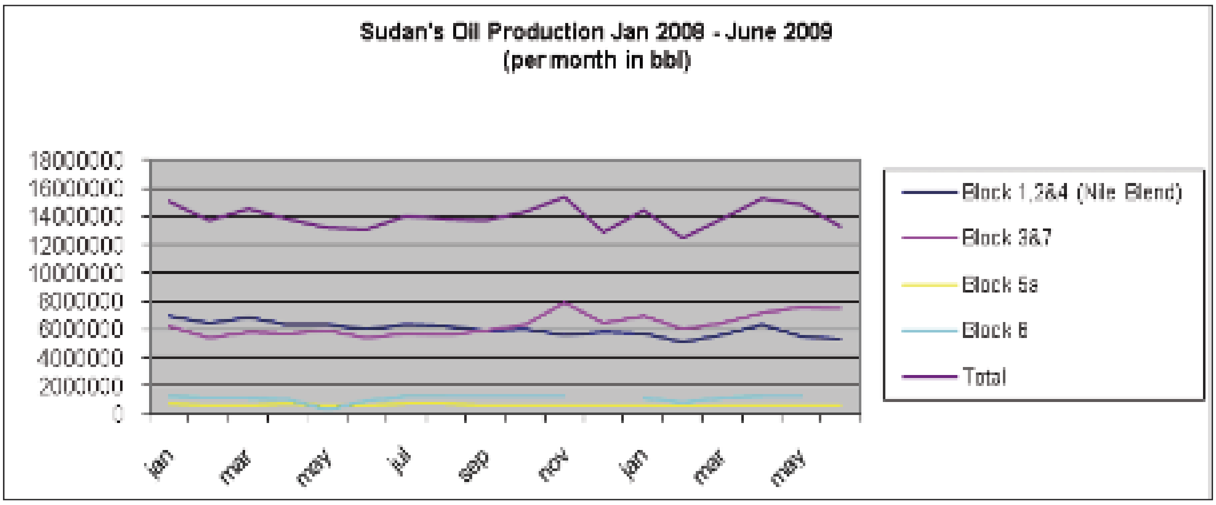


Figure 5: Oil Production per Block 2008-June 2009. Source: Petroleum Unit (GOSS) Khartoum.

In general, Sudan's oil production has been flattening out. Major fields are maturing, and while new fields have compensated for this decline, production totals have fallen short of expectations. Petronas' 2009 annual report even lists the decline in Blocks 1, 2 & 4 as the reason for the overall decline in its overseas operations. Officials speak of an expected 480,000 b/d in 2010, despite various efforts to increase production. According to Reuters, delays in 2008 in implementing new methods to reduce large amounts of water produced with Nile and Dar Blend forced Sudanese officials to voice lower expectations for 2009 from 600,000 b/d to 480,000 b/d.[42] The Government's 2006 estimate for 2010 was 1,000,000 b/d – more than double actual production.

The rig count for Sudan confirms stagnation in terms of active wells and exploration efforts. According to Petroleum Africa, active rigs in the country peaked at 29 in April 2008. By May 2009, the number of active rigs was down to 24, dropping to 21 in August 2010.[43] According to industry insiders, this trend is reflected by a general reluctance of the major consortia to sign large procurement contracts in the course of 2009 and 2010.

Despite these discouraging figures, some analysts continue to believe that Sudan's oil production is yet to peak. Business Monitor International forecasts 771,000 b/d in 2013.[45] Similarly, Sudapet stated in July 2009 that it expected overall output to reach 922,000 b/d in the near future as a result of enhanced recovery techniques. Details were not given regarding time frame and location of the oil wells affected.[46] However, because the Government of Sudan has repeatedly overstated its expectations, production forecasts by the Government are not universally accepted at face value.

Technology upgrades

Until now, the average recovery rate – the percentage of oil-in-place that is actually produced - in Sudan is estimated to be quite low at 23% , compared to a world average of 30%. Sources within the industry believe that this may be increased to 37%. A recent initial study estimates that much more oil could probably be recovered by using more advance recovery methods such as injection of water with chemicals or injection of gas. The Norwegians, who head the study project, state that "more advanced well-technology can also reduce the very high water production level and increase oil production. This can potentially reduce one of the biggest environmental challenges related to the oil industry in Sudan: handling of produced water."[44] A higher recovery rate may eventually offset part of the current production decline.

42.Reuters, 25 October 2009.
43.By December 2009, Schlumberger's subsidiary MiSwaco counted only 20 rigs in Sudan.

7. Management and Revenues

Oil money is hard to trace in Sudan's economy. In a country as vast as Sudan, with virtually no infrastructure in the remote areas and no political commitment to transparency, verification of hard data remains elusive. A 2009 report published by Global Witness provides valuable insights into the intricacies of the sector, particularly regarding the way revenues are shared between the CPA signatories. Other aspects of oil finances are no less difficult to come by, but a general picture emerges from information compiled from various sources.

7.1 Institutional Set-up

Sudapet, together with the Ministry of Energy and Mining (MEM) are the entities responsible for the management of the petroleum sector and they have kept the industry on a short leash. Operating companies report directly and in detail to Sudapet officials. The division of responsibilities between the MEM and Sudapet are difficult to discern from the outside, as is the actual hierarchy inside the decision-making institutions. Meanwhile, in response to their contractual obligation, and thanks to the scaling up of training policies, all consortia currently employ a majority of Sudanese nationals in professional positions. This potentially provides the country's leadership with a strong intelligence position.

According to one senior manager from an international oil company working in Sudan, oil consortia are not free to recruit their Chief Security Manager, but are compelled to employ officers with military or other security backgrounds, who are designated by the Ministry of Energy and Mining.[47] If this is correct, the relationship raises for clarification who non-expat security staff of the oil industry effectively report to, the country's security agencies instead of the companies' management?[48]

Southern Sudan's Nilepet is nowhere near to becoming a fully-fledged operating company. With some thirty staff members and a mere 10% share of non-producing Blocks 5B and B, Nilepet has so far been a company on paper rather than in practice. Only in June 2009 did it receive its formal status as the commercial arm of the Southern Ministry of Energy. Since 2005, the Ministry itself has made no substantial progress in building the necessary capacity to manage the petroleum sector. Considering that the South may secede in 2011, this is extremely worrying. While there are some 400 experienced government professionals in Khartoum, there is hardly anybody to match that in the South. Currently, only 8 Nilepet staff have been detached to Sudapet. Reportedly, GOSS has largely rejected taking advantage of existing training opportunities for GOSS petroleum experts at the Petroleum Training Center in Khartoum. Having rented a permanent guesthouse in Khartoum in 2010, the GOSS is currently planning more training programmes for the near future.

The National Petroleum Commission, theoretically the regulatory body in charge of formulating, monitoring and assessing policies for the oil sector, has been ineffective. Apart from its two successful rulings on the legality of specific contracts and some adjustments to consortium membership shares, the NPC has not lived up to its mandate.[49]

7.2 Production costs

Major infrastructure in Sudan operates under joint ownership arrangements. For example, Khartoum and CNPC each own 50% of the Khartoum refinery, a similar arrangement is in place for the Greater Nile Oil Project (GNOP) pipeline.[50] Because Khartoum owns part of the pipeline, operational costs for companies de-facto include pipeline usage. These tariffs vary per location. Rates for 2008 range from $4 to $8.6 per barrel, with Blocks 1, 2 & 4 accounting for the lowest, and Block 5A the highest fee. Pipeline costs for Blocks 3 & 7 are standing at US$ 5.5.[51] These fees are worth millions of dollars a month, with a reported total of $44 million in September 2008.[52] Additional operating costs are estimated to be between $1/bbl and $3/bbl. Independently verifiable data are unavailable. In official records, operating costs are sometimes labelled management or transport fees and account for 3%.[53] In some 2009 statistics for local revenues, management fees for Blocks 1, 2 & 4 account for as much as 12% of total revenue.[54]

Additional costs are arising from insecurity in some parts of the country, particularly in Southern Sudan, where the memories of the oil wars are still alive and many perceive the oil companies as allies of the NCP working against the interests of South. The industry's legacy of inconsiderate behaviour towards local communities has created popular resentment towards the industry. There are abundant examples of sabotage and vandalism, mostly attributed to popular grievances against the industry. In 2008, GNPOC reported to GOSS and GONU that local

44. Royal Norwegian Embassy in Khartoum, 7 November 2010; http://www.norway-sudan.org/News_and_events/Oil-recovery-from-oil-fields-in-Sudan-may-be-substantially-increased/
45. Business Monitor International, Sudan Oil and Gas Report Q4 2009.
46. Reuters, September 2009.

People outside a mosque, donated by Petrodar, in New Paloich. The inhabitants turned it into a church as very few Muslims live in the area.

disturbances had resulted in production stoppage at the cost of US$ 10.7 million in the first half of that year, more than twice the amount GNPOC claimed to spend on community programmes in 2010.[55] Stoppages figure high on the GONU-GOSS agenda.

The impression within local communities is that most community projects by oil companies are either a response to particular incidents or part of a strategy to build relationships with local authorities, rather than communities.[56] Instead of building mutual respect, the prevailing policy of buying goodwill through projects is creating a patron-client relationship that rewards spoilers and reinforces a vicious circle of blaming and claiming. The industry's tendency to relate with society through Governors and Commissioners is short-sighted and unsafe as the communities regard them with great suspicion. Building a social support basis for the industry requires a radical change in the relationships between companies, authorities, and communities.

7.3 Profitability

With the exception of WNPOC-1, Sudan's producing consortia have been exceptionally profitable. This is essentially because their contracts were negotiated when oil stood at US$ 20 a barrel. They have not been adjusted to prevailing market conditions while contracts provide that the upstream businesses are tax exempt.[57] In addition, the industry has kept costs low. The consortia's profits are mainly derived from their right to a contractually fixed percentage, between 20% and 40%, of 'profit oil'. It obviously makes a massive difference whether that share can be sold at US$ 20 or at S$80 a barrel. Oil prices reached an average of US$ 110 a barrel in 2008, and US$ 63 in 2009.

7.4 Revenue Sharing

According to the CPA, net revenues from the Government's share of oil produced in the South are

47. Personal communication with senior industry executive, May 2009.
48. "Unpaid Debt: The Legacy of Lundin, Petronas and OMV in Block 5A, Sudan 1997-2003", ECOS, June 2010, p. 79.
49. "Energy Politics and the South Sudan Referendum", d'Agoot, Majak, Middle East Policy, December 22, 2009; "Crude Days Ahead? Oil and the resource curse in Sudan", Patey, Luke, African Affairs, August 12, 2010.
50. Ownership shares for GNOP are not disclosed. However, it is clear that full ownership will go to the national authorities after a certain period, reportedly 2014 for GNOP and 2021 for the Adar Adar Yale-Port Sudan pipeline.
51. Joint Technical Committee for Oil Revenue Distribution.
52. "Fuelling Mistrust", Global Witness, September 2009, p.44.
53. This figure was revised from 5% in 2007. Global Witness, "Fuelling Mistrust", September 2009, p. 44.
54. Ministry of Finance and Economic Planning GOSS, Petroleum Unit Khartoum, June 2009 data.

a 49-49 split between GONU and GOSS, while 2% is allocated to the respective oil-producing States. If Sudapet's share is taken into account, GONU's effective share of Southern oil is likely to stand at 51% compared with 47% for the GOSS. The GOSS does not share in oil from the North, about 30% of national production. This so-called Wealth Sharing Agreement is the backbone of the CPA and it seems to have been largely respected. Taking the political history of the country into account, this was a major achievement, inspiring confidence in the ability of both NCP and SPLM to reach workable post-referendum agreements.

While effective, oil revenue sharing has not been flawless. The GOSS has received US$ 5.1 billion since 2007,[58] but a lack of transparency and independent verification of reported data have fuelled suspicions that the GOSS may have been duped. These suspicions focus on a lack of verification of reported production levels and realized prices.[59]

Strangely, no suspicions have been publicly expressed about the potential for fraud on the cost side. All costs of exploiting oil are paid for by so-called 'cost oil'. The oil that remains is termed 'profit oil' and split between companies and the Governments. Tendering processes are not transparent and international companies are somewhat reluctant to participate, reportedly out of concern for prior back-door dealings. Oil companies are reportedly coerced behind closed doors to award contracts to designated companies, leading to inflated prices and creating ample opportunities by the political elite to cream them off.

For instance, the majority of personnel on the oil sites are recruited through Petroneeds. Petroneeds is not only a labour recruitment agency but also a security company. Initially, applicants for jobs reportedly had to produce a National Services Certificate - the document issued after completing military service - to be eligible for a job, putting Southerners at a distinct disadvantage.[60] The consortia are reportedly obliged by the MEM to exclusively use Petroneeds' services. Total is believed to have had difficulty obtaining permission from the former Minister of Energy and Mining Al-Jaz not to contract Petroneeds.[61] In a few years, Petroneeds has become one of the country's largest companies. There are reasons to suspect that its General Manager, Salah Al-Tayeb, holds the rank of General in the National Intelligence and Security Service (NISS). Customers have expressed concerns that Petroneeds substantially overcharges.[62] In addition, leading politicians reportedly have personal business interests in the oil industry and there are no known mechanisms in place that would prevent them from abusing their position.[63]

In addition to the political power play over the CPA provisions on oil revenues, discord about Abyei's new borders is another stumbling block to straightforward revenue sharing. Since the Permanent Court of Arbitration in The Hague has defined the final and binding territory for the area, the Heglig oil field, which accounts for some 57% of Abyei's oil output,[64] has been shifted into Southern Kordofan State, which is part of the North. This means that as of September 2009, oil revenues from Block 2 are not shared. Even though the North-South border demarcation process could again place Heglig in the

Month	Net available for distribution	GoNU	GOSS	S.K. State	Warrap	Misseriya	Ngok Dinka	Development Fund (35.5%)
Jan	28.6	7.17	9.00	0.57	0.57	0.57	0.57	10.15
Feb	26.96	12.13	6.24	0.39	0.39	0.39	0.39	7.03
Mar	19.22	4.81	6.06	0.38	0.38	0.38	0.38	6.83
Apr	32.09	8.02	10.10	0.64	0.64	0.64	0.64	11.41
May	21.41	5.35	6.74	0.43	0.43	0.43	0.43	7.60
Jun	29.15	7.29	9.19	0.58	0.58	0.58	0.58	10.35
Jul	23.3	6.03	7.24	0.47	0.47	0.47	0.47	7.97
Aug	17.03	5.00	5.09	0.35	0.35	0.35	0.35	5.54
Sept	4.85	2.42	2.03	0.10	0.10	0.10	0.10	-
Oct	3.61	1.81	1.52	0.07	0.07	0.07	0.07	-
Nov	4.94	2.49	2.09	0.09	0.09	0.09	0.09	-
Dec	4.21	2.09	1.76	0.09	0.09	0.09	0.09	-
Total	**215.37**	**64.61**	**67.24**	**4.16**	**4.16**	**4.16**	**4.16**	**66.88**

Figure 6: Net revenues from oil produced in Abyei in 2009 (in Million U$). Source: Petroleum Unit GOSS.

55.GNPOC presentation, UNGC conference, Khartoum, 1-2 March 2010.
56.Personal communications, Khartoum, Juba, Melut, February-October 2010.
57.See: http://www.mbendi.com/indy/oilg/govo/af/su/p0005.htm, and GNPOC contract at www.ecosonline.org. This tax exemption does not seem to be fully effective; for example, Total is believed to pay taxes to the Government of Jonglei State, possibly without a legal obligation to do so.
58.According to the AEC, GOSS confirms having received US$ 1,385.67 million in 2007, US$ 2,598.66 Million in 2008 and US$ 1,169.35 million 2009.

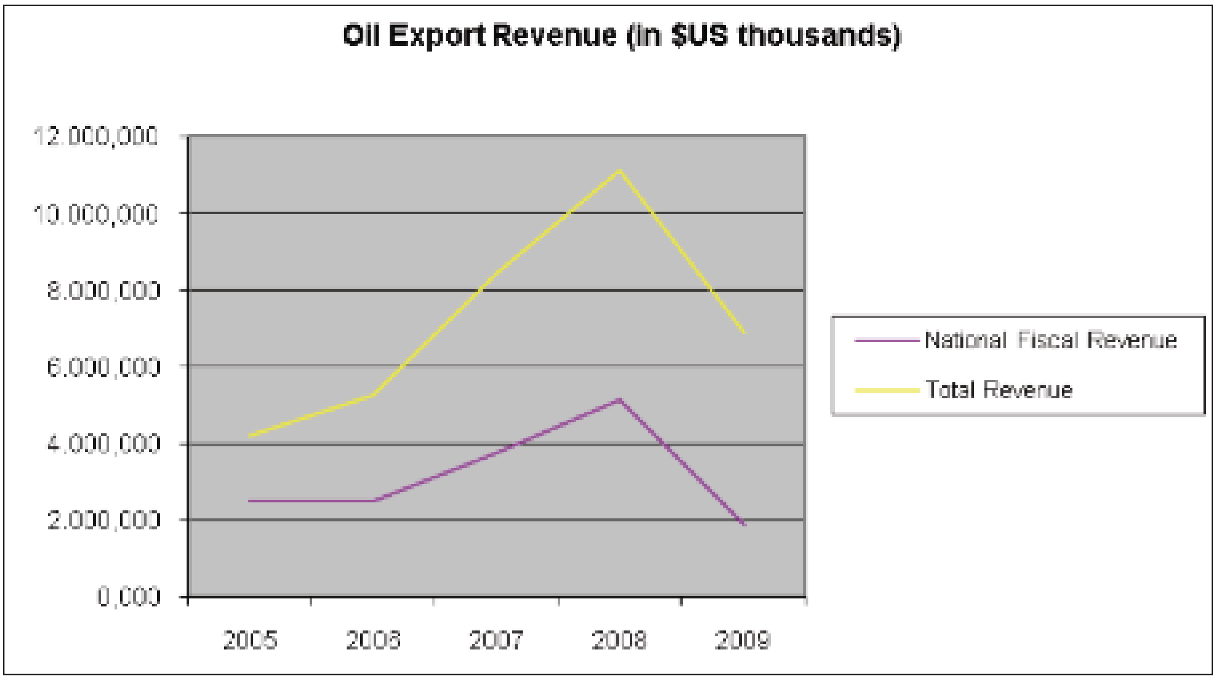


Figure 7: Sudan's oil export value declined sharply in 2009. Source: Bank of Sudan.

south – as has been demanded by SPLM officials – insiders doubt whether this will happen and Heglig will most likely stay in the North.

7.5 Value of Oil Exports

Sudan's total oil export revenues peaked in 2008 at US$ 11.1 million and fell to US$ 6.8 million in 2009. According to State Minister of Finance Al-Tayib Abu-Gnaya, in 2009 "we barely covered [our expenses] for the first quarter in the budget. We still had to borrow from the banks".

The maturing fields under GNPOC management have declined both in overall output and in export value. The Dar Blend from Blocks 3 & 7 is currently the predominant money maker.

7.6 Macro-economic impact

Both GONU and GOSS have over-budgeted for 2009 and both had to make painful adjustments when oil prices fell as suddenly as they had risen. Sudan's oil-related income plummeted by 60% in 2009 compared with 2008 from US$ 6.5 billion to US$ 2.5 billion. The Government of Southern Sudan had to cut its budget by a third, from 5.5 billion SDG in 2008 to 3.6 SDG in 2009. The IMF estimates that Sudan's foreign exchange reserves went from US$ 2 billion in mid-2008 to US$ 300 million in March 2009. This represents merely two weeks of the country's imports. As a consequence, Sudan's oil industry is becoming less significant for its overall economy, both in absolute and in relative terms.

Sudan has seen strong macro-economic growth figures for a decade, largely driven by the oil industry. A large majority of the population, however, is active in economic sectors that are disconnected from the oil economy. A substantial percentage of oil revenues have gone into the government apparatus, most notably the security sector, and neither GONU nor GOSS prioritize pro-poor growth policies. Overall service delivery has not improved since 1999 and only a small part of the population has seen its income grow substantially. In its 2010 country report, the World Bank urges Sudan to push towards greater diversification in order to lessen its dependence on oil.[65]

59.“Fuelling Mistrust”, Global Witness, September 2009.
60.Personal communications, Khartoum and Juba, 2008-2010.
61.Personal communications, Khartoum, 2006. Awad Ahmed al-Jaz is currently the national Minister of Industry.
62.Personal communications, Khartoum and Juba, 2008-2010.
63.Ali Al-Bashir, the President's brother, is a senior manager of Hi-Tech Petroleum Group, see: The Economist, “The Oil Factor”, 21 June 2007, http://www.economist.com/node/9377227?story_id=9377227; Jarch Management Group (formerly in the oil business, currently in agriculture) holds strong links with senior SPLA officers, see: Sudan Tribune, “New SPLA General, Tanginya becomes advisor to US company Jarch”, 23 October 2010.
64.Sudan Petroleum Unit: GOSS Export Revenue in June 2009.
65.World Bank Sudan Country Report, June 2010.

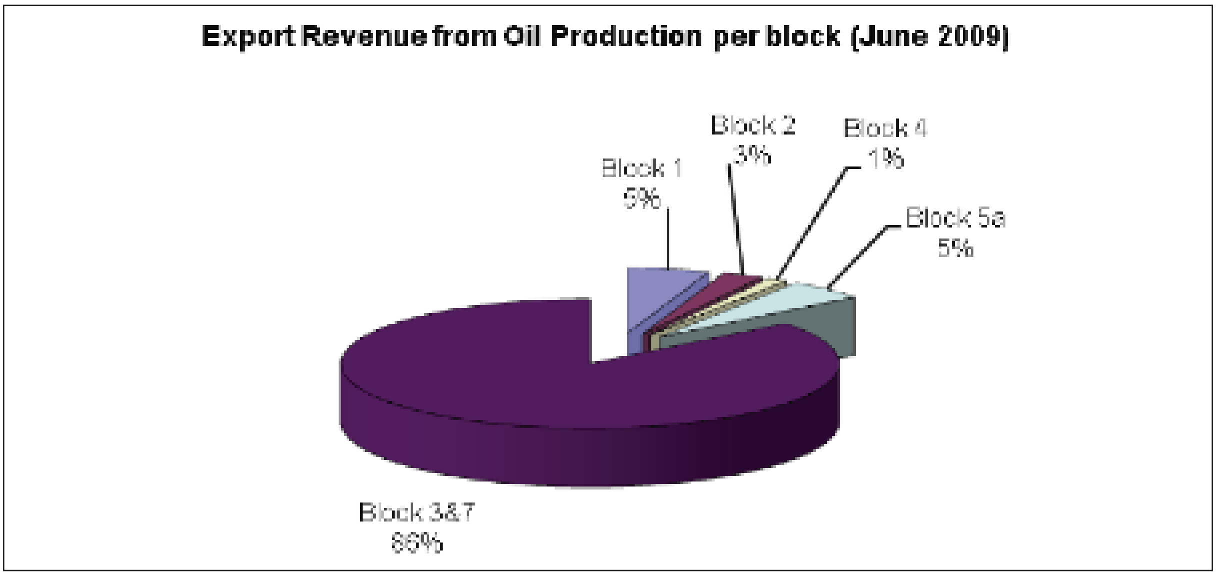


Figure 8: Export Revenue Production from active Blocks. Source: Petroleum Unit GOSS

8. Investment & Outlook

The most immediate challenge for post-referendum negotiations is to keep the oil flowing. For the industry's development in the medium and long-term, it is vital that NCP and SPLM develop a shared vision. Some believe that the coming five years will see a steady decline in oil production and the operating companies will be ending production for lack of profitability. Others expect major new finds in the large unexplored acreage and predict that Sudan will be producing substantial amounts of oil for another decade. The latter scenario requires political stability, an improved popular support basis, and attractive commercial conditions. Either way, one has to keep in mind that for the Asian state-owned companies, Sudan does not only offer potential profits, but also a geo-strategic investment at a time of dwindling fossil fuel stocks, that may be worth maintaining even at low profitable margins.

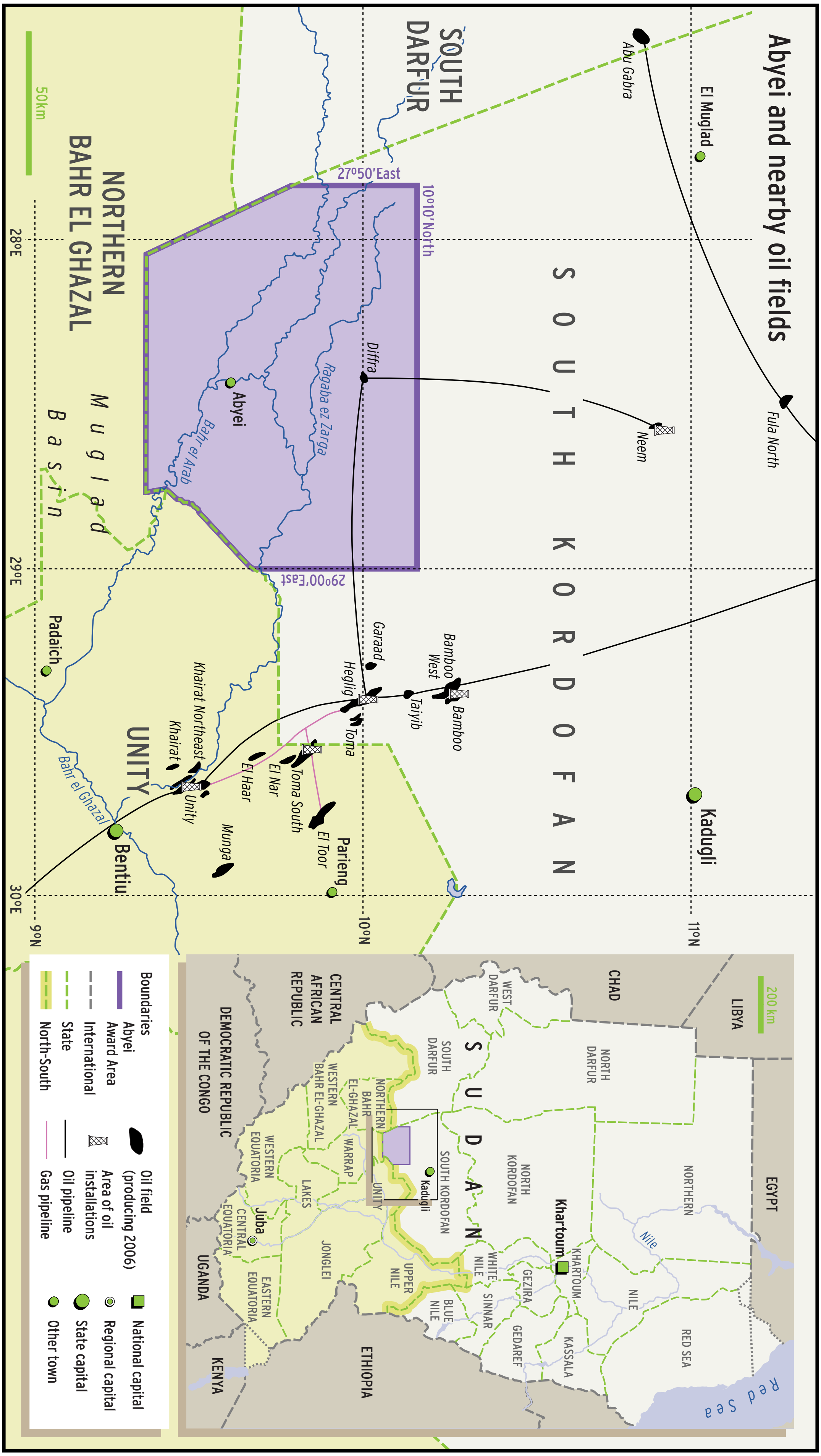
8.1 Volatile Business Environment

Sudan's oil sector has developed despite significant business risks. As a consequence, some may argue, Sudan is likely to attract three types of oil investors: those who believe that they can manage the risks, others who seek opportunities where there are high risks, and finally those who are reckoning with a significantly lower risk profile post-referendum.

The three leading companies have made substantial investments and are keen to sustain their profitable business. However, due to declining profitability and political uncertainty, important anticipated investments have been called off. Sudan's MEM has been unsuccessful in its efforts to keep its Chinese partners to commit to a full 100,000 b/d upgrade of Khartoum's Al Jaila refinery and early 2010, CNPC decided to pledge only half its originally announced financial commitment. Petronas decided against building the new Dar Blend refinery in Port Sudan. The fact that WNPOC-1 reportedly halted operations during the elections as part of a zero-risk policy indicates that political risks are also high on the industry's radar screen.

At the other end of the spectrum, small companies with limited or no expertise in oil production continue to be involved in the sector. Several of them have failed to discover oil, including Ascom in Block 5B, White Nile in Block B, and APCO in Block C, resulting in losses of hundreds of millions of dollars for their undisclosed financial backers. Others have simply been holding on to their concessions, including Zafir in Block A. Yet others are trying their luck. In August 2010, the minor company Star Petroleum, legally based in Luxembourg with Spanish connections, signed an Exploration and Production Agreement (EPSA) for Block Ea, formerly claimed by Spanish H-Oil. In August 2010, the London-based company with Finnish connections, Fenno Caledonian, also signed an EPSA for Block 10. Neither company has experience in delivering exploration and production projects.

No major new investment round is likely to occur before the post-referendum period has delivered a stable and predictable legal and political environment.



Abyei coordinates: as per the Abyei Arbitral Tribunal
Source: Oil fields: IHS Energy, 2006

Map 7: Abyei and nearby oil fields. Source: HSBA Small Arms Survey, 2010.

8.2 International divestment

Internationally, Sudan still has the status of a pariah state, seriously limiting its economic options. The International Criminal Court has indicted President Bashir for war crimes, the country is under a multi-layered economic boycott from the US and is likely to remain so until the conflict in Darfur comes to an end, its human rights record is appalling, and the recent elections have been fraudulent, possibly even more so in the South than in the North. A US divestment campaign that claimed to be able to influence Sudan's horrendous Darfur policy, further raised the reputational stakes for doing business with Sudan. All this serves as a strong deterrent to US and European business and investment communities. Rather than influencing realities inside Sudan, divestment decisions by major parties like PGGM (January 2008) and TIAA-CREF (January 2010) are likely to reinforce reluctance in Europe and the US to seek business opportunities in Sudan. The US sanctions keep American refineries away from bidding on Sudan's Dar Blend, which would otherwise increase competition and prices. The US recently warned Petrochina not to take any Sudanese crude for its newly built refinery in South China, which would be suited to take the Dar Blend. In addition, the sanctions are limiting Sudan's access to much needed advanced technologies.

9. Key Issues & Recommendations

9.1 Accountability

There is not enough accountability in Sudan's oil industry. Largely unscrutinized and under no legal obligation to account for its impact on nature and society, the industry enjoys tremendous freedom to do what it wants. To maximize its contribution to peace and sustainable development and to gain a social support basis, this accountability void needs to be filled. Only the authorities can bring that about.

Sudan's laws and regulations are not adapted to the challenges posed by the industry. The country's many environmental laws and regulations, for instance, ignore issues such as oil spills or blow outs. There are no standards for abandonment and rehabilitation, and the law does not provide for popular consultation, consent or complaint mechanisms. Oil contracts contain no references to social, environmental or human rights standards. Reporting requirements for companies are extremely limited while the Government lacks both the capacity to monitor compliance with existing rules and laws, and the political will to enforce them. Complaints about behaviour and performance are dealt with behind closed doors in the Ministry of Energy and Mining. Local grievances are, at best, dealt with on a case-by-case basis through local authorities. At worst they are ignored. The leading companies are state owned, which further limits their need to publicly account for their activities.
The usual instruments to achieve accountability are legal and contractual obligations, but getting there will take a very long time. Instead, the authorities could fill the accountability void by immediately requiring the industry to respect a series of established international standards and best practices, including respect for human rights and the most relevant IFC Performance Standards and Sustainability Guidelines, norms from the OECD's Anti-Bribery Convention, the Voluntary Principles on Security and Human Rights, the Extractive Industries Transparency Initiative the Global Reporting Initiative's G3 Guidelines, and ISO 14000 and 14001.

Combined with Government monitoring and independent auditing, this would be an effective short cut to bring the industry up to international standards, raising its performance and building its social support basis.

In addition, **the authorities should rescind the prevailing confidentiality clauses** for oil contracts, tendering, and social and environmental impact studies in an effort to make relevant information publicly available. They do not serve the public interest and obstruct parliamentary scrutiny and popular consultation.

If the national government fails to take the initiative, the GOSS could go it alone as the upcoming referendum has opened a unique window of opportunity for the GOSS to negotiate with the industry on its own new terms.

9.2 Accountable governance

Southern Sudan will be eligible for international development aid for many years to come. However, one should not be complacent about this. The austerity imposed by the financial credit crisis will lead to budget cuts for development assistance. Voters in Europe and the US, where most aid monies come from, have become sceptical about financial support to corrupt and undemocratic governments that are indifferent to the poor and have no effective economic policies.

The Government of Sudan does not have a pro-poor economic growth strategy. And as the vast majority of the population in Sudan works in economic sectors that are disconnected from the oil industry, the economic benefits of oil have reached a only small part of the population. The recent elections do not bode well for democratic and transparent decision-making in either the North or South. They have been rigged in favour of official NCP and SPLM candidates. According to oil-industry researcher Luke Patey, the SPLM is "following a trend set by their northern counterparts in accumulating resources at the centre while neglecting the wider periphery". In 2008, 90% of salaries and 67% of development expenditures by the GOSS were spent in Juba. One should no longer take for granted that international donors will be willing to fund elementary services in a country where the government is spending 45% of its budget on salaries and 30% on security.

The expected shrinking of international donor monies makes it even more important for Sudan to create an attractive environment for mainstream international investors.

9.3 Environmental Standards

Both the CPA and the Interim National Constitution require the oil industry to apply 'best known' practices in the oil industry, but neither NCP nor SPLM have specified what those are. Nor did they establish monitoring and enforcement mechanisms. The onus therefore falls on the companies, but they have yet to publicly acknowledge their constitutional obligations.

Complaints about environmental damage abound in all Sudan's oil producing regions. Among the most cited malpractices are large-scale hydrological disturbances, massive dumping of contaminated production water, deforestation, and farmland degradation. Unfortunately, there is very little scientific research to either corroborate or refute these allegations. Available satellite image analyses, however, do confirm local complaints about major hydrological disturbances caused by oil roads.[66]

Thanks to discrete lobbying by Sudanese environmentalists and interventions by the former State Minister for Oil and Mining Ms Angelina Teny, the MEM's environmental awareness has considerably improved over the past few years. In response, the consortia have started to develop environmental policies. In the absence of any reporting or independent scrutiny, it is impossible to assess them.

One concern is whether the industry will tackle its environmental legacies. Another is whether the list of environmentally-friendly initiatives that the consortia have been rolling out over the past few years indeed represent a fundamental overhaul of the industry's performance. For instance, it is unclear whether GNPOC's recently-built high-end facility for the treatment of produced water in Heglig is a one-off example of good practice or the standard that GNPOC will eventually comply with. Self-regulation is not a dependable alternative to government regulation. **It is up to Sudapet and the GOSS to set standards for production water, quality and discharge and ensure industry-wide compliance.**

Clearly, there are immediate costs involved in ensuring environmental protection and local economic impact, but they are minuscule compared with the long-term costs of neglect. The companies are expected to insist on upholding the existing contract, which contains stability clauses that protect them against the costs of future government regulations. Somebody has to foot the bill for protecting nature and livelihoods. An option would be for the **GOSS to consider including the costs of compliance with environmental standards in negotiations about management fees.**

9.4 Legacy Issues

The CPA establishes a right to compensation for people whose rights have been violated by oil contracts. This right arguably applies to the victims of the 1996-2003 oil wars, when tens of thousands of people died and hundreds of thousands were brutally displaced in a violent struggle for control over the oil fields. The clause has not been adequately implemented. **A political initiative to compensate the communities for their losses would be the most effective way to achieve justice and to reconcile the population with the industry.**

An independent and full inventory of environmental legacy issues will also be needed, in combination with mandatory remedial processes and an independent performance audit. Recent statements by senior Chinese politicians about the country's responsibilities in Africa suggest that the CNPC may be receptive to such an arrangement.

9.5 Social Support Basis

Community relations are the Achilles' heel of Sudan's oil industry. A lack of a social support basis is a deterrent for international investors and severely restricts opportunities for growth.

66. "Satellite Mapping of Land Cover and Use in relation to Oil Exploitation in Concession Block 5A in Southern Sudan 1987–2006", Prins Engineering, June 2010; "Oil Development in northern Upper Nile, Sudan", ECOS, 2006. Available at http://www.ecosonline.org/reports.

Sudan's oil industry has developed against the background of war and many people in the South continue to regard the industry as an enemy. After the signing of the CPA, instances of inconsiderate behaviour towards local communities have continued to be reported. The industry is still controlled by the national Government and seems to lack affinity with the concerns of people in the South. Discrimination in the workforce against southerners is still rife. Consortia tend to communicate with local political authorities rather than directly with communities. Such top-down policies are known to deliver ineffective projects and preliminary results from ECOS research in Upper Nile State suggests that they can also be observed in Southern Sudan. A number of newly-built schools and clinics appear to be malfunctioning in the absence of staff and sustained financing.

Community projects have, for a long time, been a top-down affair, following directives from the Ministry of Energy and Mining rather than development strategies and consultations with affected communities. The prominent role that the CPA reserves for community consultations has remained largely ignored. The prevailing policy seems to be to buy goodwill through projects. This creates community dependence on favours without creating true common interests. It is a deeply flawed concept that creates a client-patron relationship that is basically antagonistic rather than mutually respectful. The prevailing system sends the message that it pays to cause problems. Key functionaries at the MEM have recently publicly acknowledged the need to engage in genuine dialogue about the oil industry's current practices, challenges and prospects. This is long overdue. **To build a social support basis, companies will have to engage with the population on the basis of equality, that is, based on the rights of each stakeholder instead of a relationship built on privileges and sensitivity to nuisance value.**
In Upper Nile, there are some recent examples of PDOC consulting local communities about the location of waste dumps and water points. However, the major grievances for the local population such as discrimination in the workforce, lost farmland and compensation claims, still need to be dealt with satisfactorily.

9.6 Post-referendum challenges

The decision on unity or secession will be taken by the South Sudanese people. Whatever the outcome, a new agreement for managing the oil industry is needed. **Post-referendum arrangements must be comprehensive, satisfy the interests of the people in Northern and Southern Sudan, and offer a commercially attractive framework for the future management of the industry.**

North and South Sudan share a heavy dependency on oil and a healthy petroleum sector is crucial to all. Post-referendum arrangements will be closely monitored by the international financial markets. The economic prospects for sustained economic growth in Sudan are tremendous. The South has a fabulous unexplored potential for agricultural development and natural resource exploitation and the impressive oil-driven economic growth in the North has built a significant human and institutional capacity that will enable it to attract and absorb high levels of foreign direct investment. A comprehensive, straightforward and legally sound deal that ensures continued and responsible exploitation of Sudan's oil wealth is crucial for building confidence in Sudan's economic future among the international business community.

Comprehensiveness

The petroleum industry is complex and the scenario following a split up of the country would require unravelling and dividing an intricate web of legal, financial, contractual, economic and managerial factors. Not unlike separating Siamese twins, it would be a risky and painful operation. An agreement that is indecisive or incomplete will lead to future disagreement and gruelling renegotiations.

As a prerequisite for successful post-referendum negotiations, NCP and SPLM negotiators will all need unlimited access to a full package of information about oil production, calculation parameters, marketing, export and refining, as well as all relevant data on ownership, contractual rights and obligations, money flows, financial arrangements, et cetera. This will require establishing a data room. If not realized shortly, post-referendum negotiations will take place on an unequal footing which is tantamount to guaranteeing that their outcome will be disputed.

Financial arrangements

A new agreement to share the benefits of oil may create the necessary body of common interest between NCP and SPLM to ensure peace. Continuation of the oil flows are a shared priority, but continuation of the existing revenue sharing formula cannot be explained to the population in the South and will be unacceptable to the SPLM. The history of distrust between the two sides counsels against arrangements that would require close cooperation, i.e. shared ownership and shared management. Ownership is irrelevant if there is joint oversight and sound financial arrangements. The alternative would be a fee-for-service based deal as part of a comprehensive financial scheme.

GOSS could agree to pay service charges to operating companies in accordance with a clearly defined formula, for example between US$ 4-6 per barrel. Management charges, to the extent they apply, could be paid to Sudapet. Payment could be made to Khartoum on a monthly basis, in foreign currency. Negotiations on security provisions for the operations and the infrastructure could also be part of such an agreement. For example, Khartoum could present a budgetary plan on policing the pipeline maintenance operations per year. Both SPLM and NCP agree to keep downstream operations under Northern management under a fees-for-service model and leave upstream management to the GOSS.

The financial dimension of the arrangement could include standards for calculating a fixed percentage of the achieved price per barrel (calculated separately for each month) for each of the management tasks as well as of the downstream operations such as processing, refining and export handling in Port Sudan. Payment clearance could be done on a monthly basis, in foreign currency.

Southern capacity

Should secession become reality, the GOSS will instantly inherit contracts and all the rights and duties they entail, without having at its disposal the necessary human resources, institutions, experience and legal capacity to monitor operations, enforce the law and protect its own rights and interests and that of its population. Nilepet, the future Southern state oil company, is equally unable to fully assume its responsibilities. If Southern Sudan becomes an independent state, this will become an acute and hugely costly affair. External consultants may be able to partially help out, but they are expensive and the GOSS would be unable to assess their work. **An accelerated recruitment, training and exposure programme for future GOSS oil experts is urgently required.**

Social support basis

As described in paragraph 9.5, the petroleum industry lacks a proper social support basis, and consequently suffers from occasional sabotage and extortion, adding to the already high risk profile of the industry and discouraging investment.

Contract review

A review of Exploration and Production Sharing Agreements is inevitable. The prevailing contracts are outdated and do not meet the terms of possible Southern secession. They are partly responsible for problems in the petroleum industry. Issues such as environmental protection, workmanship standards, compensation, labour rights, security provision, abandonment and rehabilitation, and social impact are not addressed, and where they are they are poorly addressed. These issues are also ignored in the arrangements for cost recovery. As a result, in day-to-day negotiations between a consortium and the government, both negotiating parties have an immediate financial interest in keeping costs low. If the South becomes independent, the new country will wish to see its vital interests reflected in legally enforceable obligations of the industry. As the companies are likely to object to contract renegotiation, another form of adjustment needs to be agreed upon, for instance annexes to the contracts that qualify its stabilization clauses in specific issues such as representation of Southerners in the workforce, relocation of offices to the South, environmental standards, funding of abandonment, environmental regulation and rehabilitation, and taxation.

Preparations for the contract review agenda are long overdue. **The SPLM would be well placed to take the initiative by starting to highlight the issues, requesting the companies to submit relevant information, and proposing an agenda.**

Annex I: Chronology of oil development

1959 – 1983: First findings
Oil exploration started in 1959 when Italy's Agip oil company was granted offshore concessions in the Red Sea area in the North-East. It carried out seismic surveys and drilled six wells. Following Agip, other Western oil companies -Oceanic Oil Company, Total, Texas Eastern, Union Texas and Chevron- moved in to search, but to no avail and most companies relinquished their concessions. In 1974 Chevron, operator of a consortium in which Shell (Sudan) Development Company Ltd. took a 25% interest, got permission to search for oil. In 1978 Chevron found the first oil in the Muglad Basin which stretches deeply into Western Upper Nile in the South. In 1981 it made a second, more moderate find in the predominantly Dinka area Adar Yale in Melut Basin, east of the White Nile. Four exploratory wells showed flow rates of 1,500 and more barrels a day. Chevron believed there was a potential all the way south to Malakal and east to the Ethiopian border. In 1982 Chevron made a third, much larger discovery at Heglig, 70 km North of the Unity field, home of the Nuer. Chevron began to develop Unity and Heglig oilfields. In 1980, the Government granted a 118,000 km2 concession to the Franco-Belgian Total. Unlike Chevron, Total did not get beyond seismic exploration because of security problems. This remained so for a quarter of a century.

1983 – 1998: Oil exploration commences
In 1984 Chevron suspended operations and removed personnel, after the SPLM/A attack Chevron's base at Rub Kona, near Bentiu, killing three expatriate workers. The Government divided the former Chevron concessions into smaller units, and in 1992 awarded the Melut Basin – Blocks 3 and 7 – to Gulf Petroleum Corporation-Sudan (GPC). In October 1996 GPC drilled and reopened Chevron's wells and built an all weather road from Adar Yale to Melut. In March 1997, President Omar al Bashir inaugurated the site at Adar Yale. Production was only 5,000 b/d, but it was the first Sudanese crude oil to be exported. It was transported by truck to Melut, and from there by boat to Khartoum. By May 1998, production had increased to 10,000 b/d.
In 1992, Arakis Energy Corporation from Canada stepped in and together with its partner State Petroleum acquired former Chevron Blocks 1, 2 and 4. Arakis made several new oil discoveries but never raised sufficient capital to finance the project. In December 1996 it sold a 75% interest in its project to state-owned oil companies from China, Malaysia and Sudan, forming a consortium called the Greater Nile Petroleum Operating Company (GNPOC).

1999 – 2004: First boost
In 1997, GNPOC built a 1540 km oil pipeline from the oilfields to a marine export terminal on the Red Sea. On 31 August, 1999, the first 1,500 barrels of crude travelled through the pipeline to be loaded onto a tanker, which sailed for refineries in the Far East. Oil production and export have increased steadily since then and new discoveries have been made. In 2003 the CNPC announced the discovery of a 'world class' oil field in Blocks 3 and 7 east of the White Nile. In 2003, oil production averaged 270,000 b/d, and in 2004, 304,000 b/d.

2005 – 2008: Second boost
The signing of the CPA in January 2005 improved conditions for oil production and export. Until 2006 Sudan had only one major upstream project (Blocks 1, 2 and 4, operated by the Greater Nile Petroleum Operating Company in the Muglad Basin), one export pipeline (Greater Nile Oil Pipeline – GNOP), and one crude oil blend (high quality Nile Blend). Late 2006, a second pipeline came on stream, a major refinery expansion was completed, a second major upstream project began, producing a second crude oil blend (low quality Dar blend), in addition to important field developments elsewhere. The country's crude oil production almost doubled, making it Africa's fifth producer with more than 434,000 b/d by late 2006. 2007 and 2008 saw a sharp increase in oil prices, and Sudan's oil investments boomed as a consequence; production levels in 2007 reached 500,000 b/d.