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The New Oil-Related Issues in the Sahara

Benjamin Augé¹

Abstract

The Sahara is one of the last African regions to remain under-explored by oil companies. After the swift rise in crude oil prices about a decade ago, the land-locked nature of the terrain, the main hurdle standing in the way of exploration, had been overcome thanks to an exponential growth in sums set aside for exploration. The arrival on the scene of State enterprises, especially from China, also made profitability secondary to the pressing need to find new reserves. A study of the state of affairs in Mauritania, Mali, Niger, and Chad discloses how the situation differs from case to case. Some are already producing like Mauritania, albeit in small quantities, and Chad, which is the sole net exporter of the region, whereas Niger will begin producing in 2012 and Mali has not had a single well drilled for decades due to its haphazard choice of oil companies. The four States mentioned do not cooperate in any way in the oil sector even though this ought to be essential in a zone that has such special peculiarities in terms of climate, geography, and security as it is facing the threat of Al Qaeda in the Islamic Maghreb (AQMI) and the Tuareg.

Oil exploration in the Sahara region has developed dramatically over the past ten years. This is primarily the result of an increase in the oil price on the international market, where the price of crude oil went from US\$10 a barrel in 1998 to US\$147 by July 11, 2008. It then fell to US\$40 in December, 2008, only to recover in 2009 and 2010, when it fluctuated between US\$70 and US\$90 per barrel. The high prices caused a fundamental change in the geography of areas of exploration around the world, and in Africa in particular. The amounts budgeted by oil companies for exploration in already known areas skyrocketed, but the higher oil prices led

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to exploration in sedimentary basins that had hitherto been little explored, as was the case with the Sahara. This vast, extremely arid expanse extends from Mauritania to Sudan and includes Algeria, Mali, Burkina Faso, Libya, Niger, and Chad.

Exploration in the Sahara is not a new phenomenon. Oil companies (and especially French companies), started producing oil in the north of the Algerian Sahara from 1958, at the same time as on the Libyan coast and in Nigeria. It was not until 1999 that another country in the region began to produce oil. Thanks to the efforts of the China National Petroleum Corporation and Malaysian company PETRONAS, the region that was to become South Sudan by referendum on July 9, 2011² actually started producing 500,000 barrels per day (bpd) (although, strictly speaking, the South Sudanese oil region lies outside the Sahara in climatic terms, because that zone ends in Darfur, in the west of the country). Four years after production was started in Sudan, it was Chad's turn to start production in the southern region of the Doba Basin, with a volume of just under 200,000 bpd; then Mauritania joined the envied producers' club thanks to the Chinguetti offshore oilfields, 70 kilometers to the west of Nouakchott.

Several oilfields had already been discovered in the 1980s–1990s, but it took some time to develop them because they were land-locked. Niger is an example of this: the oil companies Elf, and later Exxon and PETRONAS, had discovered large potential reserves in the Agadem bloc in the east of the country in the 1990s. However, low oil prices meant that building a 1,500 km pipeline to reach the sea would have been unprofitable, and, coupled with political conditions they deemed too risky, this actually led them to leave the country altogether. It took the arrival of a Chinese State-owned enterprise in Niger in 2008 to relegate profitability to a secondary role, at least at first, and to replace it with the priority of producing oil, which had become a scarce resource and thus strategically important. In three years, the Chinese managed to drill fifty wells and to build a refinery and a pipeline to link it to the oilfields. Likewise in neighboring Chad, the Chinese, who had no operations in the Doba Basin, managed to discover other oilfields and also built a refinery north of N'Djamena.

This paper will not deal with all the countries in the Sahara region; we shall confine ourselves to studying four Saharan countries: Mauritania, Mali, Niger, and Chad. Only Mauritania and Chad produce oil, but we shall not linger over the consequences of already existing projects, but will rather describe future projects or those under development. We shall pose the question as to what the effect was of the high

2. A part of the oil fields is also under the sole control of Khartoum to the extent of 70,000 barrels per day, and a part of the oilfields straddles the border—a source of significant difficulties in the negotiations between the two countries.

crude prices on this region which had previously attracted little interest from the oil companies. Is there cooperation between the region's countries in the oil sector? The case of Mauritania will be linked to that of Mali because they share the same sedimentary basin, the Taoudenni Basin. This basin extends north into Algerian territory, but the complete lack of drilling and scant exploration in the area is evidence that the country does not consider the basin a priority, even though Sonatrach's directors are convinced of its large potential.³

By the same token, from the point of view of using the same infrastructure for export and with the same actors present in both countries (Chinese companies) the cases of Niger and Chad are also linked. To avoid dealing with developments bloc by bloc or region by region, we will follow a thematic structure. We will firstly examine the special role played by State-owned enterprises in exploration in the four Saharan countries. Aside from the Chinese companies, Algerian, Tunisian, and Libyan companies also feature prominently, and they are also joined by companies from the Gulf, like Qatar Petroleum and KUFPEC from Kuwait. This paper analyzes why these State-owned enterprises, which are driven by strategies and cycles which differ somewhat from those of privately owned companies, wish to be involved, specifically in this immense, inaccessible, and under-explored region. They are not the only ones active in the Sahara: for several years, large and smaller private enterprises have believed in the region's potential. Some of them act in concert with State oil companies, as is the case in Mauritania. We also address the matter of the primary challenge of this region, namely the problem of how companies, through negotiations with the States, plan to get oil out of the land-locked region. Aside from an *a posteriori* study on the World Bank's showcase project, the oil pipeline between Chad and Cameroon (which turned out to be a comprehensive failure), other possibilities for developing pipelines to export crude oil from the Agadem bloc in Niger will also be examined. The other possible use of oil is to provision locally built refineries. The individual cases of the Chinese refineries in Niger and Chad, whose economic viability is doubtful, will also be studied. Finally, we will conclude with the challenges faced by the Trans-Sahara Gas Pipeline, which is meant to carry gas from the Niger delta to Algeria via Niger and perhaps Mali. Many security challenges will have to be overcome throughout the development of this project, which has been discussed since the 1990s. Because of the growing power of terrorist organizations like Al Qaeda of the Islamic Maghreb (AQIM) since 2006, and the increase in violence in the Niger delta, it is difficult to envisage this project being finalized in the short term.

This paper is mainly based on approximately fifty interviews with senior government officials, ministers, journalists, teachers, and NGO employees conducted

3. As revealed in discussions with Sonatrach's directors in February 2011.

in the field in Mauritania and Mali during visits from 2007, as well as on frequent conversations with senior officials from the Ministry of Mines in Niger and with oil consultants from the office of the president in N'Djamena.⁴

The Diverse Range of Oil Companies in the Sahara

The oil blocs in Mauritania, Mali, Niger, and Chad all have in common that the surface area under concession is far larger than anything on offer in most other exploration fields. For example, bloc 20 in northern Mali, which is conceded to Sipex (Sonatrach International Petroleum Exploration and Production Corporation), is 117,000 square kilometers large, equal to one tenth of the country's land area. In Mauritania, the Taoudenni blocs are more than 50,000 square kilometers each. Even though the sixteen available blocs in Niger were subdivided by decree into about thirty sections in October 2010, leading to a reduction in the available areas for exploration permits, these nevertheless cover an average area of between 30,000 and 50,000 square kilometers (*Africa Energy Intelligence*, November 10, 2010). This strategy is aimed at making them attractive to the oil companies, because the probability of discovery is statistically higher with larger areas.

Land registries for oilfields also reveal the presence of three types of oil companies. The first, which is the largest and most prevalent, is that of State-owned oil companies from the Maghreb, mainly from Algeria, Tunisia, and Libya, from the Gulf (from Qatar and Kuwait), and from China; the second category consists of a few large and medium-sized Western companies, all from Europe, notably Total, ENI, Repsol, and Wintershall; and lastly, the third group, which until recently was especially common in Mauritania and now in Mali, is very small companies, often without the necessary resources, that band together and take over a bloc with the simple purpose of speculating on the companies operating in neighboring blocs making a discovery that would then increase the value of their own areas.

The Strong Presence of North African National Oil Companies

National oil companies from the oil-producing countries of the Maghreb are all interested in the Sahara region to their south for reasons of geopolitical control over this hinterland, and because they have close language ties—French or Arabic—and

4. This network of contacts could be expanded and maintained from the summer of 2008 thanks to the author's work as editor-in-chief of the information bulletin, *Africa Energy Intelligence*, a source which will be extensively cited in this article.

historic relations. Their investments in oil in the region are normally their first outside their national territory. Their venturing into the region has also gone hand-in-hand with recent oil price increases, and the boom has led them to explore outside their own country.

The Algerian company Sonatrach started showing interest in the southern Saharan states less than a decade ago. Sonatrach International Petroleum Exploration and Production Corporation, or Sipex, was formed in 1999 and was registered in the British Virgin Islands to allow it to be active in oilfields outside Algeria. The proliferation in Sipex's investments was broadly encouraged by the huge cash reserves of between US\$300 and US\$400 billion that the parent company amassed during the boom years of 2000–2008. In 2005 Sonatrach set itself the ambitious target of having 30% of its oil production originate outside Algeria within a decade (*Africa Energy Intelligence*, March 2, 2005).

To start with, Sipex took 20% of two blocs held by Total (Ta7 and Ta8) in the Mauritanian section of the Taoudenni Basin, which straddles Mauritania, Mali, and Algeria.⁵ Total, which wanted to spread the risks associated with the area's remote location and the paucity of geological knowledge, also sold 20% of the two portions to Qatar Petroleum in 2007. In that same year, Total signed an agreement with the Société Mauritanienne des Hydrocarbures (SMH)—the Mauritanian Hydrocarbon Company—for the exploitation of blocs Ta1, Ta30, Ta31, and Ta3, without there being any on-site development. In 2005 Sipex also launched itself into the Kafra bloc in Niger's northeast, and first began drilling in 2011. After that, the Algerian corporation decided to take over a whole bloc, bloc 20, for itself in the Taoudenni Basin in Mali, as well as five others in partnership with Italian company ENI, namely blocs 1, 2, 3, 4, and 9. When it became apparent that it could not honor its contractual obligations for so many blocs, the commercial partnership between the two companies began by surrendering blocs 3 and 9 and an amendment to the production sharing agreement was signed⁶ to allow the merging of blocs 2 and 4. This scheme had

5. The Algerian part of Taoudenni (100,000 square kilometers) was virtually unexplored. There had been neither drilling nor a seismic survey. There had only been shallow core drilling and a field identification search. All the same, discussions with Sonatrach senior officials revealed the company was very interested and believed it held huge potential though the development of the more northern reaches was its priority. It should not be forgotten that the Algerian part of Taoudenni lies in the far southwest of the country and thus extremely far from the coast. Surveys of Taoudenni in the other countries nevertheless gave them a better idea of the geology of the basin so as to subsequently carry out more concentrated exploration in the home country's section of the basin.

6. In the oil industry, a production sharing agreement means that in the event of discovery and subsequent production, the oil companies and the State will share the oil produced in the oilfield described in the contract in accordance with an allocation index specific to each case.

nothing to do with Sonatrach's financial difficulties, but was rather influenced by the desire to await the results of the first drilling in Total's bloc in the Mauritanian part of the basin, which took place in the summer of 2010. Although the well's yield was rather disappointing, the French company decided to drill a further well. Because it hesitated so long, Sonatrach found itself obliged to surrender some of its blocs to the State of Mali. The company found itself ideally located in the Mauritanian segment because of its partnership with Total.

In Mali, Sonatrach took advantage of the country's poor governance and the rather lackadaisical approach of the energy regulation body, the Petroleum Development and Exploration Authority (Autorité pour la Promotion de la Recherche Pétrolière/AUREP), to postpone its drilling until 2009. As it had rights in just two blocs, it was only obliged to drill a single well in each area, in theory by 2011.

Sonatrach operated under its own name in Africa, but also operated in commercial partnerships, especially the Numhyd company, a joint venture 50% owned by Sonatrach and 50% by the Entreprise tunisienne d'activités pétrolières (ETAP), the Tunisian national oil company. Numhyd has two permits in North Africa: Kabboudia, off the coast of Tunisia, and Hmara, in the prefecture of Illizi in Algeria.

Tunisia's ETAP also operates under its own name, in particular in the part of the Taoudenni Basin located in Mauritania. The company signed an initial cooperation agreement, reconfirmed in 2008, with SMH, the Mauritanian national oil company, to develop the areas Ta40, 39, 54, and 22. SMH, which was formed in 2004, wanted to take advantage of ETAP's experience because ETAP participated in virtually all the onshore and offshore concessions in Tunisia.⁷ By the beginning of 2011, however, the agreement had still not been ratified. On the Mauritanian side, this was partly due to the high turnover in the post of Oil Minister, with eight people having held the position since 2005. It was also due to a lack of enthusiasm for the deal on the part of senior Tunisian oil officials. The 2007 agreement arose out of a political decision in Tunis to demonstrate goodwill to its impoverished southern neighbor.

Even though Libya does not participate directly in exploration in the countries of the Sahara through the intermediary of its national company, the National Oil Company/NOC, it does run the majority of the gas stations in Niger. In 2008 it had actually bought up all the distribution assets of ExxonMobil in Tunisia, Morocco, and Niger, having bought those in Senegal in 2007. The Tamoil company, which

7. According to *BP Statistical Review of World Energy, 2010*, Tunisia produced 86,000 barrels a day in 2009. Its production never exceeded the 118,000 barrels a day it achieved in 1980. Virtually all its territory is the subject of exploration by medium-sized companies. The country also produces significant quantities of gas. The chief executive officer of ETAP even alluded to the possibility of creating an export marketing arm in the next five to ten years in an interview with *Pétrole et Gaz Arabes*, in January, 2011.

belongs to Libya Oil Holdings Ltd., one of Libya's investment funds, actually undertook those operations (*Africa Energy Intelligence*, September 17, 2008). On September 5, 2009, Libya Oil Holdings Ltd., which now owned 3,000 gas stations in Africa, took its first steps towards participating in exploration by buying equity in Circle Oil, an Irish company. In December 2007, the fund subsequently awarded three exploration concessions in northern Chad: Erdiss 1 and 2 as well as Djado 1.

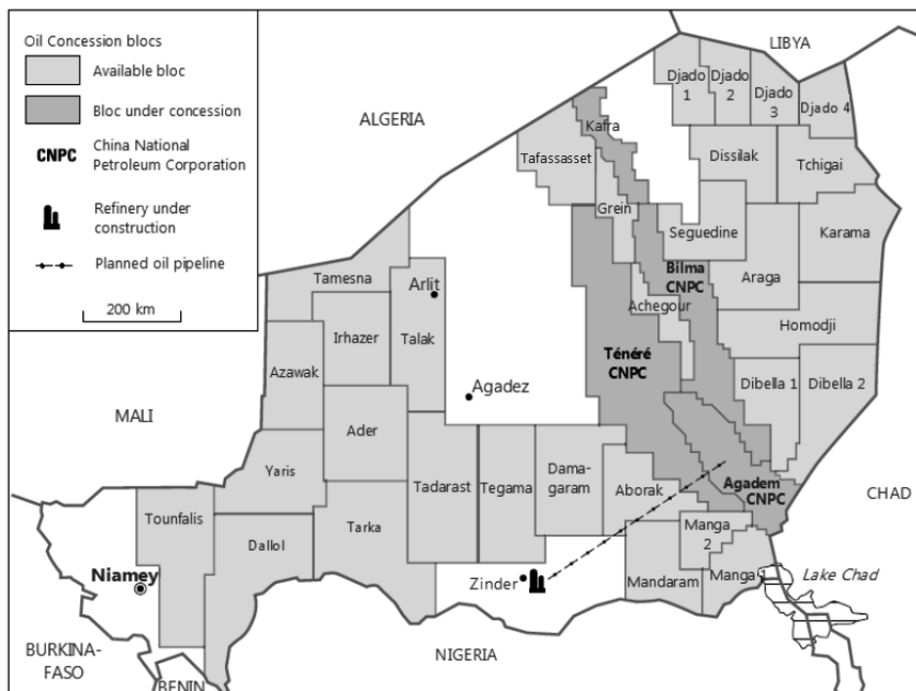
Heavy Involvement by Asian Companies

The other State-owned oil exploration company that figures prominently in our four Saharan countries is the Chinese CNPC (China National Petroleum Corporation). Although it has been active in Sudan since the mid-1990s, operating in most of productive oilfields, it only entered Mauritania in 2005, with a concession in bloc 20 on the coast between Nouakchott and the Senegalese border. This area forms part of the coastal basin and is geologically very different from the Taoudenni Basin. After drilling a dry well in 2007, CNPC surrendered its concession to the State in 2009. It is also no longer active in the Taoudenni Basin where, after a disappointing run, it surrendered the Ta20 and Ta21 concessions, which are just to the south of where Total is prospecting. Although the CNPC is not present in Mali, it is in Niger and Chad. In 2003 it started operations in the Niger Ténéré bloc, which extends over almost 70,000 square kilometers of the Diffa, Zinder, and Agadez regions (*Africa Energy Intelligence*, November 26, 2003). In 2008, it took over the giant concession of Agadem in the east of the country, where production will start in 2012. As for Chad, the CNPC, which in the beginning had been in partnership with the small Canadian company Encana, from the time of its arrival on the scene in 2003 started developing the Rônier concession near the small town of Bousso in the southwest. In 2006, it took a 50% share in the consortium formed for concession H, which extends over several sedimentary basins. It then bought the complete concession on January 12, 2007, and it is expected that this concession will produce 20,000 barrels per day from 2012. China Petroleum Company (CPC) of Taiwan has also operated blocs 1, 2, and 3 of the Chari Basin since 2006. A well drilled in bloc 1 in 2010 revealed the presence of significant reserves.

Why is China so heavily involved in all the Saharan countries except Mali? China, through its three national oil companies, CNPC, CNOOC (China National Offshore Oil Corporation), and Sinopec, wants to secure its energy supply because its own coal and oil resources have not been enough to satisfy domestic demand since 1993. In 2010, China consumed about 9 million barrels a day, of which just 3.5 million originated in its own territory. Although these companies increasingly operate in accordance with the same criteria as the other big oil companies, they

must still show a little profit and they thus seize on the opportunity to go into areas where no other oil companies want to go. It invests large amounts there in the hope of discovering new reserves. As it so happens, the presence of oil deposits in the Agadem bloc in Niger had already been verified at the end of the 1990s. Traditional international companies like Elf, Exxon, and PETRONAS still considered the exploitation uneconomical, given that the area and its reserves have no access to the coast. Moreover, when there was a call for tenders in 2008, very few were willing to accept the conditions laid down by President Mamadou Tandja of Niger, who stipulated that a refinery must also be built: a costly project with little prospect of profitability. Chinese state oil companies can, as a result, afford to invest in the short term without concerning themselves with profits, with the expectation that they will recover the investment over the very long term.

MAP: THE CHINA NATIONAL PETROLEUM CORPORATION IN NIGER



Private Companies Active in the Sahara

Aside from showing the massive presence of national oil companies, an examination of the map of the blocs in the four countries reveals the presence of privately-owned companies. One after the other since the 1970s, large companies like Elf, Exxon, Chevron, and ENI have carried out exploration in Mali, Niger, and Chad. There was far less exploration in Mauritania and the Taoudenni Basin had hardly been touched when companies started oil exploration there in the mid-2000s, but today it is in Mauritania that the largest number of companies carrying out exploration in the Sahara can be found, including French company Total, Spanish company Repsol, and the German companies Wintershall (the petroleum arm of chemical company BASF) and RWE (Rheinisch-Westfälisches Elektrizitätswerk AG). These companies rushed to Nouakchott after the 2001 announcement of the discovery of the offshore Chinguetti oilfield. The Taoudenni Basin (in which the oilfield is located) was one of the last to have been extensively explored. It is a risky sedimentary zone but presents opportunities at a time when oil companies have sizeable budgets for exploration. Other companies attempted to join the bandwagon of the Taoudenni venture once they saw the other groups there, but were ejected by the Oil Ministry in 2008 for failing to abide by production sharing agreements; this happened to private Sudanese company Hi-Tech, which had five blocs, and to ASB (the Ahmed Salem Bugshan Group), which had seven blocs (*Africa Energy Intelligence*, November 26, 2008). Exploration rights to two coastal blocs held by 4M Energy were also withdrawn.⁸

Moreover, the Mali section of the basin attracted large private companies like the Italian ENI in partnership with Sonatrach in bloc 4, and, to a lesser extent, Heritage, which partnered with Centric Energy in blocs 7 and 11. By contrast, the other basins in Mali such as the Nara Basin, the Gao Graben, and the basins of Tamesna and Iullemeden, have been explored by very small companies hoping that oil will be discovered in a neighboring bloc, thereby making a partnership more attractive for a larger company. This hope is fed by the potential arrival of Tullow Oil, which is involved in huge oilfield exploration in Uganda and Ghana, in the Tasmene region and the Nara Basin, with a delegation from the company meeting with President Amadou Toumani Touré on June 1, 2011.

As for Niger and Chad, although the CNPC is the biggest actor, there are also a number of other companies there. Exxon, PETRONAS, and Chevron operate the

8. The coastal basin hosts several big companies, like PETRONAS, which is the only active producer in the Chinguetti oilfield, as well as Tullow, which discovered oil in Ghana and Uganda, GDF-Suez, and Dana Petroleum which has a presence in Guinea, Egypt and the North Sea, and which was acquired by the Korean National Oil Company (KNOC) in 2010.

oilfields of the Doba Basin in the south of Chad, from which between 150,000 and 200,000 barrels per day are exported via pipeline to the town of Kribi in the south of Cameroon. In Niger, the small Canadian company TG World holds a minority share of the Ténéré bloc, which is also operated by CNPC. Several large companies like Gazprom and China Sonangol, a private joint venture with Angolan and Chinese interests, also approached the Ministry of Mines in Niamey in 2010.

Oil Governance in the Saharan Countries

How is the oil sector managed in the Saharan countries that feature in this study? Only Mauritania⁹ and Chad have a dedicated oil ministry: in both Niger and Mali oil falls under the portfolio of the Ministry of Mines. Neither country has begun oil production yet; in Niger production is expected to start in 2012, while none has yet been discovered in Mali. Aside from the ministries, the four countries have formed either national oil companies or independent regulatory bodies for their oil industries in areas such as exploration, production, and oil distribution, operating under a supervisory ministry. These are the Mauritanian Hydrocarbon Company (SMH) and the Chad Hydrocarbon Company, both formed in the early 2000s, and the Niger Company for Petroleum Products, Sonidep, which was formed in 1977, and deals solely with petroleum products. These three entities are not authorized to grant concessions for blocs, something that remains the responsibility of the ministries only. Their role is to manage the State's participation in oil production or exploration, to regulate the import of petroleum products, and to compile a geological database. The State either holds sole rights over blocs, which it develops with the assistance of friendly companies such as SMH and the Tunisian ETAP, or holds a minority interest in concessions awarded to and developed by foreign companies. Finally, the Petroleum Development and Exploration Authority (AUREP) of Mali has already been mentioned. Its role is to grant bloc concessions, which could be deemed a service by the Ministry of Mines. These ministries, national oil companies, and agencies essentially operate in reliance on the skills of just a few dozen people.

In 2007, the oil ministry in Mauritania was subjected to an audit thanks to funding from the World Bank and the desire of then minister Mohamed El Moktar Ould Mohamed El Hacen to improve its operations. The results revealed that a few dozen officials actually had no suitable training to work in the sector, and that others had been receiving salaries since the formation of the ministry without ever having

9. The most recent oil minister appointed in Mauritania, Taleb Ould Abdi Val, has responsibility for mines and energy as well as oil.

shown up for work. These officials were employed under short-term contracts, which are commonly used in the Mauritanian public service, and termed non-permanent staff.¹⁰ This particular type of contract fosters nepotism as it allows ministers to employ people close to them from their home regions or to whom they simply owe favors.

The case of Chad bears mentioning. National oil company SHT was managed by the brother of President Idriss Déby's second wife right up until February 2011.¹¹ The cozy relationship between oil officials and political office-bearers seems to feature less prominently in Mali and Niger because the sector does not have the same strategic importance there.

The Role of Donors in Chad

The World Bank learned a great deal from the Chad oil experience. At the end of the 1990s, even though oil companies Exxon, PETRONAS, and Chevron were convinced of the potential of oil reserves beneath the fields of the Doba Basin in southern Chad, they were rather squeamish at the thought of being the only investors in a project worth US\$4 billion in a potentially unstable country. The World Bank and the European Investment Bank thus became involved in the project by lending Chad US\$140 million. The World Bank was also active in mediating between the three main actors: the State of Chad, the populations affected by the oil project, and the oil companies (Magrin and Van Vliet, 2005). The two financial institutions provided this financial and technical support on condition that President Déby establish a future generations fund, and that of the bulk of the oil revenue (at least 80%) be used for priority sectors such as health, education, and infrastructure. In January 2006, Idriss Déby decided nonetheless to close the future generations fund, and amended the way in which the remaining 80% was apportioned. In July 2006 the World Bank agreed to a compromise according to which the closing of the future generations fund was authorized. These tensions prompted Chad to strengthen its ties with non-Western investors like the Chinese CNPC.

On September 9, 2008 Chad repaid the World Bank loan ahead of schedule. A year later, Idriss Déby decided to directly sell his portion of gross production,

10. Conversations with minister of oil and mines Mohamed El Moktar Ould Mohamed El Hacem and with the consultant responsible for the World Bank study, October–November 2007 and March 2011.

11. Ahmat Khazali Acyl ran Chad's SHT after earning a Master's degree in Trade at the American University of Kentucky in 2007. His close relationship with the powers that be allowed him to obtain financing for his studies and to assume the post.

some 40,000 bpd of the 145,000 produced, to Exxon-Mobil. In order to facilitate the negotiations, which took place at the company's headquarters in Houston, TX in March 2009, Exxon-Mobil accepted this arrangement, which was to commence in 2010 (*Africa Energy Intelligence*, March 25, 2009), and would be managed by the SHT. Control over this oil windfall would later become even more complicated, and direct sales of the State's production would actually only begin during the course of 2011.

This episode involving donors is telling. In effect, Chad, which started oil production in 2003, was able to free itself of the international community thanks to its oil revenues. When a State receives significant revenues from raw materials, the natural tendency is to rid itself as quickly as possible of the organizations that would attempt to direct spending towards specific sectors. Idriss Déby's régime could now use its revenue as it pleased. New oil-producing African countries like Ghana and Uganda generally prefer cooperation with Norway, which is viewed by these countries as being far less interventionist and more flexible.

In its own oil project, currently under development, Niger is following the same procedure chosen by Sudan in the second half of the 1990s: the financing and setting up of the oil industry is being managed exclusively by State-owned enterprises, in this case the CNPC, with no reliance on traditional lenders. However, this might change with the election of a new president in March 2011.

What to Do with the Oil Discovered in the Landlocked Sahara

Given the lack of access to the sea (with the exception of Mauritania¹²), the oil companies, in cooperation with the Saharan countries, have to find solutions for exporting landlocked oil reserves. They have limited options. Chad was innovative in developing the oil-rich Doba Basin, which is far from the sea, with the help of operator Exxon: it constructed a 1,070-kilometer pipeline connecting Kirihi to Cameroon. The consortium gambled on strengthening global demand, which would drive up the price per barrel—and it paid off. Apart from the issue of exporting crude oil, the question of locally refining some of the crude is also raised by refinery projects underway in Niger and Chad.

12. Mauritania actually also represents an example of relatively restricted access to the sea. Oil exploration in the Taoudenni Basin is, for the most part, some 500 kilometres from the coast, and infrastructure is almost non-existent. This is the position with Total's prospection close to the village of Oudane in the Adrar, which is at least 600 kilometres from Nouakchott.

Chinese Refineries and Diplomatic Gifts

Former president of Niger Mamadou Tandja, who was swept from power in a coup d'état on February 18, 2010, issued a call for tenders to develop the Agadem bloc in the east of the country between 2007 and 2008. It was already known that there were reserves in the area: 300 million barrels, officially revised to 650 million barrels in March 2011. Tandja's own son, Ousmane Tandja, who at the time was commercial attaché at the Embassy of Niger in Beijing, probably contributed to CNPC emerging as the winner. However, a factor that weighed heavily on Niger's decision was CNPC's promise to construct a refinery with a capacity of 20,000 barrels per day close to the city of Zinder, the second largest urban center in the country, near the border with Nigeria. It was no coincidence that this location, some 890 kilometers from the capital of Niamey, was selected by Mamadou Tandja. In 2008 the president was already planning to run for a third term in office, which required a change in the constitution, so he wished to launch several visible construction initiatives, such as a new bridge over the Niger River in Niamey, which was opened in February 2011, and the refinery at Zinder. The location of the refinery was by no means insignificant, as Tandja aimed to use it to win over supporters of one of his main opponents, Mahamane Ousmane.

Aside from these political benefits, it would be difficult for the refinery at Zinder to be profitable in the short term. The country consumes 6,000 to 7,000 barrels of petroleum products per day, corresponding to just one-third of the refinery's capacity. Moreover, the town is right next to the border with Nigeria, over which thousands of barrels of refined petroleum products are smuggled daily, bypassing customs. In 2007, Niger's State oil company Sonidep described the gasoline smuggling as follows in one of its reports to the government:

This problem, which manifests itself in a variety of ways, has become so entrenched in the mentality of some groups that it has become a cultural reality. Traditionally, graft is a way of life in the border regions of Niger (Tahoua, Maradi, Zinder, and Diffa); today it has taken on such proportions that the affected areas are literally awash with illicit petroleum products.

In other words, Sonidep observed that it had become a normal consumption pattern for the inhabitants of Niger to buy gasoline smuggled in from Nigeria, not only because gas stations are few and far between, but also because the price of legal gas is too high. The Zinder refinery will have trouble finding enough clients to justify operating at more than one-third of its capacity. CNPC, which built the refinery, was also well aware of the possibility that the project would not be profitable. The State's share of the construction costs (40%) was initially supposed to have been financed through the sale of petroleum products refined at the Zinder plant, but in 2009 new

informal negotiations took place between several of the president's advisors and the local head of the CNPC, Fu Jilin. Doubting the profitability of the refinery, Mr. Jilin suggested that the State's 40% share be calculated instead on the sale of both refined products and oil from Agadem destined for export, revenue from all of which should, in theory, have been paid to the Treasury, amounting to some 15 to 20% of total production. The government officials agreed to the deal.

After Tandja's fall in February 2010, however, officials from the Ministry of Mines refused to abide by this agreement, which had never been officially ratified. Furthermore, Niger's officials disputed the cost of the refinery as quoted by the CNPC (US\$980 million). At the beginning of 2011, the United Nations Development Programme also financed a study by an independent expert¹³ to conduct an audit of the costs of the Zinder project. The report was due in mid-2011. The Chinese attempted to secure for themselves the portion of production from Agadem that was due to the State, which would have meant that the State would receive no financial benefit from the sale of either refined petroleum products or crude oil for several years. The Chinese also attempted to inflate the costs of the project so as to maximize the return on their investment.

The extraordinary relationship between the CNPC and the State developed during the period in which Tandja granted several concessions to raise funds to keep himself in power. All the major contracts, in oil as well as uranium, were made over the heads of officials at the Ministry of Mines. From the beginning of the transition period in February 2010 until the election of Mahamadou Issoufou in March 2011, acrimonious negotiations took place with the local head of the CNPC, as the new authorities did not recognize the repayment methods agreed to by the previous régime.

Between 2009 and 2011, the CNPC had also constructed a refinery in Chad. It had the same capacity as the one in Zinder (20,000 bpd), and was located in Djermaya, 40 kilometers north of N'Djamena. Like its neighbor, Chad only has the capacity to consume 5,000 bpd and also suffers the ill effects of smuggling from Nigeria. It is almost impossible for the refinery to operate profitably. The CNPC is now operating five blocs in Chad, and wells operated by the Chinese currently supply the refinery at Djermaya. This involves fields at Rônier and Mimosa, close to the town of Bousso (in the southwest), which are linked to the new refinery by a 311 kilometer pipeline.

In September 2007, officials from the CNPC accepted the project terms for the refinery, which was estimated to cost the same as the one in Zinder. This concession on the part of China influenced Chad's decision to recognize the People's Republic

13. Source: Discussions with this expert, a professor at the Institut français du pétrole (IFP).

of China in 2006. Until then, Chad only maintained trade relations with Taiwan, which it continues to do via the Chinese National Corporation, which holds exploration rights to three blocs.

Exporting Crude Oil from Landlocked Regions

Aside from using crude in the refineries, the proven reserves in Niger and Chad, and possibly the Taoudenni Basin straddling Mauritania and Mali, have to be exported, and to do this pipelines need to be constructed.

The CNPC developed its pipeline project for the Agadem bloc in the east of Niger. Given that it would be too long and too costly to route it through the port of Cotonou in Benin, 1,600 kilometers away, in 2010 the CNPC turned its attention to the solution of directing it via Chad. The oil pipeline would start at Agadem and reach the border with Chad, about 200 kilometers away, then pass north of Lake Chad to connect with an ExxonMobil and PETRONAS pipeline built to carry oil from the Doba Basin.¹⁴ In Chad, the new connecting pipeline would be 800 kilometers long. The execution of the project is facilitated by the fact that the CNPC is present in both countries, and the two administrations have already discussed the matter, as confirmed by Chad's Minister for Oil, Eugène Tabe, in March, 2011.¹⁵

As for the Taoudenni Basin, its landlocked location also presents significant challenges. The exploratory drilling program currently undertaken by Total in the Mauritanian part of the basin is situated some 800 kilometers from the coast, which, in the event of oil discovery, will require the construction of expensive infrastructure. A mediocre oil field might be profitable if located near the coast, or offshore in shallow water, or if it is close to another field where existing infrastructure can be shared; but it is a different matter when a pipeline several hundred kilometers long is required to transport the oil to the sea. This is equally true for the Malian part of the Taoudenni Basin, which is even more remote. This implies that oil and gas infrastructure will need to be developed at a regional level.

14. This pipeline was designed by Exxon to transport approximately 250,000 bpd, but in fact had a surplus capacity of almost 100,000 bpd.

15. Private interview with the minister during his attendance of the Organization for Economic Cooperation and Development symposium on March 3, 2011.

The Mirage of the Trans-Sahara Gas Pipeline Project

One of the most ambitious energy projects involving the Saharan countries is the Trans-Sahara Gas Pipeline (TSGP). This pipeline is meant to transport natural gas (some 20 to 30 billion cubic meters per annum¹⁶) from Nigeria to Europe via Niger and Algeria. Interest in the pipeline is proportional to the EU's consistently high demands for natural gas. The EU has also been forced to seek ways of reducing its dependence on Russia, which currently supplies at least 30% of the 27 Member States' needs.

The TSGP project was formally launched in 2001, when an agreement in principle was signed between Nigeria and Algeria, and is estimated to cost between US\$10 and US\$21 billion at today's prices. If it took a while to garner support for the idea of a gas pipeline, it was because the agreement was signed during a period of low prices for natural gas (less than US\$20 per barrel). From the beginning of 2003, the price per barrel of natural gas began to rise, however, and the trans-Sahara project drew considerable attention because of the higher revenues that producing nations and oil companies were earning.

Following the presentation of the first feasibility report in May 2006, the British firms Penspen and IPA Energy gave their assurance that the project was both economically viable and technically feasible. The firms proposed that the pipeline's route originate in the Niger delta (in the south east of Nigeria), then pass through Kano, the largest town in northern Nigeria (a distance of some 1,000 kilometers), then extend over 841 kilometers through Niger and into Algeria almost 2,000 kilometers away, to join the gas node of Hassi R'mel, in the north of the Algerian Sahara—a total distance of 3,841 kilometers.

Nevertheless, it was not until July 3, 2009 in Abuja that the three ministers of oil and energy of Nigeria, Niger, and Algeria signed an inter-governmental agreement on the development of the TSGP. In theory, therefore, any disputes between the protagonists have been ironed out, but the project still faces numerous obstacles.

Problems with Availability of Reserves in Nigeria

One of the main reasons for the slowness of the development of the TSGP is the existence of doubt as to the availability of natural gas reserves in the Niger delta. At several meetings in 2008, officials from the Algerian Sonatrach requested that Nigeria commission a study by an independent consultancy to determine the precise

16. This would be equivalent to one-third of Algeria's natural gas production which is 80 billion cubic meters per annum.

volume of the reserves. This request was rejected by Nigerian officials, who argued that the estimates of available reserves in the delta—some 184 trillion cubic feet, the largest on the continent—are not determined by the State, but by the private oil companies: the very ones who have been extracting hydrocarbons in the region for fifty years.

Investors were also wary of making heavy investments, given the climate of insecurity in the region. Since 2006 the Niger Delta has been an area of heightened vandalism and piracy by the Movement for the Emancipation of the Niger Delta (MEND) (Augé 2009), which have driven down oil production from 2.2 million barrels per day to 1.2 mbpd at the height of the crisis in 2009. When Nigerian President Umaru Yar'Adua announced the opening of amnesty proceedings in May 2009, MEND declared an indefinite ceasefire, starting on October 4, 2009. Risks remain, however. On October 1, 2010, during celebrations of the fiftieth anniversary of the country's independence, MEND claimed responsibility for attacks that led to the death of twelve people. Furthermore, their demand for better distribution of oil revenues,¹⁷ the main stumbling block, has never been met.

Security Risks along the Route

Apart from the threat from MEND, the route suggested by Penspen's office traverses other regions that are extremely difficult to monitor because they are sparsely populated, in particular in Niger and Algeria. There are two main threats that need to be addressed: the Tuareg in Niger and what was formerly the Salafist Group for Preaching and Combat (commonly referred to as GSPC), which in 2007 morphed into Al-Qaeda in the Islamic Maghreb (AQIM), whose members are active in Algeria and—particularly in the last three years—in Mauritania, Mali, and Niger.

The Tuareg are mostly located in eastern Mali and the north of Niger. They are especially numerous in the region of Agadez in Niger through which the gas line must pass. The Tuareg have fought with the government of Niger since the 1990s to ensure that their region is not neglected with regard to infrastructure and development. They have also taken advantage of the relative neglect of their region by the State to develop some illegal trade. The rebellion was exacerbated between 2007 and October 2009 by the emergence of a new group: the Mouvement Nigérien pour la Justice – the Justice Movement of Niger (MNJ). This organization is directly responsible for the killings of several dozen Niger soldiers, mainly during attacks on barracks, to exert pressure on Niamey. Mediation by Libya facilitated the signing of

17. At present, the nine oil-producing states in Nigeria only receive 13% of the revenue allotted to the federal government.

an accord between Tandja and the Tuareg in October 2009, which led to a ceasefire. The Tuareg succeeded in dragging the government to the negotiating table because the area contained French concern Areva's huge Imouraren uranium mine, as well as part of the country's oil reserves. However, there was no guarantee that the rebellion would not restart under a new name if the results of the reconciliation process were not to the liking of one of the factions. The TSGP would present an excellent pretext for demanding further compensation from the State. Very little equipment would be needed to vandalize a pipeline that would be impossible to protect over the entire 844 kilometers that would pass through Niger territory. In other words it will be essential for Niger authorities to negotiate with the Tuareg and local communities on the passage of the gas line through their territory. Finally, there could be a resurgence of the Tuareg rebellion following the alienation of Niger from Gaddafi following Libya's descent into civil war since early 2011.

The question of Al-Qaeda in the Islamic Maghreb (AQIM) is also taken very seriously in Algeria, where several fatal attacks and kidnappings have occurred since 2007. All the countries in the region are now having to deal with the AQIM to a greater or lesser extent. In Mauritania, its activities started with the murder of four French citizens in December 2007, and attacks are increasing in Niger, including the kidnapping of Areva employees at Arlit in September 2010, and the murder of two Frenchmen kidnapped in Niamey in January 2011. A number of AQIM communiqués have been directed against French nationals, but AQIM's actions are in fact directed at all Westerners as well as the militaries of the countries in which it operates. Even though AQIM has never officially threatened the construction of the TSGP, it is feared that this period of relative peace could end as soon as work on the project is started. And all the more so since French company Total announced its participation in the project in May 2009, thus making the pipeline a potent symbol of French interests, and making the pipeline doubly targeted.

An Illusory but Exciting Project

Despite these threats, this great geopolitical project attracted the interest of other countries in the region. From 2009, Mali, which was not initially on the planned route of the TSGP, attempted to convince its counterparts in Niger and Algeria to include it in the venture (Augé 2010). In September 2009, the Authority for the Promotion of Oil Research in Mali (AUREP) commissioned a prefeasibility report from Canadian company ERCO Worldwide. ERCO was charged with determining the comparative advantages of the topography of the terrain in Mali over northern Niger so as to justify a change of route. The company was also expected to assess the natural gas production potential of Mali, some of which could be transported

in the TSGP. On July 8, 2010, a representative of the president of Mali, Amadou Toumani Touré, met with Nigerian president Goodluck Jonathan (*Africa Energy Intelligence*, July 15, 2010), who stated that he was open to Mali's participation.

However, it is very unlikely that Mali will one day be included on the pipeline's route. At present it is thought that the country has no gas reserves, and no exploratory drilling has taken place there since the 1990s. Furthermore, having the pipeline pass through its territory will certainly require a considerable revision of the plans and an increase in construction costs. Further, it would be difficult for Mali to raise the funds for a pipeline as this is by no means a priority for traditional lenders. The project already presents extraordinary difficulties with three participants; a fourth would only complicate matters further. And Algeria has not demonstrated much interest in Mali's joining the project.

An Opportunistic Scheme for Companies Eager to Get into Nigeria

Several European companies have already expressed their interest in the pipeline, which would be the longest in Africa. The most influential are Total (France), ENI (Italy), and Gas Natural and Repsol (Spain). However, while these companies are quick to emphasize that they are still interested, they have remained vague about actual involvement in the project. Under these circumstances, what could be the objective reasons for these companies to be interested in the TSGP, given that profitability is invariably the main criterion for investment?

It is highly unlikely that there is a real desire to invest in the project, but talk of the TSGP could flatter the authorities in the host countries, particularly in Nigeria, as a means of gaining access to reserves. The TSGP has been trotted out by the same people for a decade, namely the Nigerian and Algerian oil ministers (respectively Rilwanu Lukman and Chakib Khelil)—people who are also responsible for granting concessions for exploration and extraction in their respective countries. Thus, for private companies, the strategy of speaking about it publicly from time to time is not without tactical advantage. When Chakib Khelil was replaced in March 2010, and Rilwanu Lukman in May 2010, the interest of both States in the TSGP diminished considerably, as did the oil companies' promises of investment. Although Total was already active in Nigeria, Gas Natural and Repsol had been trying desperately for several years to begin exploration. Talk of the TSGP probably got them a more favorable hearing in Abuja.

Should the TSGP materialize due to an unlikely exercise of political will, then these companies would want to be involved in it because they would be the most affected by this new Europe-bound gas. The gas from the TSGP would reach Italy and Spain directly from Algeria and then continue on to France. It is thus understandable

that the large natural gas companies from these three countries should talk about it. It is worth noting also, that aside from these European companies, no other company (American or Asian)—with the exception of Gazprom—has showed the slightest bit of interest at this time.

Gazprom's Extraordinary Scheme

The giant Russian gas company, Gazprom, has been trying to work in Africa for the past five years. Algeria and Nigeria have been their primary focus because of their reserves. Gazprom became involved in December 2008, working on the Algerian El Assel field, largely because it gave assurances to the Algerian minister concerning construction of the TSGP. Getting into Nigeria was more difficult, however. After President Vladimir Putin's first visit to Abuja in 2007, a Gazprom delegation visited the country in January 2008 to propose an energy partnership. There for the first time, the Russian company officially declared its interest in the TSGP. A vague agreement in principle was signed in September 2008 between Gazprom and the Nigerian National Petroleum Corporation (NNPC), which provided for collaboration in exploration, production, and distribution of hydrocarbons in Nigeria. The official visit to Nigeria by new Russian president Dimitri Medvedev in June 2009 led to the creation of a commercial partnership between the two national companies called "Nigaz." Nigaz was to build the first section of the TSGP from the Delta to the north of the country. Gazprom won over the Nigerian authorities by proposing from the very first negotiations to construct networks to recover gas currently flared by companies working the resources of the delta. Most particularly, these networks would allow an increase in the capacity of the country's five gas-fired power plants—a proposition close to the hearts of the Nigerian authorities. However, it was the Nigerian and Algerian reserves that drove Gazprom's strategy, rather than a possible stake in the TSGP.

Gazprom was also pursuing a strategy of rounding up all the natural-gas-producing countries in a position to supply natural gas through the TSGP or liquefy gas bound for the European Union. This strategy was set out in great detail in a report by the Spanish secret service, the Centro Nacional de Inteligencia. This document, published by daily newspaper *El Publico* in April 2009, emphasized that the overall strategy of Gazprom in Africa and the Middle East has as its end goal nothing less than control of all the natural gas supply routes to the European Union. If these claims seemed extravagant, the report at least gave credence to the European Union's fear of being placed under Russian energy control.

Conclusion

The Saharan region has not yet been satisfactorily surveyed by the oil companies. The Saharan countries, and especially Mauritania and Mali, where subsidiaries of privately-owned Western companies operate, would need the oil price to be very high before oil companies will embark on lengthy research and persevere in the event of failure. At the time of writing (2011), the oil price hovered around the US\$100 mark, which was considered favorable for taking the necessary risks to explore “pioneer territories.” However, it only took a couple of dry wells to doom a basin. Total’s disappointing drilling exploits in the Taoudenni Basin in Mauritania in 2009–2010 rather tempered the oil companies’ enthusiasm for the Malian part of the basin. In the event of a second failure—a well was scheduled to be drilled by Total in 2011–2012—exploration of the entire basin could be halted altogether. Drilling a well in this region is expensive (more than US\$150 million), and only large companies can afford this kind of outlay. Matters are made even more difficult on the Malian side, where there is a profusion of small companies incapable of financing drilling. The major oil companies who are active in Mali, like Sonatrach and ENI, took a wait-and-see approach. They watched Total’s activities in Mauritania before undertaking any significant expenditure in their bloc. This was of no great consequence to Mali, as the country has never produced a drop of oil. It was a different matter in Mauritania, however, which had been producing since 2006, thanks to the offshore Chinguetti oilfield, and where the people’s expectations of the positive effects of an oil windfall—milked by politicians for all they were worth in the early years of production—made the disappointment all the more acute. Moreover, Chinguetti did not last: it was expected to produce 75,000 barrels per day, but never exceeded 37,000, and by the beginning of 2011 had levelled out at 8,000 bpd. According to the National Monitoring Committee for Revenue from Hydrocarbons, which publishes the production and revenue of the various parties each month, the Mauritanian State earned US\$14.7 million¹⁸ in the month of February 2011—a far cry from the “manna from heaven” predicted five years earlier. The Mauritanian and Malian authorities are now in wait-and-see mode.

Niger and Chad are in a different phase altogether. In the case of Niger, the oil is there, and the CNPC will use it in the refinery and then export it. This is merely a question of time. The problems originate more from the fall-out of the relationship between the Chinese CNPC and the erstwhile administration of Mamadou Tandja, whose practices are now considered unacceptable by the new democratically elected authorities. Mahamadou Issoufou, the new president of Niger who was sworn in on

18. This information published on www.tresor.mr.

April 7, 2011, will have to renegotiate the terms of the agreements with the CNPC and try to ensure the proper use and cost effectiveness of the Zinder plant. This could be achieved through agreements with neighboring countries less affected by smuggling of petroleum products from Nigeria, like Mali or Burkina Faso. The Ministry of Mines and Energy needs to play a central role in these matters and review the way in which the Chinese work, particularly with regard to employing locals and supplying information to various State services. Oil should start flowing to Zinder from 2012. How governance is settled between State actors and companies will in part determine the way in which the oil windfall is managed in one of the poorest countries on the continent.

Since 2003 Chad has been the only major producer in the Sahara outside the Maghreb. Thanks to the Doba Basin in the south of the country, it has a production of about 150,000 bpd and is the only country that receives significant oil income. Donors may have thought it worthwhile to give loans to the State to finance its participation in the oil project, but President Idriss Déby's management of oil industry practices and oil revenues was an utter failure. This example demonstrated comprehensively that it is only possible for lenders to impose restrictions on oil-producing States at the start-up of an oil project. When oil revenue starts pouring in, States want control over their oil and shake off the restrictions of foreign oversight. This is something that the Norwegians have understood well in their aid to countries embarking on exploration for the first time. President Déby will probably receive a boost concerning his management of oil revenue when oil from Niger starts to pass through his territory. The country can also reduce its oil expenses by using its own petroleum products, made possible by the Djermaya refinery.

The description of oil projects in the four countries shows how regional cooperation is practically non-existent in the sector. As for the exploration of Taoudenni, though several meetings were held between the ministers of Mauritania and Mali, there was no alignment of policies and above all, there was no resulting adjustment in the companies selected for exploration in the two countries. In Mauritania, the government was fortunate enough to have made offshore oil discoveries, which quickly attracted several large companies, and which in turn resulted in the expulsion of small companies that did not fulfill their contractual obligations. In Mali, the companies constantly deferred their work. As for Niger and Chad, the fact that the same company (CNPC) constructed refineries of the same capacity—20,000 bpd in both cases—when one would have been enough to supply both countries, is lamentable.

The only project with a truly regional dimensions is the TSGBP, which will probably not see the light of day for many years to come. It is impeded by many uncertainties about the availability of Nigerian gas reserves, as well as security concerns

along the pipeline's route. The project could have been the focus of regional cooperation, but it appears that the States concerned are not sure that it will ever get off the ground—especially as Nigeria and Algeria expect private oil companies to finance it. This “each-to-his-own” approach in an extremely remote region has weakened all of the actors involved.

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