

Oil Exploration and Production in Africa since 2014

Evolution of the Key Players and their Strategies



Benjamin AUGÉ

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Executive Summary

The fall in oil prices, which began in fall 2014, had a significant influence on the strategies of the key players in the oil industry in Africa. The continent's oil sector has experienced deep-reaching changes, ranging from a drop in exploration budgets, the disappearance or sale of weakened companies, the reorganization or pullback of the traditional oil majors, the establishment of new companies and the arrival of state-owned companies attracted by the crisis-induced windfall effects.

Yet the crisis has not redefined the geography of African production, whose principal giants are and will continue to be Nigeria, Angola, Algeria and Libya, at least in terms of reserves. Nevertheless, new zones have emerged, in particular due to the risks taken by junior players backed by powerful investment funds that have had faith in the potential of geologists and technical teams formerly employed by the big companies. This is first of all the case in East Africa, for oil, in Uganda and Kenya, along with gas, with Tanzania and Mozambique. Several very significant oil and gas discoveries have been made in a new basin located between Mauritania and Guinea, contributing to its development. However, no single African model has taken shape, as each company has followed its own path in making decisions about acquisition and exploration. Whereas traditional players, such as the Western majors ENI and Total, have continued to invest on this continent that plays a central role in their global production and strategy, some big companies, such as ConocoPhillips, have quite simply left the field, while others, such as BP and ExxonMobil, have made new high-risk acquisitions.

As for the large Asian state-owned companies, China's investments in exploration and production have tended to stagnate (concerning CNPC and Sinopec in particular), while others, such as the Indonesian Pertamina or India's ONGC, have significantly bolstered their presence.

The disengagement of the traditional banks affected by the 2008 financial crisis has led to a dearth of available funds for the oil sector in Africa, a situation exacerbated since 2015 as prices have fallen. So private and state-owned oil companies in Africa have diversified their sources of funding. Like Glencore in Chad, traders have begun making loans to the extractive sector, and Chinese banks are also lending more, including for

projects where Chinese players are not involved. The African banks, chiefly Nigerian and South African, are also playing an increasing role.

The crisis has also encouraged more cooperation among different types of oil companies. For example, a junior company such as Tullow Oil has begun to work with a major Western company, Total, and a major Chinese state-owned company, CNOOC, in developing resources it discovered in Uganda. These types of cooperation and risk-sharing increased during the crisis: today fewer licenses and projects are being developed by a single player. Finally, the crisis stimulated the arrival of service companies, which were hard hit by the drop in contracts and the pressure on prices from operators and have invested in production. By taking on the risks themselves, these service companies ensure that their competency and knowledge are utilized and protect their economic model, becoming decision-makers in oil development.

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Introduction

Like all the other zones of oil exploration and production, Africa was hit by the drop in crude prices that began in fall 2014 and which was followed by a period of relatively low prices, which fluctuated between \$30 and \$50 a barrel in 2015 and 2016, before starting a slight upward swing in 2017. Although the oil industry found this level perfectly acceptable at the start of the 21st century, it is a challenge to cover the costs of unconventional resources in difficult zones (very deep offshore, completely isolated basins, shale oil and gas). However, the very recent drop in development costs, brought about by pressure on service companies and improved techniques, has made it possible to recover a certain amount of flexibility. This crisis period, which still affects the oil sector today despite a regular increase in oil prices since 2017, has led to significant changes – in various directions – for the stakeholders in sub-Saharan Africa, which includes 50 countries. The cases of Algeria and Egypt have been analyzed in previous notes.¹

Oil production in 2016 – 7.9 million barrels per day (mb/d) or approximately 8% of world production – and oil reserves (128 billion barrels), along with gas production (208 billion cubic meters) and gas reserves (503 trillion cubic feet or 14.3 trillion cubic meters) are still rather low in Africa. This is particularly the case when these volumes are compared to other regions (the Persian Gulf notably). However, due to the low level of economic development, which results in low consumption of energy in general and oil in particular, Africa exports a very significant proportion of the oil and gas it produces: 40% of its gas and over 50% of its oil in 2017. Moreover, this percentage would be much higher if Libya's production were calculated at the level where it stood previous to the civil war that began in 2011. The following table summarizes the level of production and the reserves of the most important companies in active production in the different African countries.

1. See for example, B. Augé, "Hopes for a New Energy Independence in Egypt," *Notes de l'Ifri*, February 2016; B. Augé, "Strategies of African National Oil Companies," *Notes de l'Ifri*, September 2017.

	First year of production	Production (millions of b/d 2017)	Reserves (billions of barrels) 2016
NIGERIA (Shell, Total, Chevron, ExxonMobil, ENI, Oando)	1958	1.53 (1.47 in 2016)	37.2
ANGOLA (Total, Chevron, ExxonMobil, ENI, BP)	1959	1.64 (1.7 in 2016 and 1.8 in 2015)	11.6
LIBYA (ENI, BASF-RWE)	1961	0.83 (0.39 in 2016)	48.4
ALGERIA (Sonatrach, Anadarko, BP,	1958	1.05 (1.11 en 2016)	12.2
EGYPT (ENI, BP, Apache)	Early 20 th century	0.64 (0.67 in 2016)	3.5
SUDAN (CNPC, ONGC, Petronas)	1999	0.10 2016 figures (0.12 in 2014 and 0.109 in 2015)	1.5
SOUTH SUDAN (CNPC, ONGC, Petronas)	2011	0.12 2016 figures (0.15 in 2014 and 0.14 in 2015)	3.5
EQUATORIAL GUINEA (ExxonMobil, Marathon, Noble Energy)	1992	0.13 (0.14 in 2016)	1.1
REPUBLIC OF THE CONGO (Total, ENI, Chevron, Perenco)	1967	0.24 2016 figure (0.26 in 2014 and 0.25 in 2015)	1.6
GABON (Perenco, Total, Shell)	1957	0.20 (0.23 in 2016)	2.0
CHAD (ExxonMobil, Petronas, CNPC)	2003	0.073 2016 figures (0.082 in 2015 and 0.073 in 2014)	1.5
GHANA (Tullow Oil, Anadarko, Kosmos Energy)	2010	0.17 (0.1 in 2016 and 2015)	2.0
TUNISIA (ENI, Shell)	1966	0.063 2016 figures (0.073 in 2014 and 0.065 in 2015)	0.4
CAMEROON (Perenco)	1977	0.076	0.5
IVORY COAST (Bouygues, Tullow Oil, CNR International)	1995/	0.027	0.5
DEMOCRATIC REPUBLIC OF CONGO (Perenco)	1976	0.023 (stable)	0.5
NIGER (CNPC)	2011	0.020 (stable)	0.6
SOUTH AFRICA (PetroSA)		0.002 (stable)	0.15
MAURITANIA (Petronas, Tullow Oil)	2006	0.006 (cessation of only field in 2017)	0.1

Sources: (BP Statistical Review 2017, IEA market report, and data collected on site by the author).

The objective of this note is to describe the development of strategies and investments in Africa by type of participant in the oil industry. Rather than proceeding country by country or even by region, the approach is by participant, with the goal of highlighting the strategies adopted by

companies active in oil and gas exploration and production in sub-Saharan Africa in the last four years and describing new players that have emerged. The aim is also to understand whether the emergence of these new players and the evolution of their strategies have broader implications for geopolitical balances and the engagement of long-standing and emerging powers in Africa, and whether we are seeing the emergence of African companies in this field.

This paper starts with an analysis of the African strategy of the private Western majors, then continues with an analysis of state-owned majors from Asia (the majority are Chinese), Russia (Gazprom and Rosneft) and Latin America (principally Petrobras), before turning to smaller-sized players: independent Western companies, junior Western and African players. Finally, the paper will look at the arrival of two new types of stakeholders in exploration/production: traders and service contractors. The oil distribution and refining sector will not be examined, as the main objective is exploration and production. The choice of the players described was made based on their dynamism, including during this difficult period or, on the contrary, their loss of influence when compared to their past activism on the continent. This work does not seek to be exhaustive, but rather to understand the dynamics and choices of some key actors in a period of crisis.

Most large private companies have reorganized, or even reinforced, their presence

The large Western companies present in Africa have adopted very different strategies since 2014. Some of them, such as ConocoPhillips, have completely moved out of the African continent. In July 2014, the latter first sold all its assets in Nigeria to the Nigerian company Oando for \$1.5 billion.² Negotiations had gotten underway in 2013, before prices fell; the sale was an excellent operation for the American company but much less so for Oando, under attack since 2017 by its most important lenders.³ Wanting to focus on its investments in shale gas and oil in the United States, in January 2016, ConocoPhillips also sold its assets in Senegal to the Australian company Woodside, although they held out the promise of future income tied to the discovery of SNE (500 million barrels).

Apart from ConocoPhillips, no major has opted to forgo its presence in Africa. However, some of them have clearly decided to divest themselves of their least strategic assets. This is the case of Shell, which reduced its capex⁴ from \$31.6 billion in 2014 to \$26.1 billion in 2015 and then to \$22 billion in 2016⁵, selling a large number of onshore and shallow offshore licences (OML 25, 29, 30, 34, 40 and 42) in Nigeria starting in 2011. Chevron made similar sales⁶ (OML 52, 53, 55, 83 and 85) starting in 2013. All these licenses were bought by Nigerian companies, often for very large amounts (up to \$2.5 billion for OML 29). Nevertheless, Shell and Chevron did not withdraw from the country but rather focused to a greater

2. M. Rose, "ConocoPhillips Deal Propels Oando to Nigeria's Top League", *Reuters*, July 30, 2014, available at: <https://uk.reuters.com>.

3. "NIGERIA: Influential Alhaji Dahiru Mangal, Thorn in Oando's Side", *Africa Energy Intelligence*, No. 800, September 2017.

4. The capex of an oil company is the sum of all the costs of developing new projects, along with the costs of exploration and maintenance of existing activities. Its reduction has a direct impact on research and exploration investments.

5. "Shell Cuts 2015 Capex Again to Face Oil Downturn", *Reuters*, July 30, 2015, available at: www.reuters.com. For 2016 figures see the following address: www.statista.com.

6. Chevron also reduced its capex, by 13% between 2014 and 2015. "Chevron Plans \$35 Billion Capex Budget for 2015, a 13 percent cut," *Reuters*, January 30, 2015, available at: www.reuters.com.

extent on the vast deep offshore fields, less subject to acts of vandalism and to onshore theft of crude oil (several hundred thousand b/d). With a view to rationalizing its holdings, in March 2017 Shell also sold almost all of its licenses in Gabon to the American Carlyle Group for \$587 million.⁷ These sales must also be seen in the context of the sale of BG Group by Shell in 2015 for \$70 billion. Although this operation enabled it to acquire many African blocks, notably large gas discoveries in Tanzania and some small fields in production in Tunisia and, most importantly, some significant positions in Egypt, the cost was hard to absorb. As for Chevron, outside of Nigeria where it operates the giant Agbami field, it has retained its blocks in Angola, where it is still one of the largest operators (block 14 and o along with the LNG factory in Soyo) and in the Congo Republic where it has shares in the Moho block alongside the operator Total. However, it has very few new exploration blocks, aside from the Moroccan offshore in 2013, a block where it opted to share risks by partnering with Qatar Petroleum in 2016.

On the other hand, some Western majors did take on new risks in Africa during the crisis. This was the case of BP, at a time when its exploration budget fell from \$3.5 billion in 2013 to \$1 billion in 2016⁸ and its capex declined from \$22.9 to \$20 billion between 2014 and 2015⁹, a figure that stagnated around \$19 billion in 2016.¹⁰ Apart from its shares in the Angolan offshore zone (blocks 18 and 31), in Algeria and in Libya, in a situation of *force majeure*,¹¹ and in Egypt, where BP is the operator for 15% of the country's crude oil production and 30% of the gas production, the British company stuck to a wait-and-see position on the continent, well before the deepwater horizon/Macondo catastrophe in 2010. Nevertheless, in 2016 BP committed buying all the production of Africa's first FLNG,¹² in Mozambique (a project developed by ENI which will enter into production in 2021). In the same year, the British company also began operations of gas reserves in Senegal and Mauritania of the cross-border Tortue field (25 trillion cubic feet or 0.71 trillion cubic meters). It has also moved into the territorial waters of Sao Tomé and Príncipe (block 10 and 13),

7. Carlyle Group, "Carlyle-backed Assala Energy Acquires Shell Gabon Assets," March 24, 2017, available at: www.carlyle.com.

8. R. Bousso and D. Zhdannikov, "BP's Oil Search Strategy Shrinks with Budget Cuts", Reuters, May 23, 2015, available at the following address: www.reuters.com.

9. Business World, "BP Profits Exceed Expectations, Cuts Capex", February 3, 2015, available at: www.independent.ie.

10. Oil & Gas Journal, "Total Trims 2016 Capex by 15%", November 2, 2016, available at: www.ogj.com.

11. This provision allows a company to freeze its investments for causes set forth in the contract – political and security instability or natural catastrophe – while retaining its rights in a zone of exploration or operation.

12. Floating Liquefied Natural Gas units (FLNG) enable offshore gas to be stored and liquefied in the same facility before carriers offload it in liquefied form.

in January 2018. After making several investments in Namibia and Morocco, BP finally decided to abandon them. ExxonMobil is in a similar situation. It has recently taken some risks, although its capex declined from \$31 to \$23 billion between 2015 and 2016. Without leaving its comfort zone (Nigeria and Angola), this American major leased blocks in Mozambique (2016), Mauritania (2017) and Ghana (2018). It also made a quick incursion into Ivory Coast and Liberia, a country it left after only a few years' presence, after mixed exploration results.

The two leaders in the oil industry in Africa – over half their production comes from the continent – Total (whose capex fell by 15% between 2015 and 2016)¹³ and ENI¹⁴ (capex also declining) both also moved into new positions during the crisis. In addition to the customary activities which provide the better part of their income (for Total, Nigeria, Angola, Republic of the Congo, Gabon; for ENI, Angola, Egypt, Libya, the Republic of the Congo, Tunisia), both companies expanded their investments. Total began operations in Uganda in 2011 and made the decision to develop the Lake Albert fields in the midst of the crisis in 2016. This complex project aims at exporting the crude oil via a pipeline to the Tanzanian port of Tanga, over a distance of more than 1,400 kilometers. It has also acquired new blocks in South Africa, Mauritania and the Democratic Republic of Congo, and recently, in 2017, in Angola and Senegal. Finally, with its recent purchases, notably in Maersk, and Engie's LNG activities, it has acquired new assets in Kenya and strengthened its presence in Algeria. Moreover, ENI is drawing on its enormous discoveries made in Mozambique starting in 2010 which show a potential that would be greater than that of Algeria.¹⁵ They have resulted in the first development in Africa by FLNG, in the Coral field, which will be commissioned in 2021. In fact, ENI too made its investment decision in the middle of the crisis, in December 2016. In the same period, it also increased developments in Egypt (Zohr field)¹⁶, in Angola (block 15-06) and in Ghana (Sankofa). Total, along with ENI, are the two principal oil companies having invested in alternative energy in Africa, although for the

13. "Total Trims 2016 Capex by 15%", *Oil & Gas Journal*, November 2, 2016, available at: www.ogj.com.

14. Total and ENI are led by CEOs whose careers were marked by Africa. Patrick Pouyanné, head of Total since 2014, was general secretary in Angola. ENI is headed by Claudio Descalzi who was in charge of the group's African activities. In addition, as his wife is Congolese, he has established very high-level contacts.

15. On this subject, see B. Augé, "Oil and Gas in Eastern Africa: Current Developments and Future Perspectives," *Notes de l'Ifri*, March 2015; and by the same author, "Development of the Gas Sector in Tanzania and Mozambique. Premises of Two Asymmetrical Experiences," *Notes de l'Ifri*, October 2016.

16. On this subject, see B. Augé, "Hopes for a New Energy Independency in Egypt," *Notes de l'Ifri*, February 2016.

time being these efforts are modest (BP,¹⁷ with Lightsource BP, and Shell have solar projects but so far not in Africa). In March 2017, ENI constructed a 10-MW solar plant to meet its energy needs at Bir Rebaa North field in Algeria. With its large-scale solar panel installation subsidiary SunPower, two-thirds of which it acquired in 2011, Total sees solar energy as a profitable market and not just as a means of supplying fields situated far from electrical networks. For example, SunPower won the contract for a large 75-MW solar farm at Prieska in South Africa.

17. BP has led a few small solar projects in the past, notably in Zambia in 2005 and in Morocco in 2003 through a subsidiary of BP France, Apex-BP Solar. However, in 2011 the company left the photovoltaic sector before returning in early 2018 with an investment in one of the largest European solar panel companies, Lightsource. Source: "BP, Lead in the Development of Photovoltaic Projects," *CE Noticias Financieras*, January 27, 2018. Shell also got back into the solar sector in 2018 after more than a decade of absence following the sale in 2008 of Siemens Solar. However, its recent investment in Silicon Ranch Corporation is more oriented toward the United States.

The State-owned majors of the emerging countries have varying strategies

Investments in Africa by majors with more than 50% state-held capital have grown considerably in the last 20 years. The arrival of the first Chinese companies dates from 1996 in Sudan. Although the crisis has slowed some of these companies, others have sensed an opportunity to acquire new assets for a good price.

Chinese companies CNPC, CNOOC and Sinopec have very different strategies

All three of China's State oil companies are active in Africa. Although **China National Petroleum Corp (CNPC)** was intended for land developments in China, **China National Offshore Oil Co (CNOOC)** for offshore operations and **Sinopec** for refining, the companies have never really respected these limits to their activities in their investments in Africa. Until recently, Chinese firms managed projects in Africa along with other Asian state-owned companies they were accustomed to working with (case of Sudan), or else managed the projects alone (Niger, Chad). The arrival of Chinese companies in politically and geologically complicated zones has spurred them to increasingly share development with Western firms, not without some difficulty (case of Uganda with Total and Tullow Oil). However, although Africa is important for the purchase of crude oil and LNG by the state-owned trader Unipec or other Chinese companies, the continent is still a low priority for exploration/production. CNPC mentions Africa only four times in its 2016 annual report and produces less than 200,000 b/d there.¹⁸ Sinopec, which produces less than 100,000 b/d in Africa via Addax Petroleum,¹⁹ mentions the continent six times, mainly in relation to investments in distribution.²⁰ CNOOC is the only company apparently more oriented toward Africa, mentioning it 44 times in its 2016

19. CNPC, "Annual report 2016," available in French at the following address: www.cnpc.com.cn.

19. At the end of 2017 Nigeria was producing 35,000 B/D, followed by Cameroon with 28,000 B/D and Gabon with 23,000 b/d. Sources: "CAMEROON / GABON / NIGERIA: Sinopec Chastises Geneva Over Addax Case", *Africa Energy Intelligence*, n°799, August 29, 2017.

20. Sinopec, 2016 report, available at: www.sinopecgroup.com

report and giving an exact figure for its production in Africa, 80,000 oil-equivalent barrels a day out of a total production of 1.3 billion b/d. However, this production shows a moderate rise compared with 2012, when it reached only 56,000 oil-equivalent barrels a day.²¹

CNPC was the first to arrive in Africa in 1996, developing Chevron's discoveries in Sudan which that company abandoned as a consequence of the second civil war of 1983. The production from these licenses, scattered over Sudan and South Sudan after the latter's independence in 2011, is in free fall due to the absence of new discoveries and the damage from the civil war that began in 2013 (see introductory table). CNPC then multiplied its investments in the Sahel region in Niger (2008), Chad (2008) and in Mauritania, where it finally pulled out. As previously happened in Sudan and Niger (Elf), it only developed discoveries made by other Western majors. CNPC's conduct has not changed much since 2014. The company has not withdrawn from the countries where it was active. However, since it began activities in Chad and Niger, CNPC has made no new acquisitions in Africa with the exception of its investment in 2013 of more than \$2 billion in block 4 in Mozambique, where several dozen trillion cubic feet of gas reserves are located. The first project in this block, a FLNG of 3.4 million tonnes a year, will be commissioned in 2021. Because of China's growing demand for LNG, this costly investment, made at the elevated pre-crisis price, was strategic, but it gave rise to some regrets once prices dropped and difficulties became apparent. CNPC's project to export the crude oil from Agadem in Niger that is currently being refined in the Zinder²² facility to supply the local and regional market is now at a standstill. Logistical and security challenges must certainly be taken into account, since export of crude has to pass through a third country, either Benin (the longest route), Nigeria (shortest but the least safe) or Chad (same problem as for Nigeria with the threat of Boko Haram), but it is evident that the fall of the price per barrel has not encouraged the Chinese company to launch into this project, although it would lead to exports of 60,000 b/d.

CNOOC is currently the only Chinese major with development projects. In Nigeria, first of all, CNOOC is partnering with Total in the development of the giant Egina field (OML 130 and OML 138 via its subsidiary Nexen) which will go into production in 2018 (200,000 b/d), after it benefited from the production startup of the Akpo field in the same

21. CNOOC, 2016 report, available at: www.cnooc.com.

22. This refinery was built by CNPC and its partners in 2011. The infrastructure was the condition for obtaining the Agadem license. So far the refinery has been a financial sinkhole for the Chinese company, which sees the investment as an integral part of the state-to-state partnership between Niger and China.

block. The decision to launch Egina was made in 2013, before the start of the crisis. In contrast, despite the crisis CNOOC opted to launch investments in Uganda to develop the Kingfisher field. CNOOC is the field operator and also a partner with Total and the junior Tullow Oil, which discovered crude oil in this landlocked East African country. Fostering cooperation among this trio of heterogeneous companies (a junior British company, a Western major and a Chinese state-owned company) is a difficult task. In any case the project will not be able to function unless the operators in the different zones can agree to work along the same lines to build and supply the pipeline to Tanzania. The project will make sense and reach a critical size only if the reserves of the three partners are added together in order to reach 1.6 billion recoverable barrels. The current challenge is achieving cooperation with CNOOC, which has its own operating culture, while the three companies are partners in all the fields they operate. However, Chinese funding was fundamental in developing this complex project.

One of the Chinese banks most active in the African oil sector is the Industrial and Commercial Bank of China (ICBC). ICBC, with 51% Chinese ownership, is in the process of finalizing the first development of a FLNG in Equatorial Guinea.²³ It also acquired in 2007, for \$5 billion, 20% of the capital of Standard Bank, one of the South African banks most involved in financing energy projects in Africa. ICBC deals mainly with loans to the non-Chinese companies; investment by the other Chinese state-owned firms is made to a greater extent with their own funds or through the Exim Bank of China.

Finally, the case of **Sinopec** stands apart because this oil company is quite clearly pulling out of Africa. Its principal gateway to the continent, Addax Petroleum, bought for \$7.2 billion in 2009, began a process of divesting its assets in 2017 in Nigeria and Gabon²⁴ (theoretically it will retain only the licenses in Cameroon, but ultimately they too could be included in the sale). Sinopec's experience with Addax Petroleum was especially difficult, because, unlike its two Chinese fellow companies, it had Chinese management working in tandem with Western executives, most of them coming from Shell.²⁵ Mistakes in the subsidiaries multiplied, and corruption scandals finally came to light in 2016 when the auditor Deloitte officially refused to sign off the 2015 accounts. This led to an investigation

23. "EQUATORIAL GUINEA Fortuna: Who Is Ophir's Mystery Chinese Partner?", *Africa Energy Intelligence*, No. 809, January 31, 2018.

24. "NIGERIA: Secret Deal with NNPC May Set Addax Sale Adrift", *Africa Energy Intelligence*, No. 807, December 19, 2017.

25. "AFRICA: Hans Van Gelove, Ex-Shell Man Bolsters Team at Addax", *Africa Energy Intelligence*, No. 732, October 21, 2014.

by the Geneva prosecutor, and in July 2017 the company was sentenced to pay a fine of 32 million Swiss francs in exchange for the abandonment of legal charges against the executives facing prosecution.²⁶ These legal problems convinced Sinopec to move Addax Petroleum headquarters back to Beijing. Since the Addax Petroleum corruption charges centered mainly on its activities in Nigeria and Gabon, management in Beijing made the decision to sever ties in order to avoid any more publicity that would be detrimental to Sinopec's image. At the operational level, because of chronic under-investment Addax Petroleum produces less than when it was bought in 2009 (around 120,000 b/d). Aside from its Africa assets, Addax Petroleum also holds producing blocks in the North Sea and in Iraqi Kurdistan.

The Indian state-owned company ONGC invests massively in gas

The Indian state-owned company Oil and Natural Gas Corporation Ltd (**ONGC**) entered Africa in 1996, in the same Sudanese blocks as CNPC. It then took its time before taking new positions. It arrived in Libya in 2007 in offshore blocks but evacuated all its personnel from the country at the time of the civil war in 2011. It also took positions in Nigeria, which it no longer holds today. Just before the start of the crisis, it spent considerable sums to enter one of the blocks where the giant gas discoveries are found in Mozambique. ONGC, like the other Indian state-owned oil company, **Oil India Ltd**, paid a premium price in 2013, \$2.48 billion, to take over 10% of block 1 located in northern Mozambique and operated by Anadarko.²⁷ This investment, by far the largest India has ever made in Africa, makes sense for the country given its growing LNG export needs and strategy to avoid dependency on the same suppliers, such as Qatar. Since the crisis, ONGC has made only two investments in Africa, specifically in Namibia, where it took marginal positions in November 2017 on the Tullow Oil licenses (2012A, 15% and PEL 0037, 30%).

Malaysia's Petronas in a wait-and-see position

The Malaysian state-owned company **Petronas** also arrived in Africa in 1996, in the same blocks as CNPC and ONGC. In that year Petronas also

26. S. Besson, "Genève classe l'enquête contre Addax et encaisse 31 millions" (Geneva shelves Addax investigation and collects 31 million), *Le Temps*, July 5, 2017, available at: www.letemps.ch.

27. "India's ONGC to Buy \$2.64-billion Stake in Anadarko Mozambique Gas Block," *Reuters*, available at www.reuters.com.

bought a refinery along with a network of service stations in South Africa: Engen Petroleum Ltd. Despite its significant investments in Africa (in Chad in 1999 and then in Mauritania in 2007), all its licenses are ageing. Its only block in Mauritania, Chinguetti, ceased production in December 2017. Moreover, during the crisis Petronas sold some blocks in Mozambique and Cameroon. In 2014, it acquired a license in Gabon's deep offshore waters and recently, in February 2018, entered Gambia offshore blocks (A2, A5).

Pertamina takes advantage of the crisis

Another Asian state-owned company, the Indonesian **Pertamina**, acquired blocks in Libya in 2005 and then in Sudan in 2007; operations at both are at a standstill. Next, in 2017, it made its largest investment in Africa, buying the French company **Maurel & Prom** for several hundred million dollars. The sale, which should take effect in 2018, will enable it to enter into production licenses in Gabon, Nigeria and Tanzania, and to acquire an exploration block in Namibia. In a context of still relatively low crude prices, this investment is a good example of how state-owned companies with significant financial means, motivated less by a search for immediate profit and more by long-term strategy, can find golden opportunities in the crisis by taking over distressed companies, or ideally-located blocks in need of investors. Pertamina would have paid much more for Maurel & Prom if it had acted before the 2014 crisis.

Petrobras: the great takeoff

Active in Africa since the 1990s, **Petrobras** has accumulated licenses in Tanzania, Angola, Nigeria and even, briefly, Namibia. In November 2017, it began to sell all its licenses in Africa through its subsidiary Petrobras Oil & Gas B.V. in which it holds a majority stake.²⁸ Petrobras' most important assets in Africa are in Nigeria, where the Brazilian oil company has shares in the giant fields of Akpo and Egina (operated by Total) along with Agbami (Chevron). A partner of Petrobras in Petrobras Oil & Gas B.V., the Brazilian bank Grupo BTG Pactual had already tried unsuccessfully to sell its 40% share in 2016. Petrobras attempted to delay this sale as long as possible in order to avoid selling at a loss. But its fragile financial situation, related to burdensome investments in Brazil's offshore and to corruption scandals, forced it to begin the sales process nevertheless; the process is moving forward.

28. "NIGERIA: Who is Handling the Sale of Petrobras Giant Deposits?", *Africa Energy Intelligence*, No. 805, November 21, 2017.

Russian companies are sending contradictory signals

The two Russian state-owned companies **Gazprom** and **Rosneft** have invested relatively little in Africa. Gazprom owns only some shares in a producing block in Libya operated by Wintershall, and some exploration licenses in Algeria (El Assel), which it has had since 2009, and in Angola (3/05 and 3/05A). Despite the many agreements in principle with numerous countries (Nigeria, Mauritania, Namibia and Mozambique), Gazprom has never followed up and has settled for buying LNG, which will be produced in Cameroon. Africa is still largely *terra incognita* for Rosneft. However, its only two decisions to invest were made after the oil crisis began. Rosneft has just invested in the giant Zohr field (30 trillion cubic feet or 0.83 trillion cubic meters of gas reserves) in Egypt. It committed to a payment of \$1.125 billion in October 2017 to take over 30% of this field.²⁹ In 2015 Rosneft also won several blocks in the Mozambique offshore area, although negotiations on the terms are still continuing. These operations were carried out in tandem with ExxonMobil, in the framework of the strategic partnership between the two companies. Lukoil, a private Russian company, gave up its licenses in Ivory Coast, Ghana and Sierra Leone in 2016 but nevertheless retains assets in Cameroon, where it plans to drill in 2018. Moreover, in early 2018 Lukoil announced that it would be interested in buying up Petrobras assets in Nigeria.³⁰

African state-owned companies in crisis

The fall in the oil price had limited impact on the activities of the African state-owned companies, but it did compound their difficulties. Most of them were in a state of crisis before 2014, and lower-priced crude oil only worsened their already critical financial situation. The Algerian company **Sonatrach**, the only state-owned company in Africa both operating large quantities of crude oil and gas and having the capacity to carry on activities in the seismic, drilling, production, transportation and distribution areas, has not slowed down its activities since 2014. It even had to compensate for the lack of involvement of the private sector, in continuous decline since the hydrocarbon law of 2005, amended in 2013.³¹ But Sonatrach, which has oil licenses in Niger, Mali and Mauritania, made almost no investment

29. Rosneft press release, "Rosneft Closes the Deal to Acquire a 30% Stake in Zohr Gas Field," October 9, 2017, available at: www.rosneft.com.

30. "Russian Oil Giant Eyes Nigerian Oil Assets," *National Daily Newspaper*, January 16, 2018, available at: <https://nationaldailyng.com>.

31. For a detailed study of the strategies of the African state-owned majors, see B. Augé, "Strategies of African National Oil Companies," *Notes de l'Ifri*, September 2017.

in these blocks during the crisis. However, before the price drop, Sonatrach was already investing very little, focusing its efforts on Algeria and because of security problems, in particular in the north of Mali and Niger. Concerning Niger's **NNPC**, the crisis intensified the paralysis of this colossus, whose principal goal is to collect oil income and negotiate contracts with private companies. NNPC calls on the assistance of service companies to produce crude oil through its subsidiary NPDC. The crisis also forced Angola's **Sonangol** to change its leadership: Isabel Dos Santos, daughter of former president José Eduardo Dos Santos, was appointed in 2016 to replace the technocrat and former chief financial officer Francisco de Lemos José Maria. Isabel Dos Santos was in turn fired in December 2017 by the new president, Joao Lourenço. Sonangol's operation is quite similar to NNPC's, with the difference that the Angolan company has adopted production-sharing contracts in which its share is financed by private partner companies. NNPC, for its part, leans on joint ventures with the majors (Total, Eni, Shell, Chevron and ExxonMobil). For this reason, NNPC has to pay a share of exploration and development work. Thus the drop in prices has made it still more complicated for NNPC to access funding.

Independent companies: widely varying situations

With fewer resources than the majors but nevertheless capable of developing complex projects, independent companies have taken big risks in exploration since 2014.

Anadarko: full speed ahead

The American company **Anadarko** (totalling 628,000 oil-equivalent barrels a day on average in the last quarter of 2017)³² is unquestionably the independent most deeply involved in Africa. In addition to its discoveries in Ghana in 2007 alongside two other junior companies – Tullow Oil and Kosmos Energy – Anadarko, starting in 2010, brought to light the gas discoveries in Mozambique in block 1 (over 75 trillion cubic feet of gas). Anadarko invested more than a billion for this Mozambique project to carry out the exploration and measurement of the Gofinho field which will supply the future land-based liquefaction trains. The project's development program was submitted to the Mozambique government in 2017. In parallel with ENI, which operates the adjacent block in Mozambique, Anadarko thus facilitated discovery of a new oil province. Because of the importance of this project and despite Anadarko's relatively small percentage in block 1 (26.5%), ExxonMobil, which entered ENI's block 4 in 2017 (see above), is said to be interested in buying this asset.³³ Outside this country, the American company produces in several fields in Ghana and is the most important private producer in Algeria with the fields of El Merk (139,000 b/d) and HBNS (118,000 b/d).

Woodside makes its big comeback

Arriving in Africa in 2001 to develop the Chinguetti discovery in Mauritania, the largest independent Australian company **Woodside Energy** (totalling 226,000 oil-equivalent barrels a day in 2017) finally sold everything in 2007 after setbacks at its Mauritanian field, where the reservoir turned out to hold half as much crude as was estimated before it

32. Anadarko quarterly report, 4th quarter 2017.

33. "MOZAMBIQUE: ExxonMobil Delights in Anadarko's Frustration", *Africa Energy Intelligence*, No. 808, January 9, 2018.

went into production. Like other companies such as Pertamina, Woodside judged it timely to return to Africa in the middle of the oil price crisis. In 2014 it moved into deep offshore exploration blocks, in Gabon in 2014 and in Morocco (Rabat Deep Offshore I-VI). In 2016 it also decided to invest \$440 million to purchase ConocoPhillips assets at the giant Senegalese discovery SNE (500 million recoverable barrels³⁴) and established a dedicated team in order to obtain new licenses in Africa.

Perenco, the family business that keeps rising

Another independent company whose history is intrinsically linked to Africa is **Perenco**. This company, headed by the French family Perrodo and established in the 1970's, grew by taking over mature fields operated principally by Total. Today it produces 450,000 barrels a day, with more than 200,000 b/d coming to it directly. Perenco is the largest producer in Gabon, in the Democratic Republic of Congo and in Cameroon (since buying Total's holdings in 2011); it is also present in the Republic of the Congo and in Tunisia. Far from slowing its investments, the 2014 crisis validated the soundness of Perenco's development model, namely the lowest possible development costs in mature fields onshore or in shallow offshore waters. In February 2017 it again bought some ten fields in Gabon from Total, for a price of \$350 million.

34. "SENEGAL: Woodside Debuts on SNE despite FAR's Attempt to Block it", *Africa Energy Intelligence*, No. 780 November 2016.

The junior companies open up new provinces

In recent years, several junior companies – that is, companies producing less than 100,000 b/d – made it possible to speed up exploration in little-known zones. In fact, these junior players act as pioneers and make discoveries in Africa, in particular in countries where production is recent or still to be realized (case of Uganda, Ghana or Kenya). The majors arrive later, in a second phase, to develop the discoveries when they turn out to be very large. When discoveries are more modest, the juniors can develop them alone, by establishing partnerships among themselves.

The two leaders: Kosmos Energy and Tullow Oil

Two companies clearly stand out in Africa by their activism during the crisis: the American **Kosmos Energy** and the British **Tullow Oil**. Both have a purely African blueprint, apart from a few rare investments in the Caribbean, the geological replica of the Gulf of Guinea and thus directly related to Africa for geologists.³⁵ They did not curtail their respective investments at all during the crisis. In addition to its discoveries in Ghana, in 2015 Kosmos Energy revealed the discovery of Tortue between Mauritania and Senegal before attracting BP in 2016 to assist in developing it. Between 2015 and 2018 it also moved into six exploration blocks in the offshore waters of Sao Tomé and Príncipe, one of Africa's least well known zones. In late 2017 Kosmos Energy also obtained three licenses in the offshore area of Equatorial Guinea (W, S and EG 21). Kosmos Energy got a hand up when it was starting thanks to the financing of one of the largest American investment funds, Warburg Pincus.³⁶ Tullow Oil was set up in 1985 and was granted its first blocks in Senegal in 1986, where small quantities of gas were produced. Since then it has made discoveries in

35. B. Augé, "The Strategy of Symmetrical Margins in the Conquest of New Oil Resources," *Notes de l'Ifrri*, April 2017.

36. This particularly aggressive American investment firm takes serious risks by putting its money on companies recently set up by brilliant geologists which, thanks to the flexibility of their small structures, make more discoveries. Thus Warburg Pincus was behind the discovery of large fields in Ghana and Senegal which brought an important return on their investment. The fund is also active in Egypt and in the United States.

Ghana (2007), Uganda (2006) and Kenya (2012). Since 2014 it has eagerly pursued new licenses, including in zones that have undergone very little radiographic analysis, for example in Zambia with the acquisition of a block (31) in 2016 or in the offshore waters of Namibia with PEL 00 37 and 00 30 in 2014 and 2015. Even more recently, in late 2017, the company acquired no fewer than nine licenses in Ivory Coast's onshore and offshore areas.³⁷

Two small and very dynamic newcomers

Another company in the Warburg Pincus galaxy, **Delonex Energy**, was set up in 2012 by Rahul Dhir, a veteran of Cairn India,³⁸ with the primary goal of obtaining licenses in East Africa. The company won a bid in 2015 for licences in the Mozambique offshore area, and also won blocks 18, 19, 21 in the Ogaden region of Ethiopia at the end of 2014 along with three licenses in Kenya in 2015 ceded by Marathon Oil. Lastly, Delonex Energy bought all United Hydrocarbon's Chadian assets in 2017, some of which could be brought into production shortly. Although Delonex Energy was in fact established before the crisis, it made most of its acquisitions when the price of crude oil was at its lowest point. Thanks to its financial support, it was able to take risks in poorly known zones (Kenya and Mozambique) and invest in a project where the reserves were already proven.

Another junior which has grown a great deal in recent years is **Impact Oil & Gas**. Founded in 2009 by the British geologist Mike Doherty (30 years of experience), Impact Oil & Gas set itself the goal of obtaining offshore licences in Africa. This junior player stands out for having succeeded in safeguarding positions in a very short time in South Africa, Namibia and Gabon, and in the common zone (AGC) between Senegal and Guinea Bissau, while also attracting the most important majors to its blocks. Total, Statoil and ExxonMobil entered its licenses in South Africa, and Total also became the operator of a license in Namibia. In the AGC, CNOOC is the operator. This rapid success is due to its leaders' contacts in the financial world and in oil companies (one of its administrators, Tony Parker, is the former oil and gas director of Bank of America in Europe), and to the skills of its geologists.

Another company, **Cairn Energy**, recently made the news when it revealed the SNE field in Senegal (500 million barrels) in 2015. Cairn

37. "COTE D'IVOIRE: Tullow Methodically Creates a Near-Monopoly", *Africa Energy Intelligence*, No. 805, November 2017.

38. This company, which has most of its activity in India, is one of the principal private producers of the country. Market capitalization: \$13 billion and over \$3 billion in income in 2012. Figures available at: www.delonenergy.com.

Energy is not a new company; it is linked to Cairn India which has been producing in India for several decades. Cairn Energy made significant exploration efforts during the crisis.

Nigerian juniors attempt to consolidate their positions

It would be incomplete to talk about the junior companies in Africa without mentioning the only country on the continent that has succeeded in developing an ecosystem capable of stimulating local investors to blossom in the oil sector: Nigeria. Most of the Nigerian companies producing first developed trading activity, which enabled them to undertake exploration/production with substantial funds. The most important among them is **Oando**. Once only a trader and distributor of oil products, the company decided to move into oil production when it acquired ConocoPhillips' Nigerian assets in 2013. Thanks to these assets, it produces some 40,000 b/d. Several other traders, such as Sahara Energy, Aiteo, and Taleveras, bought licenses from the majors (see above for Shell and Chevron), sometimes for several billion dollars. Although their financial situations are more difficult because of the drop in prices, none of them has sold the assets in question. These companies were able to enter the exploration/production field because they all managed to amass significant capital thanks to their distribution of gas on a large market (population of 180 million), and they also took advantage of the "swap contract". This is a program that operated between 2010 and 2015 to enable Sahara Energy, Aiteo and Taleveras, in particular, to supply Nigeria with oil products in exchange for state-owned crude oil. The program was set up because of Nigeria's chronic liquidity problems. From 2010 to 2015 these companies prospered quickly, being guaranteed up to 90,000 b/d of crude to sell on the international market. Their ability to raise funds from Nigerian banks is another reason for their entrance in the exploration/production sector. These banks considerably facilitate access to loans and thus risk-taking. Some of these companies have even acquired licenses outside of Nigeria, for example Taleveras and Sahara Energy in Ivory Coast or Taleveras in Equatorial Guinea.

Although it was never involved in the trading of crude, another Nigerian company succeeded in obtaining many licenses outside Nigeria. Thanks to the personal skills of its president, Arthur Eze, **Oranto** managed to obtain licenses in no fewer than ten countries (first in Liberia, in Sao Tomé and Príncipe, in Nigeria, Benin, Ghana, Senegal and Namibia; then, in 2017, it broadened its presence to East Africa with the acquisition of licenses in South Sudan and Uganda). The firm's strategy is to build solid

relationships with political authorities at the highest level to allow it to spend as little as possible in its blocks while waiting for a major to take over as operator. So far the strategy has paid off: investments are minimal, and Oranto manages to delay most of its contractual obligations.

South African juniors in random order

The low level of proven and exploited resources in South Africa (a country that produces some 20,000 b/d) has not been favorable to the development of many local companies active in exploration/production. However, it is possible to mention two that have activities outside the country: Efora Energy and Dig Oil. These two companies are notably partnering with Total in block 3 in the east of the Democratic Republic of Congo, where for several years the major has delayed drilling because of the barrel crisis and the difficulty of reaching the zone with its equipment. This drilling is crucial, for the license is located near Lake Albert, where Uganda has revealed more than a billion recoverable barrels. Efora Energy is present too in exploration in Egypt, where it carried out drilling in the middle of the political crisis in 2015, and it owns distribution assets in South Africa and Nigeria. Apart from the Congo, Dig Oil's only block is located in the Central African Republic, but because of the political and security crisis raging in the country it has not made significant progress in this zone for some years.

Since 2004 the South African company Sasol has been producing very small quantities of gas in Mozambique and exporting them to South Africa through a pipeline; it has an exploration/production branch, very insignificant in comparison to the chemical activities which make it a global giant present in China, Qatar and the United States, among other countries.

The new players in exploration/production

The crisis which has lasted since 2014 has of course changed the strategies of both large and small companies already present in Africa, but it has also resulted in new practices on the part of players previously working in Africa but not directly as operators in exploration/production. Two reasons have led to the new activism of these players on the exploration/production stage: firstly, the pressure of traditional operators on the costs of service companies, which have had to continuously lower their bids in order to win contracts. As a result, some of these service companies have chosen to jump in and become directly involved in the projects, like any partner in the block being developed. The other reason for the arrival of new players is the lack of liquidity on the market. Traditional Western banks, for example BNP Paribas and Société Générale, to take the French case, have largely moved away from financing oil projects in Africa, which have suddenly become too risky, since the 2008 financial crisis. The fall in oil prices in 2014 exacerbated the reluctance of the Western banks. Even if African banks, mainly Nigerian such as First Bank and South African such as Standard Bank, have increasingly taken over, many state participants have chosen to turn to traders (or China, see above) that have large liquid assets at their disposal. Traders too have been affected by the crude oil crisis, finding new activity by lending in this sector, and are themselves moving directly into exploration and production.

Traders invest in E&P

In addition to the Nigerian traders mentioned above, two of the most important European traders of crude oil and oil products, **Glencore** and **Vitol**, have recently invested massively in exploration/production. First, in February 2014, Glencore bought Caracal Energy, a Canadian company experiencing financial difficulties in Chad, for \$1.35 billion. Caracal Energy owned blocks and discoveries whose development Glencore financed. Glencore also invested in exploration in Morocco (before pulling out in December 2017)³⁹ and has positions in Equatorial Guinea in blocks I and o.

39. "AFRICA: Glencore Gradually Gives Up on Exploration Dreams", *Africa Energy Intelligence*, No. 809, January 23, 2018.

Glencore also loaned more than a billion dollars so Chad could buy Chevron's shares in ExxonMobil's fields in 2014. Thus it took on the role of banker. In the same way Vitol, which had had positions in exploration/production in Russia for 20 years, recently made its entrance into this sector in Africa. In particular, it invested in Ghana in the Sankofa project, operated by ENI, which will produce large quantities of gas at the end of 2018.

Service companies take on some small E&P projects

In the midst of the crisis, oil service companies made the decision to take risks on development projects. This is the case of the Anglo-Norwegian company **BW Offshore** whose core business is leasing FPSOs (a floating vessel that takes on oil produced offshore until it can be offloaded to tankers). In late 2016, for \$33 million, BW Offshore bought the Dussafu block shares of a beleaguered Canadian junior, Harvest Natural Resources (HNR). This block was in the development phase in the offshore waters of Gabon.⁴⁰ As a result the company will be able to position one of its FPSOs in order to take on the production of the fields. At the start of 2017 BW Offshore also bought 56% of the Kudu gas project in Namibia's offshore; its aim is electricity production. Kudu, discovered in the 1970s by Chevron, experienced many ups and downs and multiple operators such as Tullow Oil, without having been developed because of its small scale: one trillion cubic feet or 0.02 trillion cubic meters of gas. Another case of a service company that went into production is **Schlumberger**. A specialist in drilling assistance, training and the development of complex oil projects, in July 2016 Schlumberger set up the joint venture **OneLNG** in partnership with the Norwegian FLNG specialist **Golar**. The pair's objective is to take shares in fields that have already been discovered and are in the development phase and carry out all the work of gas recovery in order to bring the product to the market. The first project OneLNG will be involved in is Fortuna in Equatorial Guinea. OneLNG will design an underwater gas recovery system and position a FLNG provided by Golar. The advantage for OneLNG is that it is certain to get the market, since it is a partner of the operator. The latter, Ophir Energy, knows it will obtain the service at the best possible rate because the supplier is also financially interested.

40. "GABON: BW Offshore Will Find Work for its FPSOs on Dussafu", *Africa Energy Intelligence*, No. 784, January 3, 2017.

Former executives of the majors set up their company

New companies of a singular kind have also made an appearance during the crisis. The massive departure from the majors, juniors and independent companies of some managers, especially geologists, because of workforce downsizing, has led to the establishment of new companies. This is the case notably of **Trident Energy**, set up in 2016 by former directors of the family company Perenco including the former CEO, Jean-Michel Jacoulot.⁴¹ Trident Energy is also among the companies financed by the American equity firm Warburg Pincus (like Kosmos Energy and Delonex Energy). Trident Energy won its first licenses in October 2017 in Equatorial Guinea, buying the gas assets of the American Hess Corp⁴² for \$650 million, alongside Kosmos Energy. Trident Energy is also set to acquire ENI assets in Tunisia. Jean-Michel Jacoulot and the other executives coming from Perenco have a very clear strategy: buy up the licenses their former company did not acquire. Thus they are perfectly familiar with the geology and the stakes of the blocks they wish to enter.

However, this type of company, established by former managers of majors or large companies, is nothing new. Former Shell geologist Michael Blaha founded **Cove Energy** in 2009; thanks to the company he acquired 8.5% of block 1 at Anadarko in Mozambique. He sold his company in 2012 for \$1.9 million – after the first gas discoveries. He next founded **Discover Exploration** which acquired licences on the other side of the Mozambique Channel, in the Comoros. Another company, **HRT oil & gas**, was set up in 2004 by Marcio Mello, a former Petrobras geologist who had participated in particular in oil research in the Santos Basin off the coast of Rio de Janeiro, where giant pre-salt discoveries were made starting in 2006. Thus in 2010 HRT oil & gas obtained several licenses in Namibia's offshore waters, an area geologically similar to Brazil's northern offshore basin.

41. "AFRICA: Secret Project Floated by Axed Perenco Execs Takes Form", *Africa Energy Intelligence*, No.778, October 4, 2016.

42. Hess press release, "Hess Announces Sale of Interests in Equatorial Guinea; Divestment Part of Strategy to Focus Portfolio on Higher Return Assets," available at: www.hess.com.

Conclusion

The analysis of companies continuing to invest in a difficult environment in Africa calls for several remarks. First, they have managed to safeguard an exploration budget when many others, forced to substantially cut back on their investments since 2014, have had to give up licenses. Thus they all have financial teams that have succeeded in raising funds. However, these teams have been able to obtain financing only because of the quality of their geologists, and because of the discoveries made before the crisis. The two go hand in hand in the oil business: the quality of the geologists taking the risks is rewarded by the banks and investment funds cognizant that the game is worth the candle, because the chances of discovering oil thanks to the technical teams they support are very good. The equation is different for the state-owned companies; funds are more easily available and the strategy is more long term. Still, few of them have invested massively during this difficult period in Africa. The Chinese majors are globally pulling back (Sinopec) or adopting a very much wait-and-see policy (CNPC). The Russian companies have progressed little during the crisis, apart from Rosneft in Egypt and Mozambique and Lukoil, in a period of transition after exiting from West Africa. Pertamina used the crisis to seize new opportunities with the acquisition of Maurel & Prom.

Once again, crisis or no crisis, the companies that take the most risks in Africa, in zones that tend to be new, are neither the privately owned majors nor the large state-owned companies, but the juniors. The examples of Kosmos Energy, Delonex Energy or recently Trident Energy are striking. All these firms are financed by the American investment fund Warburg Pincus.

The arrival of the trading companies Glencore and Vitol in the areas of exploration and production demonstrates that the crisis has also affected these giants, which have had to diversify their value chain by using their formidable dollar reserves differently. They have also responded to a need for financing on the part of states (case of Chad, which has acquired shares of Chevron thanks to Glencore funds). Other players, usually in the services and having shares in the exploration or development phase, have also contributed less costly technical solutions. Their arrival in E&P was encouraged by the crisis in their core business, but these difficulties also led to cooperation among players forced to work together to reduce development costs.

Finally, it should be remembered to what extent all these companies, of different sizes, origins and cultures, with individual areas of skill and knowledge, manage to find their place in a tacit sharing of tasks on the African continent. The junior and independent companies, acting more as pioneers, will always have a need for the private or state-owned majors in order to develop costly and complex projects. In the same way, the majors need more flexible companies that open their way to new oil provinces and ensure replacement of their reserves, an essential factor for their stock values. The crisis has not changed this distribution of the roles; it has only forced more cooperation between companies that were not necessarily used to working together, as illustrated by the case of Uganda with a junior company, a private Western Major and the Chinese CNOOC. These partnerships are sometimes difficult, but they are necessary, given the importance Chinese financing has had in the development of oil in Africa for nearly ten years now.

The study of the activities of these companies during the crisis also makes it possible to bring to the fore new zones with vast potential in Africa: First, the zone extending from Mauritania through Senegal, Guinea-Bissau and Guinea known as the MSGBC Basin, location of the giant Tortue gas field and the SNE oil field. In addition, East Africa, with the discoveries of gas in Mozambique and Tanzania and oil in Uganda and Kenya. All the other zones are either already known — which does not rule out new developments (in Nigeria, Congo, Algeria and Gabon); or they are still uncertain (in Sao Tomé and Príncipe and in Zambia).



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