

# Rising Powers and Global Standards



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### Chinese and American oil companies and their environmental practices in Chad: A quiet confluence of streams or silence before the battle?

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# **Chinese and American oil companies and their environmental practices in Chad: a quiet confluence of streams or silence before the battle?**

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## **ABSTRACT**

Does the Chinese National Petroleum Corporation (CNPC) intend to, and is it in a position to, engage in a race to the bottom regarding environmental standards and norms in Chad's oil sector? Based on recent empirical research, we will focus on the entangled relationships which are emerging following the arrival of CNPC in the Chadian oil sector (initially dominated by Exxon, a US oil major). Chinese environmental regulations in the oil sector and their increasing enforcement have resulted in a comprehensive and composite environmental management system, influenced by Chinese, international and local practices. When entering the Chadian oil sector in 2007, the CNPC thus appears to be well prepared to face comparison with the 'Exxon-Doba' project, a World Bank supported project (1998-2007). Large parts of the expected oil production in the CNPC fields will have to be exported. Among the several transport options available, the most viable appears to be using the pipeline built and administered by the Exxon consortium. The merger of the two oil streams appears as plausible but will put a burden on CNPC's capacity to engage in meaningful dialogues with stakeholders and thus compete in the setting of new environmental best practices.

**Keywords:** China, Chad, oil, critical juncture, Health Security and Environment (HSE) standards and practices, CNPC, Exxon, double standard.

## INTRODUCTION

Within the frame of a wider reflection (van Vliet and Magrin, 2005) on the practice of environmental regulation<sup>1</sup> in the extractive industries, the overall aim of this paper is to contribute to an understanding of the challenges involved in the interaction between a public multinational corporation from China (Chinese National Petroleum Company: CNPC)<sup>2</sup> and a private multinational corporation from an OECD country (Exxon, a US oil major), both operating in one of the margins of the world petroleum system<sup>3</sup>, in a Least Developed Country (LDC), in this case Chad (Central Africa).

Our research is embedded in the confluence of three linked research domains. The first concerns the debate around the fast growing presence of China in Africa over the last ten years (Alden, 2007; the Economist, 2008; Gu et al., 2008; Perret, 2007; Servant, 2005), through foreign direct investment (FDI) (Cui and Jiang, 2009; Holstag, 2006, 2007; Jenkins and Edwards, 2006), particularly in the oil sector (Alden et al., 2008; Chen, 2008; Finkelstein, 2009; Heinrichs, 2007; Munson and Zheng, 2010). Alden (2007) divides the history of China's presence in Africa in phases (a period of high activity during the liberation struggles and post-independence years—the sixties and seventies, a period of some neglect in the eighties, and rediscovery in the nineties). He distinguishes three ways of viewing China in the light of this increasing activity (development partner, competitor or colonizer). He also highlights China's adaptive approaches, depending on the political regimes in recipient countries ('pariah states, illiberal regimes or weak democracies with commodity-based economies or democracies with diversified economies', Alden, 2007: 59). Finally, he argues that future deployments by China in Africa will be influenced by two intertwined factors: (a) the reactions from African elites and the African people towards the Chinese presence, for example, in regard to national

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<sup>1</sup> Under the term 'environmental regulation' we refer to those (sets of) rules—that may be self-produced, imposed by third parties, or voluntarily adhered to—of a formal (laws, conventions, decrees, policies, strategies, codes, norms, standards) or informal (customs, norms) character, with effects in the private or public sphere, and which aim to limit access to natural resources or modify the conditions for their utilization.

<sup>2</sup> The empirical study on which this paper is based has been implemented through a partnership between Cirad (France), UIBE (China) and Gramp-Tc (Chad), with support from Cerdì (Université d'Auvergne, France) and sponsorship from the French Agency for Development (AFD) (see van Vliet and Magrin, 2010). The study followed an earlier intention to establish a dialogue with the CNPC in Mauritania (van Vliet et al., 2009).

<sup>3</sup> As of 2011, Chad is still a recently developed and small production area compared to the core of the world oil system that is situated in the Middle East. The production level was 120,000 barrels/day in 2011, while higher production levels were reached in the years 2005-2006 of 225,000 barrels/day.

electoral debates (in the cases of Angola and Zambia) and (b) the increasing pressure on Chinese enterprises from the Chinese government to change their behaviour in their operations in China and abroad. Recent environmental regulations do indeed provide policy signals that are increasingly affecting the behaviour of larger Chinese corporations.

The second research domain concerns the discussions on the recent emergence of environmental regulations in China and their concrete implications for the evolution of corporate management practices in the workplace in China (Zeng et al., 2005) and abroad. While studies do exist on compliance with Chinese public environmental regulations by Chinese firms in China (Gang, 2009; OECD, 2008; Peiyuan, 2005; Sims, 1999), research on the enforcement of environmental policies and standards abroad is still scarce (the exception being Bosshard, 2008, who provides a general overview). This constitutes an opening for case studies and digging deeper into the issues around cross-border environmental management (Christiansen and Garcia, 2004) and the returning questions around the practice of ‘double standards’<sup>4</sup> (an idea already evoked in the field of labour issues in Brandt, 1980: 182-183).

While the notion of a ‘double standard’ has been used extensively in analysing the behaviour of northern multinational corporations (MNCs) operating in less regulated southern countries, it is less obvious whether it applies in the case of a Chinese firm operating in Chad today. The literature around environmental cross-border management mistakenly identifies norms and standards from Western countries as being ‘universal references’. The nature of the norms and standards applied at home by Chinese firms—and the roles, visions and strategies of the different actors in and around these Chinese firms—are insufficiently known (although Soares de Oliveira, 2008, states that Chinese firms will use this lack of standards as a competitive advantage).

The third domain concerns the debates around the ‘resource curse’ (Development Alternatives Incorporated, 2007; Ross, 1999; Rosser, 2006) and the role of FDIs in the consolidation of

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<sup>4</sup> The notion of ‘double standards’ usually refers to the practices of Northern firms, when they operate in southern countries that are less well endowed with rules and the capacity to enforce them, following standards that are less strict than in their home countries. The Northern firms thus take an advantage of the differential, while at the same time arguing that they have to respect—and are duly respecting—the national regulations in the host countries.

cursed trajectories (refer to the notion of ‘sustainable failed states’<sup>5</sup>, Soares de Oliveira, 2007). The extensive literature on the ‘resource curse’ has been synthesized by Rosser (2006) and deals with three interrelated dimensions: decreasing economic performance, the failure of institutions and the tendency to have authoritarian regimes (Collier and Hoefer, 2005a, 2005b; Engerman and Sokoloff, 2002), and finally the contribution of resources to the intensity and duration of conflicts (Guesnet et al., 2008; Humphreys, 2005; Ross, 1999; Rosser, 2006). Magrin and van Vliet (2009) have suggested adding a fourth ‘environmental’ dimension to the debate on the resource curse.

While earlier hypotheses were formulated regarding the dynamics of corporate social and environmental behaviour and its interactions with local communities throughout the long-term mining cycle (van Vliet, 1998), van Vliet and Magrin (2009) argue that the resource curse approaches focus too narrowly on immutable ‘trajectories’, while shedding insufficient light on the potential role of extractive activities in the emergence of ‘critical junctures’, as they were recently redefined by Capoccia and Kelemen (2007). They use the notion ‘critical juncture’ to describe an observable change in the internal resource base and/or in the environment of an organisation, which substantially broadens the range of options available to the organisation and increases the potential reach of the consequences of the decisions eventually taken. More precisely, a ‘critical juncture’ represents an opportunity for a trajectory change, which does not necessarily materialize (Capoccia and Kelemen, 2007).

Within this conceptual framework, and based on recent empirical research, we will focus on the entangled relationships which are emerging following the arrival of the CNPC in the Chadian petroleum landscape, initially dominated by a consortium led by Exxon.

Exxon’s Doba oil fields in the South of Chad are linked by a pipeline running southward from the main extraction facilities in Komé (Chad) to a shipping terminal in Kribi (Cameroon), the whole project having been implemented with the support, and under the umbrella of, the World Bank Group (Magrin, 2001, 2003, 2006; Magrin and van Vliet, 2005; Pegg, 2009). The Doba project is at a mature exploitation stage, where maintaining the volumes of extraction at

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<sup>5</sup> According to Soares de Oliveira (2007), oil-producing states represent a precise example of these ‘sustainable failed states’, that is, states that no longer produce public goods, but are resilient thanks to their capacity for coercion fueled by the oil rent and because of the constant international support they receive from oil-importing countries.

reasonable levels (120,000 barrels/day) demands increasing investment from the Exxon consortium.

The Chinese CNPC-Rônier project is different in several ways. It consists of the exploitation of oil fields situated in the Centre South of Chad, some 20 km south of the little town of Bousso, and the oilfield is linked by a 311 km long pipeline to a refinery in Djermaya (40 km north of N'Djamena, the capital). When we were implementing our study, the CNPC-Rônier project was still in the midst of the construction phase<sup>6</sup>, at the very start of the business cycle. The recognition by Chad of the People's Republic of China, in 2006, which paved the way for the arrival of CNPC in 2007, was the result of intensive and multi-sided diplomatic efforts<sup>7</sup>, aimed at reducing tensions in Darfur (Sudan) and within Chad (Maoundonodji, 2009). Following a common pattern found elsewhere, the CNPC-Rônier project is being carried out within the framework of a more comprehensive and unpublished bilateral agreement between China and the Chadian government.

The CNPC project faces several challenges. It is aimed at extracting oil but also refining some of it locally, which represents a contribution to industrialization in Sub-Saharan Africa that differs from Exxon's approach. However, over time, oil production in the Rônier field is expected to be larger (at around 60,000 barrels/day) than the projected refining capacity (20,000 barrels/day). Another oil field situated in Sedigui (north of Lake Chad), linked via a second pipeline, would add a further 20,000 barrels/day. The question for CNPC and the Chadian government is thus: where can the remaining extracted oil be transported?

The range of viable options is not extensive. One option is to build a pipeline eastwards so as to link Rônier with existing CNPC facilities in Sudan (more than 1,300 km away). While this option would connect Rônier to a known environment (the Chinese have built an oil complex in Sudan, with direct maritime access to the East), it requires a huge investment in a geopolitically risky region.

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<sup>6</sup> The building of the infrastructure (oil field and pipeline) started in 2009 and was finished in March 2011; the refinery delivered its first derivatives in June 2011.

<sup>7</sup> During our fieldwork, we were informed by a reliable source that French diplomats had also actively manoeuvred in favour of the arrival of the CNPC in the Chadian oil sector.

A second option would involve an interaction between CNPC and the maturing project led by Exxon (see Appendix 1). This option<sup>8</sup> would connect the CNPC-Rônier field via a 100 km pipeline with the already existing southward pipeline system from Kome (Chad) to the export terminal Kribi (in Cameroon), infrastructure that is operated by the Exxon-led consortium<sup>9</sup> and its partners (the Chadian and Cameroon's governments) and which is still underutilized<sup>10</sup>. This option could be implemented either through a collaborative arrangement between the two firms (for example through an authorization for CNPC to utilize the Exxon consortium's pipeline, for a fee to be determined), or through a CNPC buyout of Exxon's share (a sub-option not to be discarded at this stage of the exploitation cycle, according to van Vliet, 1998). Interactions between Exxon and CNPC are still rare as the two firms are competing intensively for the same resources (Lee and Salmon, 2007), and an eventual agreement would imply a tough negotiation process, all the more so if they opt for a collaborative arrangement and exclude a buyout.

In calling for a possible interconnection of the two projects, technological challenges are certainly foreseen, from the strict engineering point of view, but these are described as solvable, according to interviewed staff from both firms. However, streamlining the environmental and social norms and standards would at first sight seem more difficult: To put it boldly, 'What kind of oil would be allowed to flow through Exxon's "clean" pipeline?'

The specific question we will therefore try to answer in this paper is as follows: Does CNPC intend to, and is it in a position to, engage in 'a race to the bottom' on environmental standards when operating in Chad and in its eventual future negotiations with Exxon?

In order to try to provide an answer to this question, we have implemented the following approach. Our entry point is the study of environmental regulations and their enforcement in the world of extractive activities (oil, gas and mining). Contrary to common practice (eg, Reiner and Tuson2009), we reviewed CNPC's environmental management practices in Chad

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<sup>8</sup> This option was first mentioned by French and Polgreen (2007)

<sup>9</sup> The consortium brings together the operator, Exxon Mobil, (40 per cent), Petronas, a public Malaysian oil firm with which CNPC has already collaborated in Sudan (35 per cent) and the US firm, Chevron Texaco (25 per cent).

<sup>10</sup> The situation of underutilization of the pipeline may reverse, as Griffiths Energy International, a smaller Canadian firm intending to start operations in 2014 has also initiated negotiations with the consortium, talks that have cooled the relation between CNPC and Exxon.

from the standpoint of China's own environmental regulations and through the lens of CNPC's own policies, standards and procedures. This did not prevent us from comparing the practices of Exxon and CNPC at a later stage (van Vliet, 2010). To implement this perspective it was vital to work side by side with Chinese, European and Chadian researchers. We have reviewed the available literature and performed field work in China and in Chad (between 20 May and 10 September 2010). Interviews with members of neighbouring villages, staff from CNPC, Exxon and the Chadian Society for Oil and Gas (SHT), the Chadian ministries of oil, environment, mining and labour, and with staff from various embassies, all provided useful information. The researchers' previous experiences in Chad also brought their share of information. The need for such empirical research (Alden, 2007) was all the more justified in light of the divergent views developed in China regarding the role of natural resources in African development and even regarding the mere perception of the 'resource curse' (e.g., Gu et al., 2008). As we recognized the complex nature of the object to be studied, we mobilized the views of researchers from different disciplines (political science, economics, political economics and geography).

We will try to argue that, at this stage, the CNPC is not in a position—and there are no indications of any CNPC intent—to engage in 'a race to the bottom' on environmental standards in Chad and in its interactions with Exxon. In order to develop that argument, we will first focus on the emergence of environmental regulation in China, its limits and the obligations it nevertheless creates for the larger Chinese firms, in particular in the oil sector. We will then recall the main elements of the Exxon-Doba heritage, and show how the critical juncture generated by the vivid interactions between civil society, the state, the World Bank and the consortium led by Exxon has been preserved. Although evoking a 'new trajectory' at this stage might be premature, we aim to provide evidence that this heritage still operates as a threshold for any newcomer in the oil sector. We will then analyse the environmental practices of CNPC thus far in Chad and focus on how they resemble and differ from those of Exxon. This will allow us to discuss the challenges involved in the CNPC-Exxon relationship in Chad and analyse the reasons for the probable pacified confluence of the several oil streams—with CNPC consolidating the new directions explored under the Exxon-Doba project. Meanwhile, a scenario in which tensions are revived should not be excluded.

## THE EMERGENCE OF ENVIRONMENTAL REGULATION IN CHINA

In China, the gap between the internal demand and supply of environmental regulation has been closing fast, especially during the last ten years. This can be seen in a number of ways. The National People's Congress (2002a) Law on Cleaner Production Promotion was promulgated in June 2002. Since then, each new piece of formal public legislation has been more comprehensive and detailed than the last, and environmental protection is progressively being woven into public policy, for example the five-year development plans, and tax laws (Gang, 2009; Liang et al., 2010a; OECD, 2008). This is being aided smoothly by the restricted access to raw materials. Firms are firmly invited to put into practice the concepts of a circular economy and cleaner production techniques (Mol and Liu, 2005). Environmental impact assessments (EIAs) are required even for relatively small investments (National People's Congress, 2002b), leading to administrative refusals in several cases. The consultation of citizens is encouraged and even required in the EIAs for larger projects. Voluntarily adopted environmental measures within the production sphere are promoted. Although not yet formally adhering to the Equator Principles (Equator Principles, 2006), several Chinese development banks, including Eximbank and the China Development Bank, have adopted comparable environmental screening procedures for their investments (Bossard, 2008). Furthermore, the fiscal consequences of environmental misbehaviour act as a deterrent, especially for larger firms (Liang et al., 2010a). Environmental reporting is obligatory for medium-sized and larger firms (Peiyuan, 2005). Thus, the theory and practice of corporate environmental management has been boosted. The introduction of 'green' credits and subsidies seeks to stimulate cleaner production approaches. In October 2007, the State Agency for Environment Protection (SEPA) and the Ministry of Commerce (MOFCOM) announced a 'green trade policy' to reduce or withdraw export quotas or licenses from high-polluting or energy-consuming enterprises. In December 2007, MOFCOM updated the Catalogue for Guiding Foreign Direct Investment, adding environmentally friendly investment projects to the list of encouraged investment categories (OECD, 2008). A stronger Ministry of Environment Protection (MEP) replaced the SEPA in March 2008.

Peiyuan (2005) studied the practice of corporate environmental reporting in several industrial sectors in China, concluding that, although it was not a widely accepted practice at the time, awareness of environmental issues had been raised. Geng et al. (2008) compared the intentions and practical implications of the notion of the circular economy at a regional level,

concluding that its implementation could be improved if each region participated in drawing up the policy by providing its own adapted definition of a ‘circular economy’. While the emergence of these new rules of the game have provided an answer to internal demands (Shi and Zhang, 2006), enforcement is still hindered because of factors such as the superposition of legislations, incompleteness and ambiguity (Gang, 2009; Tsang and Kolk, 2010), a lack of transparency and publicity, sanctions that are not commensurate with the impacts created, and incentives and/or sanctions that are not always sufficiently relevant to modify behaviour. Behind these factors, the effectiveness of environmental regulation is more fundamentally compromised by the imbalanced power relationships between the state, public and private firms, and civil society. This often leads to a prioritization of immediate economic goals over long-term environmental protection (Liang et al., 2010b).

In the petroleum industry, a sector with a long tradition of self-regulation and voluntarily adopted standards and norms, environmental regulation has also seen remarkable changes, despite—but also thanks to—the spectacular accidents that have occurred in the last ten years. Due to increasing demand and diminishing reserves in China, China became a net oil importer in 1993. In 2009, it was the world’s third largest oil importer behind the USA and Japan, with total imports of 203.8 million tons of crude oil . In recent years, the national oil companies have dramatically increased their investments abroad and Chinese oil companies are present in oil-producing regions on all continents (Liang et al., 2010c). At home and abroad, Chinese oil firms have been confronted with the environmental impacts and risks involved in oil exploration, exploitation, storage and transportation. The need to set guides and standards has been acknowledged.

The government has played an essential role in the emergence of environmental regulation in the oil and gas sector. Taking into account the specificities of the petroleum sector, the government has promulgated a series of administrative decrees to regulate the sector’s environmental issues, including a reference to the obligation for Chinese firms and foreign partners to ‘follow international practices’ regarding the protection of agriculture and environment (Liang et al., 2010c). Most of the regulations for the petroleum sector have been formulated at the national level, but lower levels of government have also issued petroleum-specific regulations (such as the provinces of Hebei, Liaoning and Heilongjian and the Xinjiang Uygur Autonomous Region) (Liang et al., 2010c). Based on learning and adaptation, a composite and comprehensive regulatory framework has emerged for Chinese petroleum

companies, inspired by ‘unique Chinese corporate social responsibility dimensions’ (Xu and Yang, 2010), elements from home legislation, but also elements adapted from host countries and international public and private organizations. In several domains (air and water pollution, discharges, recycling etc.), the Chinese environmental regulations are stricter than those in western countries, and thus now also operate as non-tariff barriers for undesired competitors in China.

Despite these developments, the lack of a general law for the petroleum sector leaves a number of vacuums and contradictions between the general environmental regulations and the sector-specific regulations. The state-owned nature of oil companies implies that they have a very close relationship with government departments. This is illustrated by the history of CNPC, which was created out of the former Ministry for the Petroleum Industry. The government is both owner and regulator of the oil companies, and these functions are not exercised by separate bodies within the government. In view of the importance of oil companies for national energy security, and because of the fact that the functions of entrepreneur and regulator are not clearly separated within the government, environmental enforcement decisions involving large public enterprises do not always lead to drastic action (Liang et al., 2010c). Accidents and pollution incidents are still growing along with the expansion of the petroleum sector throughout the country. This is illustrated by a series of oil industry accidents in recent years, including the gas pipe explosion in Kai County of the Chong Qing municipality in 2003, the Songhua River pollution caused by an explosion at a petrochemical factory in Jilin province in 2005, and the recent oil spill in the Bohai Sea (due to a blast at an oil pipeline near Dalian City in the summer of 2010). With the sharp growth in China’s oil industry, the number of oil spill accidents in the seas along China’s coast has increased steadily during the last decade. However, the Chinese government has tended to react more strongly to each successive accident in the petroleum sector. The recent oil spill in July 2010 mentioned above gave birth to a new Law on the Protection of Oil and Natural Gas Pipelines, which took effect on 1 October 2010 (Liang et al., 2010c). These accidents have also prompted corrective measures from the oil firms.

Within the Chinese oil firms, a steady development of engineering, health, safety and environmental standards can be observed. This is due to a number of factors (defending their reputation, the honour of the engineering profession, and demands from staff, citizens, the media, local and national authorities at home and abroad, the Communist Party, consortium

members, consumers and banks). Internally, the low hierarchical rank of HSE managers in Chinese oil firms is not always favourable to the full implementation of HSE policies. However, exposure to the above pressures was stimulated during the ‘opening up’ phase, thanks firstly to partnerships with foreign oil firms (eg, Shell) and then again, within the frame of the ‘going out strategy’, when Chinese firms took their first steps outside China, initially as deliverers and installers of very basic equipment, then as qualified subcontractors, and finally as consortium members or even leaders. The case of CNPC adequately encapsulates this (Liang et al., 2010c).

The CNPC was created in 1988 and has successively expanded its scope of activities from initial upstream resource exploration to downstream business, from oil exploration and refining to technical services and equipment manufacturing, and from domestic operations to overseas expansion. Based on its domestic dominance, CNPC is also becoming a large international oil company with ambitious overseas expansion projects. Encouraged by the government’s ‘go out’ policy and a preferential credit policy<sup>11</sup>, CNPC is today the largest Chinese overseas investor in the petroleum sector. However, the rapid expansion of the company’s activities has been accompanied by a number of production accidents which have caused human, economic and environmental losses. Under pressure at home and abroad, and keen to improve its domestic and international image and gain and maintain access to reserves abroad, CNPC has paid increasing attention to environmental issues and established a number of environmental protection measures (Liang et al., 2010c).

In 1997, CNPC adopted the ISO14001 Environmental Management System, which obliges firms to define all work procedures and their potential impacts, to foresee preventive measures, to detect and report failures, and to take corrective and preventive measures. By the end of 2007, CNPC’s 216 affiliates had all received ISO14001 certification. The company issued a series of environmental management rules and plans<sup>12</sup> to enforce an effective environmental management system, a pollution-reduction indicator system, a monitoring system and an evaluation system. In terms of ensuring clean operations, CNPC adopted a clean production technology innovation programme. A series of new technologies and

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<sup>11</sup> In 2009, the China Development Bank provided a long-term loan of US\$ 30 billion to support CNPC’s overseas development for the next five years.

<sup>12</sup> Including Management of Environmental Monitoring, Statistical Environmental Management and the Plan for Establishing an Online Pollution Source Monitoring System, Technical Guidelines for the Identification and Selection of Environmental Factors.

equipment was developed, including clean operations in well drilling, ecological protection during pipeline construction, the recycling of refinery sewage and the reduction of greenhouse gas emissions. A three-tier HSE management system was implemented to ensure that environmental protection facilities and major engineering projects are designed, constructed and completed simultaneously (in line with the government's 'three synchronization policy'). Safety management guidelines have been conceived and implemented. Advice and expertise from western firms has been systematically sought in all domains. To meet the demands of its offshore business and prospecting work in the Bohai Sea, CNPC established the Offshore Emergency Rescue and Response Center to handle offshore accidents, including rescue, firefighting, oil-spill treatment and key project protection (Liang et al., 2010c). In previous operations abroad, and more specifically in nearby Sudan, these environmental standards were gradually improved, through interactions with consortium partners that might have been surprised initially by some of the technical procedures followed by CNPC<sup>13</sup>, or with environmental organizations that contested its choice of drilling sites or their timing (Dittgen, 2010). When arriving in Chad in 2007, through (considerable) failures and (rapid) learning, CNPC had already acquired the status of an experienced global operator and was thus technically prepared to engage in the interaction with the Exxon-Doba project (Liang et al., 2010c; Lin, 2010).

## **HOW THE 'FAILED' EXXON-DOBA PROJECT CONTRIBUTED TO A CRITICAL JUNCTURE, A PRECEDENT FOR NEW OIL COMPANIES OPERATING IN CHAD**

Chad has not experienced sustained peace since the rebellion that broke out in 1965, which led to the fall of the first president François Tombalbaye in 1975. As well as the North/South divide, rebellions against the government have emerged sporadically from the peripheries of the country, backed by neighbouring countries (mainly Libya and the Sudan). Rebels have sometimes succeeded in gaining power, such as Hissein Habre in 1982, who was himself overthrown by Idriss Déby in 1990.

Following the repression related to Ogoni's oil in neighbouring Nigeria in the mid-1990s, and the international upheaval it provoked, any large oil investor in Chad would have been

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<sup>13</sup> This appears the case for Petronas, a member of the International Oil and Gas Producers Association, which includes the western oil majors and most the oil and gas companies from OCDE countries..

immediately questioned about its relationship with a disputed regime. The Exxon-Doba project would probably have been considerably different without the legitimacy provided by the World Bank's support, which also functioned as a red flag, attracting intense worldwide scrutiny (Magrin, 2003; Magrin and van Vliet, 2009).

The World Bank considered Chad's exploitation of oil in Doba as a challenge and it was explicitly presented as a means to test a way out of the resource curse. It was based on three main pillars: the first was a state capacity management reinforcement project funded by the World Bank; the second was a multilevel social and environmental monitoring system; last but not least was a system of oil revenue management. The system was founded on the Chadian Law n°001 of 1999, which stipulated that the majority of the oil revenue was to be assigned to priority fields identified in the anti-poverty policy framework. The control of the use of the oil revenue was to be enforced by a specialized supervising body<sup>14</sup>, with participation from civil society organizations.

Later developments provided arguments for proponents of the ‘natural resource curse’ approach. The productive sectors outside the oil economy went on declining (the cotton sector appears to have been immune to the improving world prices during the last seven years). The system that was intended to control the management of the oil revenues did not prevent corruption, particularly in the building of public infrastructure. In 2006, amidst growing tensions with the succeeding World Bank missions, the government modified the revenue management law of 1999, adding public administration and security—which allowed it to buy weapons—to the list of priority domains within the anti-poverty policy. After the start of the oil exploitation in 2003, conflicts were stimulated: rebel groups based in Sudan brought war inside the capital city, Ndjamena, twice, in 2006 and 2008, but failed to overthrow President Déby. Access to the oil rent was without doubt a key motivation, and the same rent allowed president Déby to purchase guns for the war (as was the case for the government of Sudan, which backed the rebels).

Since 2006, public debate around the Exxon-Doba project has cooled down considerably, probably due to the World Bank's withdrawal from the project in 2008. This, combined with the monotony of oil production activities once they have started, might also have dissuaded

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<sup>14</sup> Collège de contrôle et de suivi des revenus pétroliers (CCSRP).

larger international NGOs from getting involved. As a consequence, dependent local NGOs have progressively lowered the intensity of their activities around the Doba project and the number of civic consultations with the consortium have decreased. The monitoring capacity of the state—initially financed by the World Bank—has been temporarily disturbed. The first (small) oil spill has been detected and cleaned up (International Advisory Group, 2009).. Security worries have tended to harm relations between the state, firms, NGOs and villagers in some areas. The financial envelope for compensation has been reduced over time (Magrin, 2010a).

Nevertheless, descriptions of the death of the ‘model Chad-Cameroon Pipeline Project’ (Pegg, 2009) do not give full credit to the many interesting features of the Doba experiment (van Vliet and Magrin, 2011). The Exxon-Doba experience contributed to a genuine critical juncture in at least four ways (van Vliet and Magrin, 2009). First, it led to a sudden widening of public choices as a consequence of oil and gas revenues. Access to unconditional resources created the necessary conditions for more autonomous public policy making. This new space was indeed utilized by the Chadian state to escape from the traditional IMF and World Bank policies which tended to privilege investment (thus infrastructure) over operation (thus salaries and functioning expenses). Second, freely disposable resources also introduced another basic new choice in Chad: the state was able to choose between coercion and legitimization (a function with which the Chadian state is increasingly experimenting). The third element contributing to a critical juncture is related to the acceptance by the state of interdependencies—learning to work with multinational firms and NGOs and their imbedded scrutiny mechanisms and practices. The fourth is related to the former and concerns the evolution of the state towards one that will take into account these new social demands and can answer the divergent requirements of the oil and gas sector (ie, to respect agreements made, to provide security and also social peace, and to respect the decision sphere of the firms). To effectively achieve this, the state needs a space of relative autonomy (Gramsci, 1975; Poulantzas, 1968) vis-à-vis the oil and gas firms and vis-à-vis the other demands in society (van Vliet and Magrin, 2009).

Today, the heritage of the World Bank’s past involvement is still going strong. Many of the positions gained by civil society during that time have been respected: the agreed environment procedures; the transparency regarding alerts and responses; the principles and criteria for relocation and compensation; the right of NGOs to be informed; the rights of affected

communities to be heard in consultations; and supervision by external expert commissions. Most importantly, as was emphasized during the interviews carried out for this research, the Doba project has contributed to a noticeable increase in capacities (eg, Chadian staff in Exxon., NGOs, civil servants) and the sharing of a common language and even values (eg, the respect of basic norms, the importance of dialogue). Hundreds of resource personnel have been trained in EIA, environmental reporting, monitoring and negotiation. Since the 2006 crisis in the relationship between the Chadian state and the World Bank, environmental rules of the game have been formulated, experimented with, and widely applied in and around the Doba project. The Doba project is therefore indeed an oil field and a pipeline, but one that is literally encapsulated by and surrounded with institutional capital (the rules of the game, experimentation, training and learning). This heritage is still influencing CNPC's recent entrance into the Chadian oil sector (Magrin, 2010a).

## **DOBA'S INFLUENCE ON THE HEALTH, SAFETY AND ENVIRONMENT PROCEDURES IMPLEMENTED BY CNPC IN CHAD AND THEIR LIMITS**

CNPC faced a series of environmental legal obligations when it started operating in Chad. The obligations inherited from contractual agreements signed years earlier between Encana (a Canadian oil firm that explored the Rônier area in 2000 and later sold its shares to CNPC) and the Chadian government represented CNPC's first frame of reference regarding health, security and the environment (HSE) (Lin, 2010; Tavares and Doudjidingao, 2010). The second frame of reference consists of CNPC's own HSE procedures and standards, which are of a composite nature (Lin, 2010). They are the result of a progressive mixing, integration and adaptation of rules from diverse origins (CNPC's own rules, Chinese norms and standards based on the country's own values and norms, standards as agreed in multilateral bodies, and norms and standards adapted or integrated from the International Oil and Gas Association and its members). The predominance of internationally adopted best practices is striking, although CNPC has sought to avoid the over-voluminous environmental documentation produced in the Doba project. The third frame of reference for CNPC is Chadian oil law, which includes environmental obligations and was also influenced by the Doba debates<sup>15</sup>. The fourth frame of reference are the rules and procedures from the Doba project itself, which are continually

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<sup>15</sup> A comprehensive environment protection law was adopted in 1998. However, specific regulations for the implementation of EIAs were only published in August 2010. The oil legislation was revised in 1997 and 2007.

referred to by functionaries, villagers and NGOs alike, and which indeed function as a threshold with which CNPC managers deal pragmatically every day.

Most of these frames of reference appear to have inspired HSE implementation in the CNPC. The foreseen impacts are relatively modest, in view of the classic nature and small scope of the investment, the lack of striking environmental challenges (except the Chari river crossing and the floodable refinery site) and the low population density (Magrin, 2010b). The technical solutions adopted for the river crossing take into account the best available international practices. With one very regretful exception (a child who was playing in an unguarded and unprotected road-building materials extraction site drowned—an event to which CNPC responded immediately with corrective and preventive measures), we did not find any striking cases showing an intent or a disposition to avoid or bypass these adopted regulations.

Globally, when faced with safety or environmental problems, CNPC have always responded.

Regarding the implementation of EIAs, it can be observed that the project has been split into two components (the refinery and the oilfield pipeline). This is understandable given the financing structure (the financing of the government's share in the ownership of the refinery is to be financed via a loan from the China Eximbank) but is not advisable from the point of view of Chinese regulations on EIAs (which recommend comprehensively taking into account the cumulative impacts of all components of a project). The EIA concerning the refinery passed through all of the required stages (probably due to the more stringent environmental procedures applied by Eximbank)<sup>16</sup>. In contrast, the EIA regarding extraction and storage facilities and the pipeline did not pass through all stages before the start of activities (final approval by the Ministry of Environment was still lacking in September 2010). However, we observed that the draft EIA report had indeed influenced the organization of the activities, the consultation process with communities and the final trajectory of the pipeline. The environment management plan and the oil spill prevention plan—both of which are demanded by the CNPC procedures, the Chadian legislation and international best practice (including that in Doba)—were not accessible during our fieldwork (Lin, 2010; Tavares and Doudjidingao, 2010)<sup>17</sup>.

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<sup>16</sup> In September 2010 the loan allowing government participation in the refinery had still not been approved by China Eximbank.

<sup>17</sup> For further analysis regarding the juridical haziness surrounding EIAs upon CNPC's entrance into Chad, refer to van Vliet and Magrin (2012, in press).

## **COMPARING THE CORPORATE ENVIRONMENTAL MANAGEMENT APPROACHES OF CNPC AND EXXON IN CHAD**

An eventual collaboration between CNPC and Exxon will bring together two firms with mostly shared goals in the field of environmental management. Both firms experience similar upward pressures on standards, behaviour and impacts (from the media, the markets, governments, political parties, financial institutions, NGOs, workers' unions, and citizens), even if CNPC is relatively less exposed in China due to being state-owned. As technological difficulties are not perceived to be an obstacle, and since HSE approaches, standards and criteria in both firms appear to be converging, what then are the main challenges facing the relationship between the Exxon-Doba and CNPC-Rônier projects?

In CNPC, HSE plays an essential but narrowly defined technical role: accidents and incidents must be avoided, detected, responded and prevented. In Exxon, HSE is perceived to have a much wider scope: beyond its technical functions, corporate environmental management plays an active role in mediation and dialogue with outside stakeholders and even serves as a means for lobbying and gaining new markets. This results in different hierarchical roles for HSE managers in the two firms. In Exxon, the HSE director (a Chadian) is in charge of a large department. He operates directly as the second-in-line and also plays a role in external relations, a function he shares with a Chadian political heavyweight (Maoundonodji, 2010). In CNPC, the HSE department appears to have a rather discrete and technical position in the hierarchy. Few staff members seem to dedicate 100 per cent of their time to HSE functions: instead such functions appear to be spread out across the organization.

CNPC apparently has nothing to hide (no significant problems have been detected, even after tight scrutiny from local NGOs). It may have the documents, it probably has its internal monitoring procedures in place, the internal learning processes are probably rich, staff may know the answers to many of the questions that are asked daily, but the firm barely communicate this, if at all, either to functionaries, NGOs, villagers or researchers. The language barrier should be accounted for but does not seem to explain the situation entirely<sup>18</sup>. Cultural differences may be a factor: boasting about one's own work is not positively

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<sup>18</sup> The lack of capacity to communicate and to engage in dialogues with stakeholders in their surroundings has been acknowledged by the commercial attaché at the Chinese Embassy as one of the main challenges needing to be addressed by Chinese firms in Chad.

perceived in China (Lin, 2010<sup>19</sup>). Wider societal dialogues are still strictly channeled in China. A further explanation might be that CNPC simply does not have a written and detailed procedure for dealing with dialogue with stakeholders. In a highly regulated engineering sector, where no step is taken without a detailed procedure behind it, this may explain the embarrassment of the staff in the field (van Vliet and Magrin, 2012, *in press*). The reluctance to communicate, or to engage in dialogue, appears to be a consistent feature of CNPC's approach to corporate environmental management, at least as observed in Chad (Lin, 2010; Maoundonodji, 2010; Tavares and Doudjidingao, 2010). This has profound consequences for CNPC's future role in the development of environmental standard setting.

The oil sector is a heavily and intensively regulated and organized market. Not just any global firm can suggest a new, or reject an established, standard. Depending on its position in a specific market, a firm will be able to operate either as a producer or as a mere consumer of norms and standards. Furthermore, in any given country—and this is also valid for the oil sector—the first firm tends to set the norms and standards which followers have to adopt or outbid. This makes entry for non-performing or lower performing firms difficult but represents no hindrance to other global competitors. Until now, there have been no indications that CNPC has suffered such a hindrance. While Exxon, with the support of the World Bank, is clearly a producer of norms and standards, the role of CNPC is more ambiguous. Like Exxon's, CNPC's environmental standards and norms are of a composite nature. However, the originality and effectiveness of the specific Chinese contribution to global HSE norms are not easily perceivable (Xu and Yang, 2010) and CNPC does not communicate on the topic. In order to suggest a new standard, you need to communicate, and you need to convince people. No new practice can be established without the capacity to communicate, to convince and to gain adherence to one's suggested new best practice. Because of its restraint in this domain, the impression emerges that CNPC is still operating as a consumer, selectively picking the best worldwide practices to implement, rather than as a best practice producer. We anticipate that this might change in the near future, because it is plausible that CNPC will continue pushing for higher environmental standards in the oil sector, all be it only so as to continue expanding in the global market and to be accepted as a competitor or partner in any component of the world petroleum sector, and not only at its margins.

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<sup>19</sup> Contact between oil firms and researchers is still very uncommon in China, even for Chinese researchers; the worlds of social/environmental sciences and engineering remain far apart, in China and elsewhere; the language barrier for those who do not speak Chinese is huge; we are thus grateful for the exchanges we had with CNPC staff.

A peaceful arrangement between CNPC and Exxon implies several challenges, but does appear feasible. Such a collaborative arrangement would represent the first concrete manifestation in Central Africa, of a common strategy for the ‘depoliticization’ of the respective energy policies of China and the USA (as advocated by Lee and Shalmon, 2007)<sup>20</sup>, while at the same time preserving and feeding the critical juncture created by Chad’s sudden access to oil and gas resources. The fact that the contractual obligations in the loan documents with the World Bank and the International Finance Corporation clearly stipulate that all companies using the pipeline should respect the same Doba standards represents an additional incentive for cooperation (Maoundonodji, 2010).

However, another trajectory might be envisaged if CNPC does not fully capture the quintessence of the Exxon-Doba project and its most interesting dimension. A simple buy-out of the Exxon facilities might reduce the rich institutional heritage of the Exxon-Doba project to a mere pipeline. In that event, CNPC would be severed from access to what appears today to be its scarcest resource: the capacity to communicate, to establish dialogues with its surroundings, to elaborate commonly agreed rules and to convince and mobilize. Acquiring and applying these skills will be the condition *sine qua non* of playing a more significant role in the setting of international environment standards in the oil and gas industry in the future.

## CONCLUSIONS

The evidence from CNPC indicates that some Chinese MNCs may well be making significant headway in adopting international standards, especially on HSE. As a public MNC, CNPC has to compete or collaborate with firms from the OECD and their environmental standards. Competition and/or collaboration are exercising the same demands on HSE practices in the firm. Internal (citizens’ claims, the media, and demands from within and around the Communist party) and external (the need to compete globally and overcome the non-tariff barriers) pressures have contributed to rapid policy learning and the closure of the gap between internal demand and supply of environmental regulation.

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<sup>20</sup> In a convincing essay, Lee and Shalmon (2007) argue that oil importers rarely win by increasing tensions among themselves; as China and the USA share the same situation as net oil importers, they should instead work together.

Moreover our analysis provides evidence of strong engagement by the state in China to regulate on environmental issues. In China, the gap between the demand and supply of environmental regulation has been progressively reduced over the last fifteen years, even if enforcement still lags behind. In the petroleum sector, the flagship of Chinese public investment at home and abroad, the distance between the environmental regulations and their enforcement has been steadily reduced over the last ten years.

The CNPC experience challenges the view that Chinese MNCs will necessarily drive a race to the bottom on environmental standards. In the case of CNPC in Chad, we did not find evidence in support of Soares de Oliveira's (2008) statement that Chinese firms are adopting lower standards as a way of competitively entering the market. In Chad, CNPC had no leeway to adopt a classic double standards approach. When it arrived in Chad in 2007, its corporate environmental management practice was simultaneously scrutinized by top HSE management within the firm, by the Chinese State Council and Eximbank and faced with the Doba heritage. Despite the shortcomings of the World Bank's involvement in the oil sector in Chad, this heritage still strongly shapes the mindsets of all actors involved in the sector today. The peculiar relationship between Exxon and the World Bank Group has generated a series of specific norms and standards, which cannot easily be avoided at this stage. When operating in Chad, and although its practices might still be consolidated, CNPC appears to be adequately endowed with environmental management tools and stands up to comparison with the environmental approaches implemented by Exxon.

There may still be challenges for such Chinese MNCs, especially when it comes to learning how to engage in dialogue and communicate with stakeholders. Although CNPC deals pragmatically with the situation it faces, and has to adapt to and compete with the capacity of Exxon's HSE department in this respect, the Chinese firm has not yet been in a position to set new and more stringent norms. Until now, only a few firms from OECD countries have been in a position to participate in the competition for new technologies, approaches and procedures—and have been able to move through the decision processes of the self-regulated and West-centred oil and gas organizations, the media, public opinion, and their competitors, and see their efforts recognized and proclaimed as producers of new 'best practices'. Besides having 'good' practice, this requires the capacity to communicate, convince, and gain adhesion, a capacity which CNPC has yet to build.

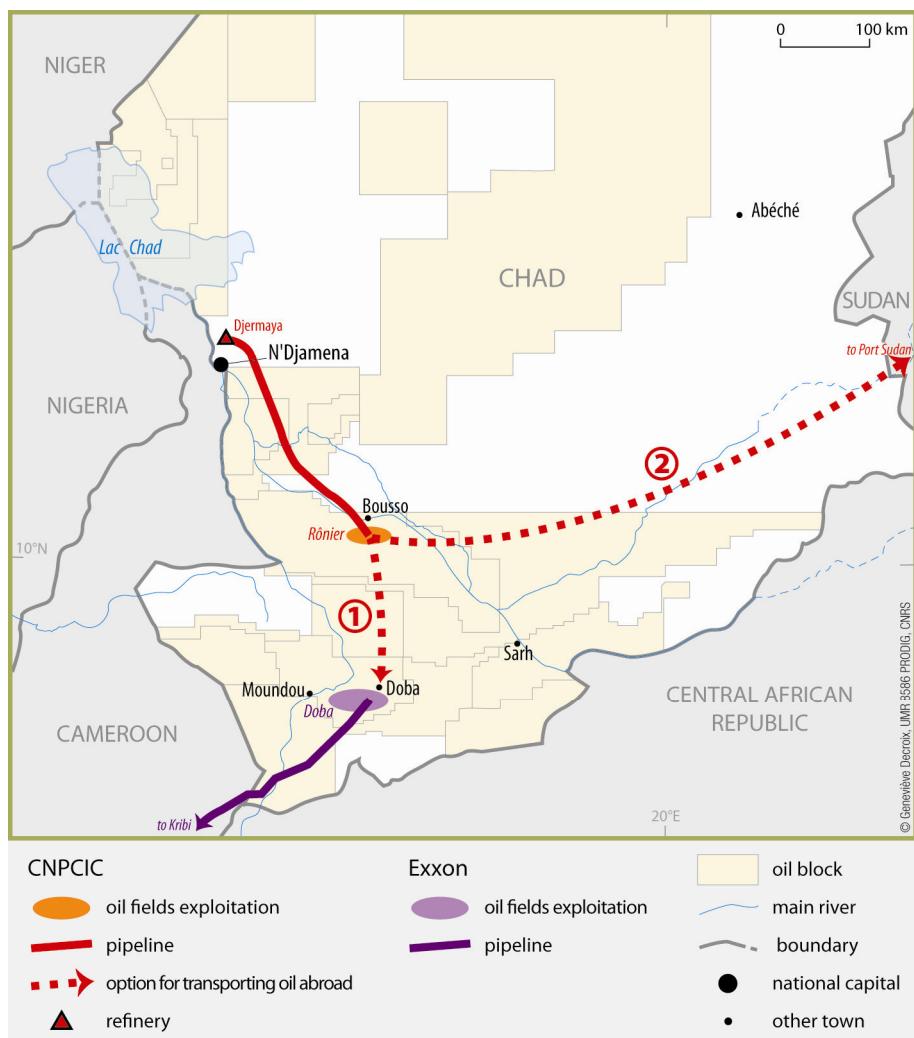
What might happen if CNPC is denied access to the Exxon-operated pipeline and has to move eastwards to Sudan, or if there is a simple buy-out, remains an open book. However, even in the case of a peaceful collaboration between the two firms and states involved, reducing the rich institutional heritage of the Exxon-Doba project to a mere pipeline could be a strategic mistake for CNPC.

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## APPENDIX 1

Map Showing Location of the Exxon-Doba and CNPC-Rônier projects in Chad (to be finalized)



## REFERENCES

- Alden, C. (2007) *China in Africa*. London / New York: Zed Books.
- Alden, C., D. Large and R. Soares De Oliveira (eds) (2008) *China Returns to Africa: A Rising Power and a Continent Embrace*. London: Hurst Publishers Ltd.
- Bosshard, P. (2008), 'China's Environmental Footprint in Africa'. SAIIA China in Africa Policy Briefing, No 3, Johannesburg: SA Institute of International Affairs (SAIIA).
- Brandt, W. (1980) 'North-South: A Program for Survival'. The Independent Commission on International Development Issues. Cambridge, Massachusetts: The MIT Press.
- Capoccia, G. and R. D. Kelemen (2007) 'The Study of Critical Junctures: Theory, Narrative, and Counterfactuals in Historical Institutionalism', *World Politics*, The Johns Hopkins University Press, 59(4): 341–369.
- Chen, S. (2008) 'China's Outbound FDI and Energy Security'. East Asian Institute. Paper draft submitted for the Annual Meeting of the American Political Science Association, Boston, USA.
- Christiansen, H. and E. García (2004) 'An Overview of Corporate Environmental Management Practices'. Joint Study by the OECD Secretariat and EIRIS.
- Collier, P. and A. Hoeffler (2005a) 'Resource Rents, Governance, and Conflict', *Journal of Conflict Resolution* 49(4): 625–633.
- Collier, P. and A. Hoeffler (2005b) 'Démocraties Pétrolières' (Oil Democracies), *Afrique Contemporaine* 216: 107–123.
- Cui, L. and F. Jiang (2009) "FDI Entry Mode Choice of Chinese Firms: A Strategic Behavior Perspective", *Journal of World Business* 44(4): 434–444.

Development Alternatives Incorporated DAI (2007) 'From Curse to Cures: Practical Perspectives on Remedyng the Resource Curse', *Developing Alternatives* 11(1): 1-38.

Dittgen, R. (2010) 'La CNPC en Afrique Médiane: Comparaison des Expériences de Gestion Environnementale au Soudan, au Niger et au Tchad' (CNPC in Middle Africa : A Comparison of its Environmental Management Approaches in Sudan, Niger and Chad), in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)*, pp. 360–390. CIRAD/UIBE/GRAMPTC (final report, mimeo).

The Economist (2008) 'A Ravenous Dragon: A Special Report on China's Quest for Resources', 15 March 2008.

Engerman, S. L. and K. L. Sokoloff (2002) 'Factor Endowments, Inequality, and Paths of Development Among New World Economics'. National Bureau of Economic Research, Working Paper No 9259, Cambridge, MA.

The Equator Principles: A Financial Industry Benchmark for Determining, Assessing and Managing Social & Environmental Risk in Project Financing (2006) <http://www.equator-principles.com/principles.shtml> (accessed 19 October 2010).

Finkelstein, D. (2009) 'China's External Grand Strategy'. Presentation at the 38th Taiwan-US Conference on Contemporary China: China Faces the Future, CNAPS-IIR, The Brookings Institution (July 14-15). [iir.nccu.edu.tw/attachments/news/modify/Finkelstein.pdf](http://iir.nccu.edu.tw/attachments/news/modify/Finkelstein.pdf) (accessed 3 November 2010).

French, H. W. and L. Polgreen (2007) 'China, Filling a Void, Drills for Riches in Chad', *New York Times*, 13 August 2007.  
[http://www.nytimes.com/2007/08/13/world/africa/13chinaafrica.html?\\_r=2&pagewanted=2&sq=chad%20cnpc&st=cse&scp=2](http://www.nytimes.com/2007/08/13/world/africa/13chinaafrica.html?_r=2&pagewanted=2&sq=chad%20cnpc&st=cse&scp=2) (accessed 13 October 2010).

Gang, C. (2009) 'Politics of China's Environmental Protection: Problems and Progress', *Series on Contemporary China* 17.

Geng, Y., Q. Zhu, B. Doberstein and T. Fujita (2008) 'Implementing China's Circular Economy Concept at the Regional Level: A Review of Progress in Dalian, China', *Waste Management* 29(2)(February) : 996–1002.

Gramsci, A. (1975) *Notas sobre Maquiavelo, sobre política y sobre el Estado Moderno* (Notes on Maquiavelo, on Politics and on the Modern State), (Translated from the Italian [1966] by José M. Arico). Mexico: Juan Pablos Editor

Gu, J., J. Humphrey and D. Messner (2008) 'Global Governance and Developing Countries: The Implications of the Rise of China', *World development* 26(2): 274–292.

Guesnet, L., J. Schure and W.-C. Paes (eds) (2008) 'Digging for Peace: Private Companies and Emerging Economies in Zones of Conflict'. Report from the Fatal Transactions Conference, Bonn (21–22 November).

Heinrigs, P. (2007) 'Oil and Gas'. In the *Atlas on Regional Integration in West Africa*, Economy series. ECOWAS-SWAC/OECD.

Holstag, J. (2006) 'Unleash the Dragon: A New Phase in China's Economic Transition'. Vrije Universiteit Brussel (VUB), Asia Paper of the Brussels Institute of Contemporary China Studies, October. <http://www.vub.ac.be/biccs>, (accessed 3 November 2010).

Holstag, J. (2007) 'Friendly Giant? China's Evolving Africa Policy', *Asia Paper* 2(5). Brussels Institute of Contemporary China Studies (BICCS).

Humphreys, M. (2005) 'Natural Resources, Conflict and Conflict Resolution: Uncovering the Mechanisms', *Journal of Conflict Resolution* 49(4): 508–537.

International Advisory Group (IAG) for the Chad-Cameroon Petroleum Development and Pipeline Project (2009). Report on a mission to Chad and Cameroon (13–31 January).

Jenkins, R. and C. Edwards (2006) 'The Economic Impact of China and India on Sub-Saharan Africa: Trends and Prospects', *Journal of Asian Economics* 17: 207–225.

Lee, H. and D. A. Shalmon (2007) 'Searching for Oil: China's Oil Initiatives in the Middle East'. Discussion Paper, Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University, Cambridge, MA.

Liang G., F. Wang and W. Yang (2010a) 'The Emergence of Environmental Laws and Regulations in China', in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)*, pp. 50–89. CIRAD/UIBE/GRAMPTC (final report, mimeo).

Liang G., F. Wang and W. Yang (2010b) 'Implementation and Enforcement of China's Environmental Laws and Regulations', in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)*, pp. 90–122. CIRAD/UIBE/GRAMPTC (final report, mimeo).

Liang G., F. Wang and W. Yang (2010c) 'Environmental Regulations for the Petroleum Sector and their Implementation in China', in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)*, pp. 123–163. CIRAD/UIBE/GRAMPTC (final report, mimeo).

Lin, Y. (2010) 'Dispositifs et Pratiques de la CNPC dans le Domaine Environnemental' (The Organisation and Practice of Environmental Management in the CNPC in Chad), in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)*, pp. 293–321. CIRAD/UIBE/GRAMPTC (final report, mimeo).

Magrin, G. (2001) *Le Sud du Tchad en Mutation. Des Champs de Coton aux Sirènes de l'Or Noir (From Cotton to Oil Fields in the South of Chad)*. Paris: Sepia-Cirad.

Magrin, G. (2003) 'Le pétrole contre l'enclavement: un enjeu de la mondialisation au sud du Tchad' (Oil and the Challenge of Globalisation in the South of Chad) . *Labyrinthe* 16(December): 19–34.

Magrin, G. (2006) 'Le pétrole' (Oil). *Tchad, Atlas Jeune Afrique*: 38–39.

Magrin, G. (2010a) 'Un héritage pour le projet Rônier: le modèle de Doba à l'épreuve du temps'(Doba : A heritage for the Ronier project ?), in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)* , pp. 197–226. CIRAD/UIBE/GRAMPTC (final report, mimeo).

Magrin, G. (2010b) 'Les enjeux du projet Rônier'(The Challenges of the Ronier Project), in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)* , pp. 167–292. CIRAD/UIBE/GRAMPTC (final report, mimeo).

Magrin, G. and G. van Vliet (2005) 'Greffé pétrolière et dynamiques territoriales: l'exemple de l'on shore tchadien'(Oil and Territorial Dynamics : the Example of On Shore Exploitation in Chad, *Afrique contemporaine* 216(4): 87–10. <http://www.cairn.info/revue-afrigue-contemporaine-2005-4-page-87.htm> (accessed 3 November 2010).

Magrin, G. and G. van Vliet (2009) 'The Use of Oil Revenues in Africa', in J. Lesourne (ed.) *Governance of Oil in Africa: Unfinished Business*, pp. 103-165. Paris, Ifri, Les Etudes Ifri, Gouvernance européenne et géopolitique de l'énergie, Vol.6 (European Governance and the Geopolitics of Energy, Vol. 6) , [www.ifri.org/files/Energie/MAGRIN.pdf](http://www.ifri.org/files/Energie/MAGRIN.pdf) (accessed 3 November 2010).

Maoundonodji, G. (2009) 'Les Enjeux Géopolitiques et Géostratégiques de l'Exploitation du Pétrole au Tchad' (Geopolitical and Geostrategical Challenges of Oil Exploitation in Chad) . Doctoral Thesis, Université Louvain-La-Neuve.

Maoundonodji, G. (2010) 'Les entreprises chinoises sont elles plus "vertes" que les multinationales occidentales? Une analyse comparative des projets d'Exxon (Doba) et de CNPCI (Rônier) au Tchad' (Are Chinese firms « greener » than western multinational corporations ? A comparative analysis of the Exxon (Doba) and the CNPCI (Ronier) projects in Chad) in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)*, pp. 340–360. CIRAD/UIBE/GRAMPTC (final report, mimeo).

Mol, A. P. J. and Liu, Y. (2005) 'Institutionalising Cleaner Production in China: The Cleaner Production Promotion Law', *International Journal of Environment and Sustainable Development* 4(3): 227–24.

Munson, P. and R. Zheng (2010) 'Feeding the Dragon: Managing Chinese Resource Acquisition in Africa'. Research Paper, Partnership for Environmental Law, Vermont Law School and USAID.

National People's Congress (2002a) *Cleaner Production Promotion Law* (29 June).

National People's Congress (2002b) *Law of the People's Republic of China on the Environmental Impact Assessment*. Unofficial translation. (Adopted 28 October 2002, effective 1 September 2003). <http://www.lexadin.nl/wlg/legis/nofr/oeur/lxwechi.htm> (accessed 19 October 2010).

The Organisation for Economic Co-operation and Development (2008) 'OECD investment policy reviews: China 2008'.

Pegg, S. (2009) 'Chronicle of a Death Foretold: The Collapse of the Chad-Cameroon Pipeline Project', *African Affairs* 108/431: 311-320

Peiyuan, G. (2005) 'Corporate Environmental Reporting and Disclosure in China'. Research paper, School of Public Policy and Management, Tsinghua University, Beijing (edited by Richard Welford).

Perret, C. (2007) 'Africa and China', in *Atlas on Regional Integration in West Africa*, Economy series. ECOWAS-SWAC/OECD.

<http://www.oecd.org/dataoecd/42/26/38409391.pdf> , accessed 23 November 2011.

Poulantzas, N. (1968) *Pouvoir Politique et Classes Sociales* (Political Power and Social Classes) . Paris: Maspero.

Reiner, K. and A. Tuson (2009) 'Most Environmentally and Socially Controversial Companies in June and July 2009'. Paper presented at ECOFACT AG, Zurich (3 August).

Ross, M. (1999) 'The Political Economy of The Resource Curse', *World Politics* 51(2): 297–322.

Rosser, A. (2006) 'The Political Economy of the Resource Curse: A Literature Survey'. Working paper 268, Institute of Development Studies, Centre for the Future State (April).

Servant, J. C. (2005) 'La Chine à l'assaut du marché africain' (China's assault on the African Market)*Le Monde Diplomatique*, (May).

Shi, H. and L. Zhang (2006) 'China's Environmental Governance of Rapid Industrialization', *Environmental Politics* 15(2): 271–292.

Sims, H. (1999) 'One Fifth of the Sky: China's Environmental Stewardship', *World Development* 27(7):1227–1245.

Soares de Oliveira, R. (2007) *Oil and Politics in the Gulf of Guinea*. New York: Columbia University Press.

Soares de Oliveira, R. (2008) 'Making Sense of Chinese Oil Investment in Africa', in C. Alden, D. Large and R. Soares de Oliveira (eds) *China Returns to Africa*, pp. 83–110. London: Hurst Publishers Ltd.

Tavares, M. A and A. Doudjidingao (2010) 'Le Projet Rônier: Réalisations, Impacts et Apprentissages'(The Ronier project : results, impacts, learning), in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)*, pp. 340–360. CIRAD/UIBE/GRAMPTC (final report, mimeo).

Tsang, S. and A. Kolk (2010) 'Evolution of Chinese Policies and Governance Structures on Environment, Energy and Climate', *Environmental Policy and Governance* 20(3): 180–196.

van Vliet, G. (1998) 'Activités minières, barrages, et problématiques de négociation : hypothèses pour une réflexion, présentation' (Long Cycle Mining Activities, Dams, and Negotiation Challenges : Hypothesis for Discussion) ,  
<http://www.iucn.org/about/union/commissions/ceesp/wg/seaprise/> (accessed 20 October 2010).

van Vliet, G. (2010) 'Introduction', in G. van Vliet and G. Magrin (eds) *La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier (CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle)* , pp. 30–40. CIRAD/UIBE/GRAMPTC (final report, mimeo).

van Vliet, G. and G. Magrin (2005) 'Proposal for the Creation of a Network for Applied Research on Mining, Oil and Gas Activities—NARMA'. Cirad, Montpellier (mimeo).

van Vliet, G. and G. Magrin (2009) 'Public Steering in the Hydro-Fuel Sector: Conditions for Trajectory Bifurcation in Chad and Mauritania'. Presented at the 21st World Congress of Political Science, Panel: Oil Governance in the Current Energy Crisis, Santiago de Chile (12–16 July).

van Vliet, G. and G. Magrin (eds) (2010) 'La Gestion Environnementale de la CNPC au Tchad: Enjeux et Mise en Perspective en début de Cycle Pétrolier' (*CNPC's Environmental Management in Chad : Challenges and Perspectives at the Start of the Oil Production Cycle*) . CIRAD/UIBE/GRAMPTC (final report, mimeo).

van Vliet, G. and G. Magrin (2011, in press) 'Une autre lecture du projet pétrolier de Doba au Tchad: l'écorce et le noyau' (The Bark and the Core : another Reading of the Doba Project in Chad), in *F. Leloup, J. Brot and H. Gérardin (eds) L'État acteur du développement (The State as an Actor of Development)* , pp. 1-19. Paris: Karthala.

van Vliet, G. and G. Magrin (eds) (2012, in press) *Une entreprise pétrolière chinoise face au défi environnemental au Tchad*, (Greening Chinese Oil : First Lessons from Chad), Paris, AFD/QUAE, Collection Focales.

van Vliet, G., G. Magrin, B. van Dessel and L. Chabason (2009) 'Rapport définitif du Panel scientifique indépendant sur les activités pétrolières et gazières en République Islamique de Mauritanie' (Final report of the Scientific Independant Panel on Oil and Gaz Activities in the Islamic Republic of Mauritania). Nouakchott, UICN.

Xu, S. and R. Yang (2010) 'Indigeneous Characteristics of Chinese Corporate Social Responsibility Conceptual Paradigm', *Journal of Business Ethics* 93: 321–333.

Zeng, S. X, C. M. Tam, V. W. Y. Tam and Z. M. Deng (2005), 'Towards Implementation of ISO 14001 Environmental Management Systems in Selected Industries in China, *Journal of Cleaner Production* 13: 645–656.

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