

Health and equity impacts of a large oil project in Africa

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Abstract A system of external reviewers was established by the World Bank Group to promote a thorough environmental and health impact assessment for the US\$ 3.5 billion Chad Oil Export Project, based on a loan request from Chad, Cameroon and a consortium of oil companies. The environmental and health assessment process showed evidence of its ability to minimize the number of deaths from malaria, traffic accidents and construction accidents and the occurrence of minor sexually transmitted diseases, diarrhoeal diseases and respiratory diseases; it also probably limited adverse impacts on wildlife and tropical ecology along the pipeline route. However, the system was unable to deal with the larger issues, which included: the intrinsic unsustainability of this kind of extraction project; its eventual contribution to large amounts of greenhouse gases in the atmosphere; the lack of equity in sharing the risks, negative impacts, benefits and decision-making among the various participants in the project; and the possible acceleration of transmission of the AIDS virus into central Africa. Unfortunately, the international panel of experts appointed by the World Bank Group was largely ignored by the project proponents, and had little success in minimizing the most serious impacts or in improving the social equity of the project.

Keywords Petroleum/economics; Industry/manpower; Environmental health; Risk reduction behavior; HIV infections/prevention and control/transmission; Malaria/prevention and control; Accidents, Traffic/prevention and control; Accidents, Occupational/prevention and control; Diarrhea/prevention and control; Transportation; Social justice; Socioeconomic factors; United Nations; Cameroon/epidemiology; Chad/epidemiology (*source: MeSH, NLM*).

Mots clés Pétrole/économie; Industrie/main-d'œuvre; Hygiène environnement; Comportement de réduction de risques; HIV, Infection/prévention et contrôle/transmission; Paludisme/prévention et contrôle; Accident circulation/prévention et contrôle; Accident travail/prévention et contrôle; Diarrhée/prévention et contrôle; Transports; Justice sociale; Facteur socio-économique; Nations Unies; Cameroun/épidémiologie; Tchad/épidémiologie (*source: MeSH, INSERM*).

Palabras clave Petróleo/economía; Industrias/recursos humanos; Salud ambiental; Conducta de reducción del riesgo; Infecciones por VIH/prevencción y control/transmisión; Paludismo/prevencción y control; Accidentes de tránsito/prevencción y control; Accidentes de trabajo/prevencción y control; Diarrea/prevencción y control; Transportes; Justicia social; Factores socioeconómicos; Naciones Unidas; Camerún/epidemiología; Chad/epidemiología (*fuentes: DeCS, BIREME*).

الكلمات المفتاحية: البترول، اقتصاد البترول، الصناعة، القوى العاملة في الصناعة، الصحة البيئية، سلوك تخفيف الخطر، العدوى بفيروس العوز المناعي، الوقاية من العدوى بفيروس العوز المناعي ومكافحته، سارية العدوى بفيروس العوز المناعي، الملاريا، الوقاية من الملاريا ومكافحتها، الحوادث، حوادث الطرق، الوقاية من حوادث الطرق ومكافحتها، الحوادث المهنية، الوقاية من الحوادث المهنية ومكافحتها، الإسهال، الوقاية من الإسهال ومكافحته، النقل، العدالة الاجتماعية، العوامل الاجتماعية الاقتصادية، الأمم المتحدة، الكاميرون، إبيديميولوجيا الكاميرون، تشاد، إبيديميولوجيا تشاد (المصدر: رؤوس الموضوعات الطبية، المكتب الإقليمي لشرق المتوسط).

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يمكن الاطلاع على الملخص بالعربية على الصفحة ٤٢٥.

Introduction

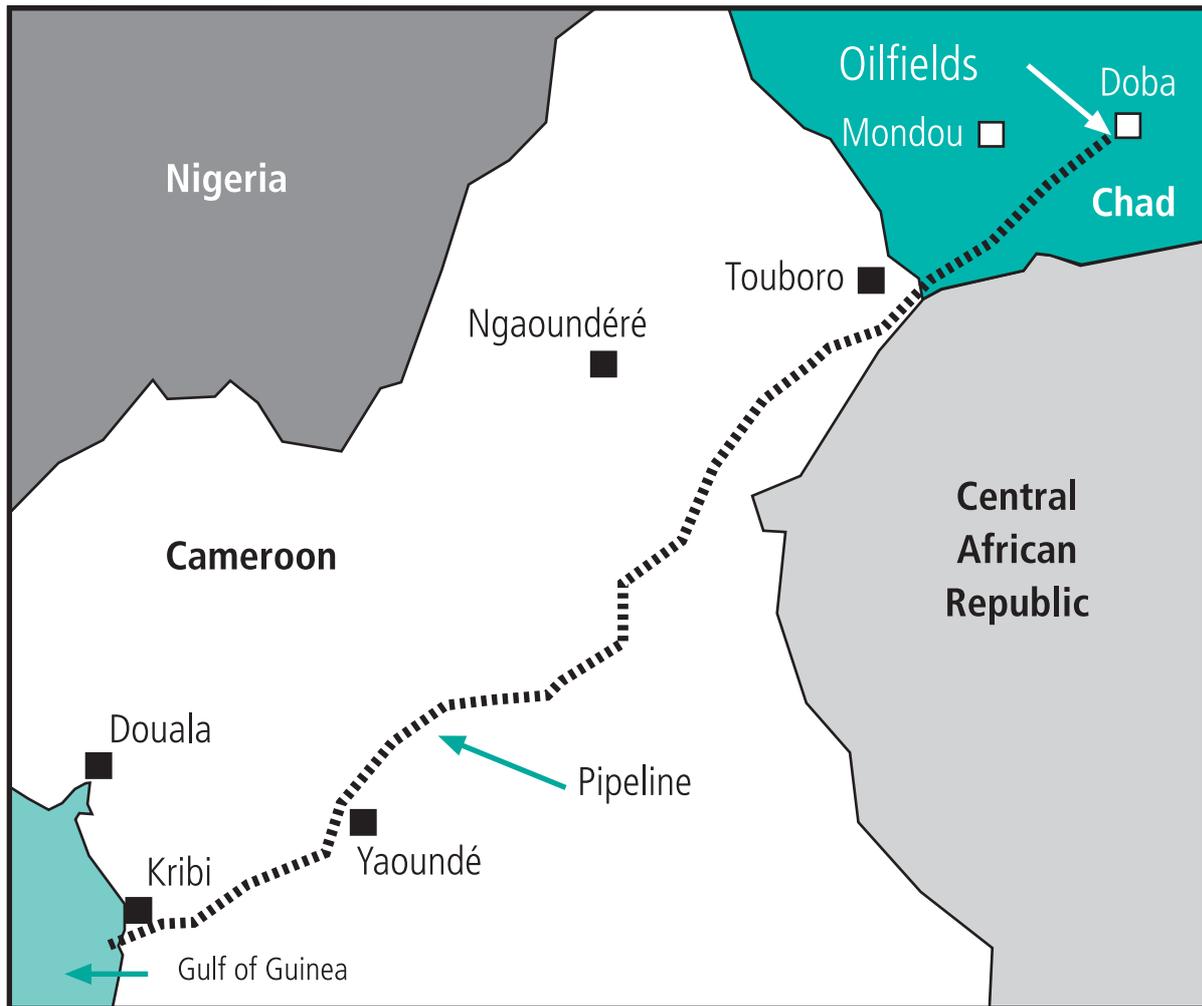
The Chad Oil Export Project is the largest project of the World Bank Group in Africa, the first ExxonMobil project in the region, and the largest construction project ever contemplated in the Republic of Chad. Based on the discovery of oilfields in Chad after exploration began in 1969, the Chad Oil Export Consortium was formed by Exxon and others in 1993, and a loan was made from the World Bank to Chad, Cameroon and the Consortium at the end of 1999. Work started on the oilfield and pipeline in October 2000, and the first oil is expected to flow in mid-2003. Construction and drilling costs are estimated to be US\$ 3.5 billion. The project is vitally important to the government of Chad, and of significant importance to all of the other stakeholders. It was estimated that a billion barrels of oil will be pumped out over 30 years, with an approximate value of US\$ 15 billion. At current oil prices this value could be doubled.

The project facilities will consist of about 300 deep wells in southern Chad near Doba, connected by a 1000 km pipeline from the Doba oilfields across Chad and Cameroon to a tanker permanently moored offshore from Kribi on the coast of Cameroon, to transfer the oil to ocean-going vessels (Fig. 1). The project will have serious impacts on the people of southern Chad. About a thousand people will be displaced by the project: up to 150 households will be displaced from the oilfield area and will be resettled nearby. Compensation will be paid for temporary losses of crops and land use during the three-year construction period. Along the pipeline from Doba to Kribi, very few households will be resettled, but many will be compensated for temporary loss of the use of their land during construction of the pipeline.

In view of the magnitude of the construction project, attention was paid to possible adverse environmental and social impacts. To accomplish this, the preparation of

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Fig. 1. Model of determinants of health within an integrated impact assessment



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environmental documents on the recent loan request for the project was accompanied by a system of internal protocols and external advisers established by the World Bank Group.

The area of the oilfields is wooded savannah with about 1 m of annual rainfall. Population density is about 17 persons per km², and people depend primarily on agriculture for their livelihood. The people are very poor, with annual incomes of about US\$ 200 per household. The health of the people in the project area is also extremely poor: life expectancy is less than 50 years and about one in five children dies before reaching five years of age (1). The major health risk facing the project area is the threat of AIDS, as in most of sub-Saharan Africa. Large construction projects have been implicated in the introduction of the AIDS virus to regions where it was previously absent: in the Lesotho Highlands Dam Project in southern Africa, the prevalence of HIV near the construction site became five times that of villages at some distance (2).

In Chad, the project area is politically unstable. President Idriss Deby has faced insurgencies there since he took office in 1990. In October 1997, military forces from the national government swept the area of Mondou, the regional centre, and it was reported that 80 people were killed in clashes between security forces and former

members of the armed resistance (3). Public meetings aimed at informing people about the oil project required armed guards for government officials and members of the Consortium, and it is likely that their presence inhibited free discussion.

Health information in the environmental assessment

In addition to dealing with health impacts, the documents of the Consortium covered assessments of socioeconomic impacts and impacts on the environment, including wildlife and biodiversity. In the documents on health, there was a large compendium of information on diseases in the project area (1). A serious deficiency, however, was the lack of recent health data from the project area. Malaria and AIDS were clearly the most serious health problems to be faced.

Malaria

The entire project area in southern Chad and most of Cameroon was infested with malaria mosquitos with extremely high parasite transmission rates, especially in the months after the annual rains of June–October.

HIV/AIDS

Although HIV prevalence in Chad was thought to be generally low in pre-project surveys, there were no systematic estimates of the prevalence or transmission rates of HIV near the oilfields, nor along the pipeline route in southwestern Chad. The prevalence had been only 1.6% in the nearby regional capital of Mondou in 1989 (4).

In contrast, there was clear evidence that an HIV epidemic was expanding rapidly in Cameroon. There was especially disturbing information from Mbaimboum, a settlement near Touboro on the pipeline route along the frontier between Cameroon and Chad. A new bridge was to be built there over the Mbere River, and large numbers of trucks would haul pipes and other materials from Cameroon over the bridge into southern Chad. Mbaimboum was already on a principal North–South trucking route from the Central African Republic along the Chad border to Nigeria. The informal settlement containing about 10 000 people was a market, truck-stop and a conglomeration of brothels. Prostitutes in this settlement had HIV seroprevalences of 55% (5).

Many of the trucks carrying pipe and materials for Chad would originate in the port city of Douala in Cameroon. The prevalence of HIV among truckers in Douala was 17% in 1997 (6). Thus the virus was much more prevalent than in Chad, and additional truckers would pick up infections en route, especially at Mbaimboum.

Review by external groups

Following its regulations for high-profile projects, the World Bank Group required Chad and Cameroon to hire an external panel of experts to help the countries evaluate and guide the environmental assessment (7) and the environmental management plan (8) prepared by the Consortium. The panel consisted of a social scientist, a wildlife and biodiversity specialist, and a public health engineer — the author of the present article, who was assisted by associates with expertise in AIDS and trucking safety. The panel also worked with national technical committees appointed by Chad and by Cameroon.

In further attempts to protect the environment, health, and social equity, the World Bank Group established two other groups of external monitors. One was the External Compliance Monitoring Group which made its first site visit in 2000 shortly after construction began. This group confirmed the need to monitor HIV transmission, but was rebuffed by Cameroon (9). The second was an International Advisory Group to be concerned with larger issues of corruption and the equitable use of project profits in Chad. Special arrangements were also made to control the disbursement of loan funds by the governments.

The environmental assessments and the management plans were prepared by consultants working for the Consortium. However, the work of the panel of experts and the national technical committees was restricted to analysing, criticizing and suggesting improvements to these documents. Utilization of the comments from the panel and the committees was at the discretion of the governments of Chad and Cameroon, the World Bank and the Consortium.

The panel of experts was contracted by Chad and Cameroon in September 1996, issuing its first review of the draft environmental assessment in December 1996. This was followed by another review in April 1997. The panel then

issued a review of the draft environmental management plan in April 1998, and finally conducted special meetings on AIDS in 1999 and 2000.

At their first meeting with the panel, planners for the Consortium announced that greenhouse gas emissions and global warming could not be discussed, a policy which was also enunciated by the Chief Executive Officer of Exxon (10). This was at variance with the views of staff in the Environment Department of the World Bank, who advocated a carbon tax for planning fossil fuel projects (11, 12). The Consortium also announced that no field data on health would be collected for the environmental assessment, a serious breach of normal procedures.

The Government of Chad appointed competent engineers, health experts and planners to their National Technical Committee, which worked with the panel of experts; there was also an observer from the office of the Prime Minister. However, the chairperson of the committee was replaced four times in three years, and the sporadic contracts of the panel members were allowed to lapse for months at a time: some payments were delayed for over a year, and the contracts were not renewed after passage of the loan. These actions of the government seriously hindered the functioning of the panel of experts.

A significant problem with the National Technical Committee of Cameroon was the lack of a health specialist, and thus the lack of any response to the panel's recommendations on preventing HIV transmission.

The World Bank had established the first short-term contracts between Chad, Cameroon and the panel of experts. Despite this initial backing, the short length of the following contracts became a major problem for the panel members, causing innumerable difficulties and delays in planning site visits and subsequent meetings.

Health measures in the environmental management plan

Intensive conventional measures were proposed in the environmental management plan for prevention and treatment of malaria, for reduction of traffic accidents and construction accidents, and for other major health and safety concerns.

An array of measures was prescribed for protection against malaria — including heavy clothing, mosquito repellents, bednets and prophylactic drugs. Distribution of bednets to surrounding communities was also conducted in Chad, and eventually along the pipeline route in Cameroon.

Elaborate provisions were also made to minimize construction accidents, and to prevent diarrhoeal diseases being transmitted through food and water. All the contractors were required to provide health care for their employees. Existing and new wells for drinking-water were to be carefully protected, and all sewage was to be treated. Solid waste management, including handling of hazardous wastes from construction and drilling operations, was also specified.

The plan's detailed documents included many other environmental protection measures regarding wildlife, soil erosion, dust control, water quality and noise control.

Modifications proposed by the panel of experts

Using the limited information at its disposal, the panel concluded that the environmental management plan needed

to focus on the most important health and safety risks. Assuming AIDS, malaria and traffic accidents to be the most important issues (13), the panel made estimates of the likely deaths per year in order to rank the importance of the risks (but not as confident predictions of the number of deaths). The ranking was then used to evaluate the relative effort needed to reduce the various health and safety risks caused by the project. It was estimated that, even with the prevention measures proposed in the management plan, about two deaths per year would occur from traffic accidents, and three deaths per year from malaria.

Based on quick calculations followed by a simple computer simulation, it was also estimated that over 100 deaths per year would eventually result from AIDS, even with an environmental management plan that reduced normal HIV transmission by 80%. Thus AIDS prevention was ranked as the top priority for health management, significantly higher than any of the other risks (14), and the panel recommended several measures in addition to the conventional ones prescribed by the initial versions of the management plan. These additional measures dealt primarily with AIDS prevention and extraordinary measures to be taken to minimize HIV transmission around the project, especially among the truck drivers. The Consortium subsequently implemented a stronger, expanded programme to promote safe sex and reduce and treat all sexually transmitted diseases other than HIV infections. The World Bank also announced a large loan to Chad for AIDS education.

The role of long-distance truckers is important in the spread of AIDS in Africa. The original Consortium plan for transporting the 1000 km of pipe allowed for the trucks to be loaded at the port city of Douala on the Cameroon coast, or at the railhead of Ngaoundere in central Cameroon, for trips up the pipeline route in the direction of Chad. The drivers were to pick up their loads, and stay with their truck — including tractor and trailer — for the duration of the trip which would involve about three overnight stops. This pattern is ideally suited for transporting the AIDS virus into the interior of southern Chad, as has been documented in Uganda and elsewhere in Africa.

An alternative system of relays was proposed by the panel, in which each driver would have his own tractor or cab but the trailers would be passed along the route from driver to driver. The drivers would thus be able to sleep at home every night, and the rate at which they encountered new sexual partners would be significantly reduced — a key factor in

containing the transmission of HIV infection. Although the Consortium accepted this proposal in principle, it was not implemented by the trucking contractors.

While its last contract was coming to an end, the panel of experts called for extraordinary measures to treat HIV infections before the workforce was demobilized, because the project workers and their camp followers would subsequently disperse throughout central Africa, with the possibility that they were carrying the AIDS virus. However, the Consortium did not provide staff or facilities for diagnosis, counselling or treatment of HIV in the workforce or in camp followers, neither did the governments. Despite its general support of AIDS prevention, the World Bank Group did not insist that this recommendation of the experts be implemented.

Other technical suggestions on health from the panel of experts were generally accepted, except for a request that the Consortium provide a reliable supply of electricity from the generator at the Doba oilfield to the nearby Doba hospital, and that they provide vehicles and fuel for the hospital. Again, the World Bank did not insist on implementation. Part of the difficulty for the panel members in advocating these items was due to abrupt and early termination of their sporadic contracts, and also the apparently low importance accorded to the panel.

The panel also made important recommendations on resettlement and compensation for affected residents, as well as changes in the pipeline route in Cameroon, especially near undisturbed areas such as the Mberé Rift Valley and the Deng Deng forest; these recommendations were implemented.

Monitoring of construction impacts

Internal monitoring of construction was conducted primarily by the Consortium with its own field staff. Chad and Cameroon were supposed to put monitors in the field as soon as construction started, but their arrival was delayed until about a year later.

Construction started in October 2000. By the end of the second year, the number of workers had risen to over 12 000. If we ignore the lack of the most important epidemiological information — the pattern and rates of HIV transmission — the rest of the monitoring of death and disease from the project is well summarized in the Consortium's quarterly reports on the construction phase (15) and indicates effective environmental management for those secondary issues. Table 1 shows the progression of the workforce and the number of clinically diagnosed cases of disease according to the quarterly reports.

Table 1. Clinically diagnosed cases of disease among workers, Chad Oil Export Project

	Months after start of construction						
	6	9	12	15	18	21	24
No. of workers	3521	5087	7559	9788	*	11 243	12 474
Diagnosed cases							
Malaria	400	674	1400	421	473	37	113
Sexually transmitted diseases	109	400	400	192	595	379	342
Other diseases ^a	12	800	800	95	232	236	126
Follow-up							
Hospitalizations	10	14	14	11	29	36	43
Medical evacuations	9	9	8	5	3	14	6

^a Mainly diarrhoeal diseases and respiratory diseases.

* The estimated number is about 12 000, but Exxon did not report the exact number for that quarter.

Twelve months after construction started — in the quarter after the rainy season of 2001 — 1400 cases of malaria were diagnosed and treated. During the quarter at the end of the 2002 dry season, 21 months after the start of construction, this number dropped markedly to 37 cases. Sexually transmitted diseases other than HIV/AIDS were also common: 200–600 cases were diagnosed each quarter.

In the two years covered by the quarterly reports, there were two deaths from malaria in the workforce, as shown in Table 2 (16). There was one reported traffic fatality, one construction-related death in a machine repair shop, and one death due to a machete attack at a hiring centre. Thus the total number of deaths in the first two years was five, less than that foreseen by the panel of experts.

Reflections on the environmental assessment process

The process of environmental assessment should be aimed at avoiding irreversible damage to the environment and to society, and at selecting the safest project alternative with the fewest negative impacts. The environmental management plan is to prescribe environmental prevention and remediation measures, and compensation to unavoidably affected persons. This process should include special attention to the needs and wishes of those people most severely impacted. However, it appeared that in this project decisions were based largely on cost and profit considerations, giving only passing attention to environmental and social aspects, and little or no decision-making power to the affected populations.

The panel of experts had a limited, advisory role in this project which, because of its size and expected profits, was of major importance for the Consortium, for Chad, and for the World Bank Group. Thus any environmental concerns expressed by the panel that might delay or obstruct completion of the project were likely to face powerful opposition by the proponents. This was probably the reason for the sporadic nature of the short-term contracts of panel members and for the repeated replacement of the chairmen of the national technical committees. There also seemed to be a crucial lack of World Bank support for recommendations that followed the World Bank's policies but conflicted with the views of the Consortium. This probably reflects the weak nature of panels of experts in World Bank projects, especially those in which billion-dollar profits are involved.

The weak role of the panel of experts is well illustrated in the absence of environmental inspectors from Chad at the early stages of construction, which seemed a particularly serious failure in the overall implementation of the environmental management plan. Despite attempts by the panel to arrange the early hiring and training of these inspectors with early disbursements of the loan, the inspectors were not in place until long after construction began, apparently because their funding had been diverted. In order to avoid such diversion of funds by the governments, the World Bank had built elaborate financial safeguards into the loan agreement. However, a newspaper in the USA reported that US\$ 4.5 million of the first disbursement of the loan to Chad was used to purchase weapons and ammunition (16). Despite its obvious responsibility for proper utilization of the loan, the World Bank continued to disburse the remaining funds.

Table 2. Mortality during the first two years of Chad Oil Export Project construction

Cause of death	No. of workers
Malaria	2
Traffic accidents	1
Construction accidents	1
Other	1
Total	5

Visits by the panel of experts to the project area and surrounding towns revealed a shocking disparity in affluence, calling into question the ethical values inherent in this project. Within its fences, the project employs space-age technology for all operations, including the protection of health. There are ambulances, high-quality medical clinics, airconditioning, a large array of drugs, diagnostic laboratories, cellular telephones, email facilities, and rapid medical evacuation facilities to capital cities of Europe or to Houston. In contrast, the local hospitals outside the fence are lacking vehicles or fuel, and are dusty, crumbling brick buildings without electricity, where inadequate numbers of staff conduct surgery by kerosene lantern, without sterilizers, and with few drugs. Recommendations from the panel of experts that the Consortium provide this hospital with electricity, vehicles, and fuel from the nearby Doba oilfields were not implemented.

The influence of the World Bank Group and the Consortium on equitable distribution of project benefits would depend on their own internal motivation. Undoubtedly the World Bank justified the project because it felt that it would alleviate general poverty in the area; certainly the Consortium is not directly responsible for the political situation. However, both groups must share responsibility for the realities of the situation, once they decide to cooperate with the governments. The importance of the project for these governments gives the other proponents enormous power, but also great responsibility. The decision to proceed with projects in such areas is undoubtedly difficult, except for those whose only motive is profit.

Although widespread benefits of this oil project are theoretically possible, the recent experiences with oil production in two nearby countries — Nigeria and the Sudan — do not offer much evidence for this hope. In fact, the struggle over inequities in distribution of the wealth produced by oil production may be the root cause of the violent conflicts and civil war in these two neighbouring countries and in other developing countries where oil is being produced.

The Government of Chad is expected to earn some US\$ 1–2 billion over the 28-year production life of the oilfields (17). The Consortium is expecting a profit of several billion dollars. However, the people in southern Chad in the immediate vicinity of the oilfield have received only about US\$ 10 million in compensation payments for their displacement, loss of crops, and health risks including AIDS (15). With a population around Doba of about 200 000 people, that would amount to less than US\$ 50 per person.

To quote a leading thinker on social equity and justice, “A true revolution of values will soon look uneasily on the glaring contrast of poverty and wealth. With righteous

indignation, it will look across the seas and see individual capitalists of the West investing huge sums of money in Asia, Africa and South America, only to take the profits out with no concern for the social betterment of the countries, and say: This is not just.” (18)

Conclusion

Considerable effort went into preparation of the required environmental documents submitted by the Consortium to the World Bank Group. The appointment of an international panel of experts by the proponents gave the erroneous impression

that the environmental assessment and the environmental management plan were carried out under supervision of this panel and that the documents had their approval, whereas, in fact, the panel was largely ignored. The proponents apparently had other, more pressing concerns. Environmental and social equity considerations for the people of the Doba region were largely ignored in the final execution of the project. There is an old saying in Cameroon: “When elephants fight, the grass suffers” (19). ■

Conflicts of interest: none declared.

Résumé

L'impact sanitaire et social d'un grand projet d'exploitation pétrolière en Afrique

Faisant suite une demande de prêt émanant du Tchad, du Cameroun et d'un consortium de compagnies pétrolières, le Groupe de la Banque mondiale a désigné un groupe d'experts indépendants pour encourager la réalisation d'une étude d'impact approfondie sur l'environnement et la santé concernant le projet pétrolier tchadien d'un montant de US \$3,5 milliards. L'étude d'impact sur l'environnement et la santé a établi qu'il avait la capacité de réduire le nombre de décès dus au paludisme, aux accidents de la circulation et à ceux liés à la construction du projet ainsi que la survenue de maladies sexuellement transmissibles mineures, de maladies diarrhéiques et de maladies respiratoires ; tout comme probablement les incidences négatives sur la faune et

la flore sauvages et sur l'écologie tropicale le long du tracé de l'oléoduc. Toutefois, le groupe d'experts n'a pas été en mesure de traiter des questions plus importantes, notamment la non-viabilité de ce type de projet ; sa contribution possible à la production de grandes quantités de gaz à effet de serre ; le partage inégal des risques, des retombées négatives, des avantages et des décisions entre les diverses parties prenantes ; et l'accélération possible de la transmission du SIDA en Afrique centrale. Malheureusement, le groupe d'experts international nommé par le Groupe de la Banque mondiale n'a guère été écouté par les initiateurs du projet, pas plus qu'il n'est parvenu à limiter les impacts les plus graves ou à répondre aux préoccupations sociales inhérentes au projet.

Resumen

Impacto en la salud y la equidad de un gran proyecto petrolero en África

La petición de un préstamo por parte del Chad, el Camerún y un consorcio de compañías petroleras llevó al Grupo del Banco Mundial a crear un sistema de examinadores independientes para alentar la realización de una evaluación completa del impacto sanitario y ambiental del Proyecto de Exportación de Petróleo del Chad, por un monto de US\$ 3,5 mil millones. El proceso de evaluación ambiental y sanitaria demostró su capacidad de minimizar el número de muertes por malaria, accidentes de tráfico y accidentes en la construcción, así como la aparición de enfermedades de transmisión sexual menores, enfermedades diarreicas y enfermedades respiratorias; probablemente también redujera el impacto negativo sobre la vida salvaje y la ecología tropical a lo largo del oleoducto. Sin embargo, el sistema fue

incapaz de abordar los problemas mayores, entre los que figuraban la insostenibilidad intrínseca de este tipo de proyectos de extracción; su eventual contribución a la producción de grandes cantidades de gases con efecto invernadero; la falta de equidad en el reparto de los riesgos, de las repercusiones negativas, de los beneficios y de la toma de decisiones entre los diferentes participantes en el proyecto, y la posible aceleración de la transmisión del virus del SIDA en África Central. Lamentablemente, el grupo internacional de expertos nombrado por el Grupo del Banco Mundial fue ignorado en gran medida por los proponentes del proyecto y tuvo escaso éxito en lo que se refiere a la minimización de las repercusiones más graves y al mejoramiento de la equidad social del proyecto.

ملخص

تأثير الصحة والعدالة الناجمين عن مشروع كبير للنفط في أفريقيا

الأكثر حجماً والتي تشمل على عدم ضمان الاستمرارية الداخلية لهذا النوع من مشاريع الاستخراج ومساهمته الفعلية في إنتاج كميات كبيرة من غازات الدفيئة في الجو، وفقدان العدالة في توزيع المخاطر والمشاركة في تحملها، وفي تحمل التأثيرات السلبية وتلقي المنافع ووضع القرارات بين مختلف المشاركين في المشروع، والتعجيل المحتمل الحدوث في سرية فيروس الإيدز في أفريقيا الوسطى. ولسوء الحظ فإن فريق الخبراء الدوليين الذي تم تعيينه من قبل مجموعة البنك الدولي قوبل بالتجاهل إلى حد كبير من قبل أصحاب مشروع النفط، مما قلل من نجاحه في تخفيف وطأة التأثيرات الأكثر شدة وفي تحسين العدالة الاجتماعية عبر ذلك المشروع.

أسست مجموعة البنك الدولي نظام المراجعين الخارجيين لتعزيز تقييم التأثير الصحي والبيئي لمشروع لتصدير النفط في تشاد رأسماله ٣,٥ بليون دولار أمريكي، وارتكز التقييم على استمارة لطلب قرض تقدمت بها كل من تشاد والكاميرون ومجموعة استثمارية من شركات النفط وقد أظهرت عملية التقييم الصحي والبيئي بينات حول قدرة هذا التقييم على إنقاص عدد الوفيات من الملاريا ومن حوادث الطرق وحوادث العمل في البناء والتعمير، ومعدلات حدوث الأمراض المنقولة جنسياً القليلة الخطر، وأمراض الإسهال والأمراض التنفسية. وما قد يكون له تأثير ضائر محدود على الحياة البرية وعلى الظروف البيئية في المناطق المدارية المحيطة بخط أنابيب نقل النفط. إلا أن النظام لم يكن قادراً على التعامل مع القضايا

References

1. Chad Oil Export Project Consortium. *Environmental assessment supplemental documents. Volume 6, Chad public health and Cameroon public health*. Houston: Chad Oil Export Project; 1999.
2. Kravitz J, Mandel R, Petersen E, Nyaphisis M, Human D. Human immunodeficiency virus seroprevalence in an occupational cohort in a South African community. *Archives of Internal Medicine* 1995; 155:1601-4.
3. *Extra-judicial executions in Chad*. External Extra Chad 151/97. London: Amnesty International Secretariat; 1997.
4. Louis J, Danyod M. Evaluation de la circulation des virus VIH au sud du Tchad: resultats de deux enquêtes de séroprévalence réalisées à Mondou et à Sarh en mars 1989 [Evaluation of transmission of HIV in the south of Chad: results from two seroprevalence surveys conducted in Mondou and Sarh in March 1989]. *Bulletins et liaisons documentaires de l'Organisation pour la Coopération en Epidémiologie d'Afrique Centrale, Yaoundé* 1989; 88:15-7.
5. Chambon R, Louis F, Louvet F, Lescieux A, Fagot P, Mauclere P. Enquête: connaissance, attitudes, pratiques et séroprévalence VIH-1 chez les prostituées et filles libres de Mbaimboum, Cameroun [Survey on knowledge, attitudes, practices and VIH-1 seroprevalence among prostitutes and bar girls in Mbaimboum, Cameroon]. *Bulletins et liaisons documentaires de l'Organisation pour la Coopération en Epidémiologie d'Afrique Centrale, Yaoundé* 1995; 28:20-5. In French.
6. *Internal report on HIV surveillance for 1997*. Yaounde: Ministry of Public Health; 1997.
7. Chad Oil Export Project Consortium. *Environmental assessment*. Houston: Chad Oil Export Project; 1999.
8. Chad Oil Export Project Consortium. *Environmental management plan*. Houston: Chad Oil Export Project; 1999.
9. External Compliance Monitoring Group. *Report of the sixth site visit to Chad and Cameroon for Chad Oil Export Project*. Genoa: D Appolonia S.p.A.; 2002.
10. Exxon urges developing nations to shun environmental curbs hindering growth. *Wall Street Journal*; 14 October 1997.
11. Goodland R, Daly J, El Serafy S. *Environmentally sustainable economic development: building on Brundtland*. Washington, DC: Environment Department, World Bank; 1991.
12. Goodland, R. The biophysical basis of environmental sustainability. In: van den Bergh J, editor. *Handbook of environmental and resource economics*. London: Edward Elgar Publishers; 1999. p. 1328.
13. Jobin W. *Preliminary estimations of leading causes of death for Doba Oil Project in Chad and Cameroon*. Letter to World Bank Group in Washington, DC; 25 October 1999.
14. Jobin W, Jobin-Leeds M. *Estimated increase in AIDS due to construction of proposed Doba Oil Project in Chad and Cameroon*. Internal report submitted to World Bank Group in Washington, DC; 23 November 1999.
15. ExxonMobil web site at <http://www2.exxonmobil.com/Chad>, accessed on 31 January 2003.
16. World Bank reassesses pipeline deal — Officials dismayed at government arms purchase. *Washington Post*; 5 December 2000, p. A38.
17. *Project appraisal document for Chad petroleum sector management capacity-building project*. World Bank Report No. 19342CD. Washington, DC: World Bank; 2002.
18. King M. *Presidential address*. Southern Christian Leadership Conference, Atlanta; 1967.
19. Amida G. *WHO-USSR lectures on environmental diseases in Cameroon, Moscow, November 1985*. World Health Organization, 1985.