

Oil and Gas Pipelines

Social and Environmental Impact Assessment

State of the Art

Robert Goodland, editor



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Social and Environmental Impact Assessment: State of the Art

Compiled and edited

By

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For

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This book is dedicated to the people who may be impacted by pipelines.
I hope they use it to prevent or minimize such impacts in the future.

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Acronyms & Abbreviations

AIDS Auto Immune Deficiency Syndrome
Agip Italy's biggest petroleum corporation
AGM Annual general Meeting
Aka also known as
Bbl Barrels of oil
Bbl/d Barrels of oil per day
Bcm/yr Billion cubic meters per year
Bn Billion
BP British Petroleum
BP (World) Bank Procedures
BTC Baku-Tbilisi-Ceyhan Pipeline
c. Circa (approximately)
CAS Country Assistance Strategy
Ch Chapter
CEA Cumulative Environmental Assessment
CEO Chief Executive Officer
CNPC China National Petroleum Corporation
CTF Central Treatment Facility
COTCO Cameroon Oil Transportation Company
CSO Civil Society Organization
IDSEEP Peru's national indigenous federation
DOE US Department of Energy
DC District Of Columbia
EA Environmental Assessment
ECGD U.K. Export Credit Guarantee Department
EBRF European Bank for Reconstruction and Development
ECA Export Credit Agencies
ECMG External Compliance Monitoring Group
ECOWAS Economic Community of West African States
EIR Extractive Industry Review of the WBGs oil, gas & mining
EMP Environmental Management Plan
EnCana Canada's biggest petroleum corporation, Calgary
ENI Ente Nazionale Idrocarburi, Italian hydrocarbon corporation
EOP Early Oil Project
ERI EarthRights International
EGAT Electricity Generating Authority of Thailand
ESA Environmental and social assessment
ESIA Environmental and social impact assessment
ESO Environmental Site Officer
FCCC UN Framework Convention on Climate Change
FEDEC Foundation for Environment and Development in Cameroon
FUNAI Brazil's Fundação Nacional do Índio
GasBol Bolivia-Brazil gas pipeline
GE General Electric
GEF Global Environmental Facility
GHG Greenhouse Gas
Gjoule Giga Joule
GoP Government of Peru
GTB Gas TransBoliviano
Ha. Hectares
HIV Human Immune Virus (AIDS)
HRW Human Rights Watch
IAIA International Association of Impact Assessment
IBAMA Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis
IBRD International Bank for Reconstruction and Development
ICF International Consultants Firm
ID Identification
IDB InterAmerican Development Bank
IDA International Development Association
IPDP Indigenous People Development Plan

IFC International Finance Corporation
ILO UN International Labor Organization
ISO International Standards Organization
ISRP Independent Scientific Review Panel of IUCN
IUCN International Union for the Conservation of Nature
JBIC Japanese Bank for International Cooperation
Kg Kilogram
Km Kilometer
LNG Liquefied Natural Gas
M Million
MDB Multilateral Development Bank
MIGA Multilateral Investment Guarantee Agency
MINEF Ministry of Environment and Forests (Cameroon)
Mbpd Million barrels per day
MW Megawatts
MOGE Myanmar Oil and Gas Enterprise
NEPA National Electric Power Authority
NGO NonGovernmental Organization
NGS Nigerian Gas Company
NNPC Nigeria National Petroleum Corporation
NTFP Non Timber Forest Products
OAS Organization of American States
OCP Oleoducto de Crudos Pesados
OP Operational Policy
OPIC Overseas Private Investment Corporation
Oxy Occidental Petroleum Corp
PCDP Public Consultation and Disclosure Plan
PL Public Law
PPAH Pollution Prevention and Abatement Handbook
PSA Production Sharing Agreement
PTT Petroleum Authority of Thailand
POE Panel of Experts
PRI Private Sector Department of IDB
RAP Resettlement Action Plan
REA Regional Environmental Assessment
RESA Regional Environmental and Social Assessment
ROW Right of Way
SEIC Sakhalin Energy Investment Company
SEA Strategic Environmental Assessment
SLORC State Law and Order Restoration Committee
SOTE Trans-Ecuadorian Oil Pipeline System
STD Sexually Transmitted Diseases
SNV [Netherlands Development Organisation](#)
TBG Transportadora Brasileira Gasoducto Bolivia-Brasil
Tcf Trillion cubic feet
Tcm Trillion cubic meters
TOR Terms of Reference
UN United Nations
URS San Francisco consultants (+dames & Moore)
USAID US Agency for International Development
USDA US Department of Agriculture
USG US Government
WAGP West African Gas Pipeline
WAPCo West African Gas Pipeline Company
WBG World Bank Group
WWF World Wildlife Foundation
YPF Argentinan Oil Corp

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Our 17-year-old son Arthur unfailingly fixed my computer errors 24/7. My wife, Jonmin, put up with six months of silences while I grappled with the manuscript. Mary Paden of Alexandria, Virginia worked her magic in transforming the manuscript into a professional book. Warm personal thanks to all.

This is my fifth, and probably last, gift of a book to the International Association of Impact Assessment, to strenuously encourage it to improve the effectiveness of impact assessment in all its forms.

Foreword

This is the only book so far to tackle the social and environmental impacts associated with oil and gas pipelines. Now that pipeline construction is burgeoning worldwide, these fundamental precautions of pipeline project design and operation have become increasingly important. Especially useful is that this book is thoroughly grounded in detailed case studies of ten recent major pipelines in developing countries by experienced and hands-on practitioners. These pragmatic voices enhance the value of this book.

The impacts of pipelines *a priori* should be minor. Why then are so many recent pipelines so controversial? For example, two gigantic pipelines, BP's Sakhalin I and Shell's Sakhalin II, have become sharply controversial and could be stalled. This book suggests that social and environmental assessments have not yet become the norm, some assessments are weak, some assessment teams try to protect the multinational proponent rather than the impacted people or the environment, and the mitigation measures provided in the assessments are not always systematically implemented. Developing countries will benefit greatly by leap-frogging the errors made by industrial countries and learning from industrial country mistakes. Following the advice in this book will greatly enhance development effectiveness, save many scarce resources, and protect vulnerable people.

The Independent Extractive Industry Review of the World Bank Group's Oil, Gas, and Mining Portfolio, which I led between 2001 and 2004, recommended that natural gas be used as a bridging fuel on the tortuous and overdue path to renewable energy systems (as amplified in www.eir.org). This book clarifies how to accelerate that transition with the lowest impacts.

My main message to the oil and gas industry, pipeline proponents, pipeline financiers and development colleagues is to use this book to design out the more serious impacts of your pipeline schemes, reduce any big risks, and mitigate the rest. You will end up with safer and non-controversial pipelines at greatly reduced overall cost.

His Excellency Dr Emil Salim
First Minister of Environment and Population, Indonesia
Chair: United Nations Environment Summit, Rio de Janeiro
Eminent Person: The Independent Extractive Industry Review of the World Bank Group's
Oil, Gas, and Mining Portfolio

Chapter 1

Perspectives on the Assessment of Pipelines

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Editor and Compiler

About the Author

Robert Goodland has been involved in the social and environmental assessment of five pipelines: Thailand's Yadana Gas, Chad-Cameroon Oil, Ecuador's OCP, Peru's Camisea gas, and the BTC oil pipelines. He served the World Bank Group for 25 years, retiring in 2001 as their Environmental Advisor, where he drafted and persuaded the Bank to adopt most of its social and environmental "Safeguard" Policies. He was a member of the Extractive Industry Review (2001-2004), consultant to the World Bank's Inspection Panel, Metropolitan Chair of the Ecological Society of America, and Past President of IAIA. He has published about 20 books on environment and sustainability of major infrastructure projects. His PhD on Brazilian ecosystems is from McGill University in Montreal.

This book focuses on the social and environmental impacts of pipelines in developing countries. It shows the state of the art on how to prevent or minimize impacts of pipelines, and fully mitigate any residual impacts. The emphasis is on gas pipelines more than oil pipelines. The book is aimed at the hydrocarbon industry and pipeline corporations, and countries which depend on pipelines or who are contemplating a major national pipeline, as well as their environmental professionals, and the economic development community.

The case studies of ten major recent pipelines show best practice in the social and environmental assessment of pipelines. Four case studies are from Africa, three from South America, and three from Asia. Ten case studies cannot fully represent the whole. Even so, practically all major or recurring issues of pipelines are covered by this case study approach. The strength of the case studies is that all are written by practitioners who were personally involved either with the assessment, or with seeing that the social and environmental precautions are being prudently implemented.

As can be seen from the case studies, the issues span the spectrum on the social side from slavery (Case 10) and vulnerable ethnic minorities (Cases 1, 5, 6 & 7), through forced displacement. Pollution, climate change, biodiversity conservation, and post-construction restoration recur on the environmental side. Most impacts are fairly well known, although often inadequately mitigated. This leads to major controversies, such as the endangerment of the Pacific Gray Whale in the Sakhalin case study (Case 9).

The Environmental Significance of Natural Gas

More electricity is generated from coal than from oil and gas combined. The impacts of coal are so severe that any trend away from coal and towards gas will be massively beneficial to society and the environment. Emil Salim's independent Extractive Industries Review recommended accelerating the inevitable transition towards renewable energy, while using natural gas as a bridge to that very difficult transition. Coal burning is the worst culprit in emitting GHG. Burning coal¹ emits 24 kg of carbon per Gjoule, whereas oil emits 19, and natural gas only 14.

More than 60 countries already have over 2000 km of pipelines (Figure 1). About 10,000 kms of new pipelines are planned for this decade, with 2500 km in 2005 alone at a cost of \$27bn (Oil & Gas Journal, Feb.'05). Most of this action will be in developing countries.

Natural gas looks set to become the world's most important energy source within a couple of decades. This turnaround is a huge benefit for health and environment. Until fairly recently, gas was seen as a nuisance and was 'flared' and wasted. It is now increasingly piped from well to port where it is frozen into a liquid (liquefaction to LNG), shipped to markets in refrigerated tankers, where it is warmed back into gas to be injected into local pipelines. The US consumes 25% of world gas, but 96%

is imported from developing countries. The industry expects to invest \$100bn in expanding LNG over the next decade; hype claims “the century of natural gas” has begun. Impact assessment has a huge role in minimizing the impact of such pipelines.

Figure 1: Countries with More Than 2000 kilometers of Pipelines

United States	793,285	Egypt	12,664	United Arab Rep.	5,365
Russia	239,439	Pakistan	11,766	Chile	4,924
Canada	98,544	Spain	11,548	Syria	4,483
Algeria	95,999	Libya	11,088	Denmark	4,425
Mexico	53,004	Uzbekistan	10,051	Tunisia	4,367
Australia	34,295	Norway	9,607	Serbia and Montenegro	3,570
Iran	33,844	Saudi Arabia	9,413	Austria	3,534
Argentina	33,833	Belarus	9,352	Thailand	3,377
China	33,648	Nigeria	9,265	South Africa	3,353
Germany	32,985	Bolivia	9,200	Sudan	3,331
United Kingdom	32,832	Netherlands	8,629	Ecuador	3,220
Ukraine	28,778	Iraq	8,500	Georgia	2,956
France	22,145	Turkmenistan	7,944	Japan	2,949
Kazakhstan	21,733	Czech Republic	7,661	Bulgaria	2,947
Brazil	21,291	Malaysia	7,281	New Zealand	2,756
India	18,546	Slovakia	7,218	Burma	2,614
Italy	18,471	Oman	6,966	Slovenia	2,537
Indonesia	18,351	Turkey	6,739	Qatar	2,438
Ukraine	15,436	Azerbaijan	5,969	Belgium	2,178

Sources: Oil & Gas Journal (Pipelines issue 2004); CIA World Factbook 2005

Oil and gas pipelines are among the biggest infrastructure projects in developing countries in recent years. Their construction is burgeoning. Nearly 30,000 kms of pipelines are planned annually for the next years. The top 25+ new pipelines are compared in Figure 2. Environmental professionals are interested because prudent impact assessment can ensure these pipelines are relatively benign. Inadequate impact assessment almost guarantees massive human and environmental damage.

Figure 2: Examples of Recent Pipelines

Name	Lead	Length	Cost	Completion	Capacity	
Oil (O) or Gas (G)	Partner	Kms	US\$bn	Est. year		
West to East G	PetroChina	4200	16.9	2004	18bcm/y	Tarim-Shanghai
Siberia/Pacific O	Yukos,Transneft	4200	16	Plan[i]	80mtpy	Taishet to Nakhodha
Siberia-Korea G	BP	4000	12	Plan	1.9tcm	Kovykta via PRC
Sakhalin I O+G	Exxon	220	12	2005	10mbpd	Case 8
Sakhalin II O+G	Shell	1670	10	2007	12mtpy	
Asian Gas Grid G[iii]		5000	8	2008	?	Indonesia-China
Kazakhstan O	CNPC	3000	9.5	2011	25Mt/y	to Xinjiang
TransSahara G	NigeriaAlgeria	6000	7.5	Feas.	500MMscfd	Spain, WB
TransAsean G	Malay,Indon	4500	7	2020	?	Thailand, Philippines
Iran-India G	BHP/Snamprog	2660	6	2010?	180Mcm/d	via Kashmir
Yamal-Nenets G	Gazprom	4000	6	2004	1tcm	Siberia,Belarus,Poland, Germany
Chad-Cameroon O	ExxonMobil	1070	4.2	2003	225Kb/d	Case 1
Tangguh BP, G	Pertamina	---	5	2008	7Mt/y	Bintuni[iii] W. Papua LNG
Blue Stream G	ENI/Gazprom	1220	3.4	2002	16b.cu.m/yr	Russia, under Black sea/Ankara
BTC O+ G	BP[iv]	1760	3	2005?	1mbpd	Case 7
PNG/Australia G	Exxon	3600	3	Plan	600mcm/y	'Highlands' Kutubu
Kazakhstan O Chev	Exxon	1400	2.7	2001	600Kb/d	Black Sea
Bolivia-Brazil G	Petrobras	3150	2.1	1999	30Mcum.d	Case 5
Peru: Camisea G	PlusPetrol	715	2	2004	450mcf/d	Case 6
TransAfghan G	Turkmen/Pakist	1800	2	Plan	1.2md	ADB,WB? ex-Unocal
Tsaidam G	PetroChina/BP	950	1.9?	1999?	--	to Gansu
Xinjiang O	CNPC		1.2	2006?	10Mtpy	to Lanzhou
Sudan O	Talisman	1600	1.0?	1999	0.240mbpd	Figure 5
Ecuador OCP O	Encana	503	1.5	2003	850Kbpd	Case 4
Mozambique O	SASOL	665	1.3	2004		Case 3
Burma Yadana G	UnocalTotal	560	1.2	1998	525mcfpd	Case 9
WAGP G	ChevronTexaco	1033	0.6	2006	200+mcfpd	Case 4
Iran/Turkey G	Govts	2530	0.1	2001	1.5Mcm/d	
Tazama O	Tanzania-Zambia	1710	0.1	1995?	8Mb/d	Imports from Dar-es-Salaam

Sources: US DOE Int. Energy Outlook 2005; Oil & Gas Journal²

The Impacts of Oil Pipelines vs. Gas Pipelines

It costs approximately 50 cents per barrel to ship oil in a pipeline over 1000 kilometers, whereas the same energy in the form of gas costs \$2.50–\$4.00. Oil spills are exceptionally damaging to the environment, whereas gas leaks are not. Oil spills are all too common, especially from ocean tankers. Nearly all LNG tankers are new and safe. Accidental gas leaks and LNG spills are rare. The contrast between oil and gas projects is stark. There is inadequate political will to implement oil tanker age restrictions and safety certification, to prevent flags-of-convenience, and to promote double-hulling. Most oil spill clean-ups are barely more than token. The climate change impacts of methane leakage from aging gas pipelines is one of the biggest impacts, even though gas is not as damaging as oil with regard to changing the climate (see below). Gas and oil are often transported in parallel pipelines as in the BTC pipeline project (Case 8), and in the Sakhalin II project (Case 9). While the impacts of leaked oil exceed the impacts of leaked gas, the physical impacts of trenching any pipeline, together with their access roads are the same. Whether gas or oil, any trenching of water course stream-bottoms or water course crossings is equally harmful. Although the impacts of oil pipelines are more damaging than the impacts of gas pipelines, the content is a given, so the environmental assessment process has little leverage.

Impact Assessment of Pipelines

Analysis of Alternatives

The environmental and social impact assessment (ESA) has a role to play in the alternatives to a pipeline, such as marine tanker, trucks, rail, canals, or siting the refinery or processing plant at the wellhead. The pipeline ESA needs to scrutinize alternatives and then to justify why non-pipeline alternatives have been ruled out. A diamond mine and some valuable logging projects may be able prevent most impacts by shipping out the product by helicopter, but this is not an option in hydrocarbon projects. The commendable example was in Peru's Camisea Gas Pipeline, where Royal Dutch/Shell's ESA found hovercraft to be the lowest impact way of constructing the pipeline, rather than building roads. Shell then commissioned an ESA of hovercrafts in general and consulted in depth with the potentially affected people. The results led to a lower impact redesign by the hovercraft manufacturer.

The five overarching goals of the social and environmental assessment of pipelines should be standard, but bear reinforcing. The goals of ESA are first to prevent impacts, second to minimize the impacts that cannot be entirely prevented, and third to mitigate the residual minimal impacts. Fourth, residual minimized impacts should be fully compensated or offset such that the impacted people and environment are better off with the project. Fifth, benefits to society, especially the affected people, and to the environment should be maximized. Pipelines when buried without access roads, and maintained by helicopter, should be inherently low impact. As the book

shows, pipelines impact seriously on people and the environment in fact because of either inadequate assessment, or failing to implement the assessment.

Mechanisms to Foster Implementation of Mitigation

Failing to implement adequately the prudentiary mitigation as set out in the assessment is a generic problem that all impact assessment practitioners (and our guild, the International Association of Impact Assessment, IAIA) struggle with daily. Mandating performance bonds, escrowed accounts, more effective monitoring, and meaningful fines must become more widespread than is commonly the case.

Speed Of Pipeline Construction

The speed at which pipelines are built is one of the more serious constraints in preventing impacts. Most big infrastructure takes many years to plan and build. Completion of pipelines, on the other hand, often takes 24 to 36 months. This means it is even more important for the ESA of pipelines to begin as soon as the prefeasibility planning begins. Route selection, the main means of reducing impacts, is often one of the first items planned by the engineers, so there is even less time for the ESA.

Route Selection

The literature shows that route selection is the first and most effective means of preventing pipeline impacts from the outset. The literature is rich, diverse, detailed and helpful.³ Environmental assessments of pipelines are neither new, nor esoteric, nor precedent setting. The environmental assessment of pipeline impacts on vulnerable ethnic minorities, biodiversity, conservation units, and spill risks is standard practice in other projects by now. Of course, each pipeline is different, but the methodologies and the types of impacts to be aware of have long since become standard.

As route selection is the most important means of reducing environmental and social impacts, it needs to be the centerpiece of the ESA. Route selection is normally expected in the “Analysis of Alternatives” sections of EA/EMP. Starting from one fixed point – the oil or gas reserve – there is major scope for directional drilling. For example, if a hydrocarbon reserve is located inside a “sensitive area” (e.g., Indigenous Peoples, a densely populated town, rich biodiversity, old growth forest, a conservation unit; see Figure 3), directional drilling can avoid damage to the sensitive area by drilling laterally as far as possible. Directional drilling technology is improving annually and needs to be fully exploited before contemplating entering any sensitive area. Directional drilling was a lost opportunity in Peru’s Camisea gas pipeline Case 7). It could have reduced severe impacts on vulnerable ethnic minorities and their protected areas.

The second step is to assess siting the terminus of the pipeline. The ESA process needs to be started as early as possible, before the terminal’s location has been

finalized. Siting the terminal on the coast, or off-shore in a floating facility is crucial to reduce impacts. Shorelines are usually valuable assets (dwellings, mangroves, fish and other seafood), in which case the off-shore loading facility is strongly preferred as it is often (not always) the lower impact alternative. The connection between the end of the pipeline near to shore to the offshore loading facility needs special attention by the ESA, especially to prevent risks from shipping. Coastal bathymetry, tides, currents, population centers, and sensitive areas are easily assessed in order to minimize impact. In the Chad-Cameroon case (Case 1), justification for the selection of Kribi, Cameroon’s only golden-sand tourist beach, for the terminal is absent from the ESA. Ruling out the shorter alternative along the main highway directly to the existing oil facilities on the coast well north of Kribi was not transparent in the ESA... Between the two points then agreed upon, there is great flexibility in routing the pipeline to avoid sensitive areas between the two ends.

Figure 3: Clarification of ‘Sensitive’ and ‘No-Go’ Areas

1. Areas supporting many people who would have to be involuntarily displaced and resettled (e.g., a town or several villages)
2. Areas used by Indigenous Peoples or vulnerable ethnic minorities
3. Protected areas (e.g., UN World Heritage sites; UN Biosphere Reserves; Ramsar sites, ramsar@ramsar.org).
4. Areas meeting IUCN's categories I thru VI, and marine categories I-V (e.g., fishing or fish breeding reserves). Proposed or recognized protected area; Areas maintaining conditions vital for protected areas (e.g., watersheds, buffer zones).
5. Areas critical for rare, vulnerable, migratory or endangered species (e.g., redlist@ssc-uk.org).
6. Areas with cultural property: archeological, historic or sacred sites
7. Outstanding aesthetic value, beauty spots (e.g., Murchison Falls, Grand Canyon)

Compensatory Offsets

If the gas well is too far inside one of these "sensitive" categories to be reached by directional drilling or safely tunneling underneath, in some cases it may be possible to improve the total by investing in compensatory offsets (e.g., creating a National Park elsewhere of more value than the one containing the gas deposit).. The ratio between area lost to the project and the area of the compensatory offset is under discussion⁴. Problems are avoided by adopting a generous ratio (1: 10) and guaranteeing financing in perpetuity. For example, in the Chad-Cameroon case (Case 1) two extensive National Parks were created as compensatory offsets for those segments of the Right-of-Way (ROW) running through forests.

Route the Pipeline to Avoid Sensitive Features

Long pipelines can be routed around sensitive features (Figure 3) if planned in advance, with little or no extra cost, and sometimes at lower cost. If the blueprints show the pipeline is straight, it probably has not been socially and environmentally optimized. There are usually sensitive features, such as communities, ethnic minorities, water crossings and protected areas that it is relatively easy to avoid. If

the ESA team sees a straight-line plan for the ROW of the pipeline, ESA inputs are overdue and suspicions should be raised. There may be some exceptions such as in barren uninhabited deserts, but in general dead straight pipelines suggest a lack of ESA. While a straight pipeline means shorter distance impacted, a slightly longer pipeline going around sensitive areas is much lower impact.

Follow Existing Infrastructure

Following existing infrastructure is often a goal, but the concept needs to be sharpened. The Yadana gas pipeline (Chapter 10) minimized impact for much of its length once inside Thailand by burying the pipeline in the soft shoulder of an existing, laterite gravel highway. One welcome compensation was that the proponent, Thailand's gas corporation, then blacktopped the whole highway, which had been expensive to use in the wet season. In addition, the gas corporation improved the paths or driveways between roadside houses to the highway, blacktopping most of them. In the Chad-Cameroon case, the agreement to "follow existing infrastructure" did not take the shortest route by following the highway from Yaoundé due west to the coast where there already are oil facilities. Instead, the proponent chose to follow an old German forest pathway that has fallen into desuetude. This meant the ROW bisected the territories of the main vulnerable ethnic minorities (Bakola & Bagyeli Pygmies), rather than following the highway.

Figure 4 Colombia: Occidental Petroleum's Caño Limon Oil Pipeline

Occidental's c 800 km Cano Limon pipeline was completed in 1986. Now it transports c.100,000 bbl/day, with a capacity of 230,000 bbls/d, from reserves of c. 300M bbl. This production is about 20% of Colombia's total. It has spilled 1.7M bbl of crude.

The pipeline starts 10 km from the border with Venezuela to the Atlantic port of Covenas in Sucre Province. The biggest impact is that it runs through Arauca's Samoré block, which overlaps the territory of the U'wa Indigenous Peoples in the Sierra Nevada de Cucuy. Colombia's Constitutional Court ruling to nullify the environmental permit in 1997 was overturned by the Council of State. The OAS recommended suspension of the project.

In 1995, the U'wa threatened collective suicide by threatening to jump off a 1400 ft high precipice, which sparked pressure on Oxy to ease up. Royal Dutch Shell withdrew in 1998, fearing "another Nigeria". The courts issued an injunction to halt drilling, but it was overturned by the Superior Court. It has also been sabotaged more than 500 times by Guerillas. The worst year, according to Government records was 1996, which included 18 massacres, 31 tortures, 38 murders, 44 kidnappings 151 illegal detentions. The U'wa elected leader, Roberto Cobaría was beaten in 1997 and three US activists were killed. In 1998, the InterAmerican Commission on Human Rights urged the government to mandate friendly negotiations.

U'wa leader, Berito KuwarU'wa received the Bartolomé de las Casas prize from Spain and the Goldman Environmental Prize. Oxy's 3May'02 AGM stated they were pulling out Siriri (aka Samoré). The US Supplemental Appropriations Act (PL 107-206) appropriated up to \$6million for the Colombian Armed Forces to protect the pipeline. In 2003, a suit against Oxy was filed in the US District Court. Nevertheless, in 2004, Oxy seems to have extended their Caño Limon contract until at least 2018.

Sources: Websites of Oxy, RAN, Oil&Gas. Wade, J. 2000. Violence, Crime Continue to Cast Shadow Over Future Oil Investment in Colombia. Oil and Gas Journal (January 17) 98: 32-37.

Access Roads

The impacts from construction of access roads can and often does exceed the impacts of the pipelines Right-of-Way (ROW). Routing the pipeline to minimize the length of access roads can be effective. Formal agreements to deactivate access roads and bridges immediately following construction helps reduce impacts greatly. Ensuring that the ROW cannot be used for transport or unplanned settlement, also prevents major impacts. Monitoring and maintenance nowadays is increasingly feasible by helicopter, which greatly reduces the impacts of the project.

Traffic Accidents Sustainability demands zero loss of life or serious injuries. Planning for vehicular traffic is the first step. Well-known accident reduction needs to be emphasized. Proponent safety (seatbelts, hard hats, visible clothing, boots, and signage) already is effective in better run projects.

The Impact Of Traffic The impact of converting a quiet country lane into a major highway with 50 heavy trucks a day is severe. In the BTC pipeline (Case 8), much of Georgia's segment followed a dirt road used by a dozen or so vehicles a day. Pipeline construction traffic magnified that into hundreds of heavy trucks every day. One of the most frequent complaints was that the rumbling trucks caused cracks in the old dwellings usually sited adjacent to the road. Such dwellings were made of wattle-and-daub, log-and-mud, mud bricks, or low quality fired bricks, so such cracking is expected. In this case, best practice is to upgrade the dirt road into a sealed blacktop highway of the same width to avoid any resettlement. For the proponent to send in teams of lawyers to dispute the causes of the cracks engenders ill-will and is regressive.

Buried Vs. Above-Ground

Since the 1950s, pipelines were built above ground, even when on harsh terrain such as permafrost and muskeg. Associated brines may not have been stripped off leading to rapid corrosion of the steel piping. Many Siberian oil pipelines are old and leak, but not enough to warrant repair. Modern pipelines are buried, with the welds thoroughly inspected beforehand. Inner and outer pipeline coatings are increasingly effective in improving protection and longevity of the steel pipe. Corrosion of steel is prevented by removal of water and salts. Cathodic protection is becoming standard. Fiber-optics detect even minor leaks very early. New, best practice pipelines rarely leak or rupture. Trenching for buried pipelines is a clear impact, but burial and restoration helps land use to revert to normal, this reducing long-term impacts, and the risk of sabotage, ruptures from traffic crashes or even drunken hunters.⁵ Above-ground pipelines can impede passage of humans, sheep flocks, vehicles, and wildlife, and removes the often 50m-wide ROW from other land-use.

Terrestrial vs. Submarine

Although buried best practice pipelines are relatively safe and benign, their access or maintenance roads often impose major impacts. As submarine pipelines do not need

access roads, they are that much less damaging. Buried submarine pipelines are safer than submarine pipelines laid on the sea bed. Trenching for buried submarine pipelines creates major impacts as it stirs much silt and destroys benthos (See Sakhalin Case 9).

Figure 5: Sudan's Oil Pipeline

This 1600 km-long pipeline transports about 250,000b/d of oil northeastwards from the Nuer & Dinka peoples territories in the South, passing just west of Khartoum to Port Sudan on the Red Sea. It has operated since 1999 and was constructed in 18 months, together with a 2.5 million ton refinery near Khartoum, mainly by 10,000 Chinese laborers. About 4,000 Chinese troops guard the oil facilities in Sudan. The c\$1bn cost was born by China's CNPC(40%), Petronas (30%) and Talisman (25%). BP-Amoco bought a \$576 million share of PetroChina in 2000, and proposes to increase that to \$1bn. Sudan's civil war, mainly between the oil-rich South and the governing North began in 1956 and has continued almost incessantly since then. About 2 million people have been evicted, and 4 millions been killed. Aerial bombing of civilians (mainly Nuer and Dinka peoples), has been common. Peace treaties may take hold in 2005. ILO has looked into allegations of genocide, use of Chinese prison labor, atrocities by the army, and of child soldiers. Human rights violations seem to be the main impact of this pipeline.

Sources: BP.com, BPenergy.org, Human Rights Watch, 2003. Sudan, oil, and human rights. New York, HRW, 581 p.; Verney, P. 1999. Raising the stakes: Oil and Conflict in Sudan. Sudan Update, 60 p.; Field, S. 2000. The civil war in Sudan: The role of the oil industry. Braamfontein, R. S.A., Inst for Global Dialogue, Occasional paper 23: 43 p.

Workers Rules

The impact of typically several thousand construction workers on the local environment during 24 months or so can be massive. The ESA team should ensure that during all stages of the project through planning, construction, operation and decommissioning, no project staff (not even Company Security or HQ staff) shall hunt, buy, sell, gather, harvest or possess any bushmeat, skin, fish, or other animal or body parts, or use any project equipment (e.g., vehicles) for such purposes at least while on duty. Vermin are the exception -- carefully defined -- such as house rats, disease vectors and mosquitoes, and then mainly for the vermin control staff. The same applies to timber and non-timber forest products (e.g., flowers, fruits, seeds, roots, medicinal, cuttings, honey, perfumes, resin, saps, barks etc.), and specifically fuelwood, charcoal etc. Project staff should be provided with commercial fuels such as electricity, oil, kerosene, paraffin, bottled gas, or the gas commendably not flared from the project itself.

Similarly with firearms, (security staff exceptions strictly while on official duties). Snares, nets, hooks, traps, explosives, dieldrin or other biocides (except for specified vermin control) also need to be regulated. This policy can be modified, but construction personnel are not helping vulnerable ethnic minorities, for example, by buying their bushmeat and most forest products. Project personnel should avoid, to the extent possible, creating strong but temporary demand leading to renewable

resource drawdown by the poor in the project area. Vulnerable ethnic minorities are more sustainably helped by improvements in their health and subsistence regimes.

Contractors and Environment The ESA needs to address what is left up to contractors. Contractors usually know less about the environment than the proponent knows and have tighter schedules. In addition, contractors may not possess sufficient information on which to base important environmental decisions. For example, should a contractor ascertain fish breeding sites when finalizing the siting of a bridge? If the contractor is in the field during the off-season of fish breeding, they may be unable to avoid damage to breeding sites with potentially severe impacts. While escrow accounts and performance bonds are useful, even essential, without assessment of site-specific impacts, no one can know when an impact has occurred. ESAs need to amplify contractors responsibilities, performance, environmental staffing and the level of environmental information they will be supplied with. Specifically, the ESAs need to show that contractors will not face decisions for which they do not have adequate information, guidance and professional ability to implement.

Figure 6: Nigeria: Shell's Ogoniland Projects

Shell operated in Nigeria between 1958 and 1997. Nigeria is the source of 14% of Shell's production (c.\$10 bn.), which supplies 70%-80% of Nigeria's revenues. The Biafran War, which ended in 1970, and starved 2 million people to death, was to a large extent over control of Nigeria's oil. There is dispute over the degree of pollution in Ogoniland, an area of the densely populated Rivers Province surrounding the Niger Delta. There have been several thousand oil spills, an average of 4 spills per week, some of which catch fire, ruining the land and making it hazardous for children. 1100 million cu ft of gas is flared per day, which causes soot, noise, respiratory stress and acid rain, and which depresses agricultural yields. Pipelines are overground. Blowouts, leaks and pollution are documented. Formal complaints were lodged at the International Court of Justice in the Hague in 1998.

Shell acknowledges some damage. *"I have to believe we weren't deliberately lying to people. On the other hand, I don't think we were being honest with ourselves"* about environmental damage, according to Alan Hunt, then Chief Engineer of Shell's Nigerian operations, now CEO of Shell Prospecting in Peru (see Chapter 7 Camisea Gas). Shell withdrew from the Ogoni area (*sensu stricto*) in January 1993. World Bank affiliate IFC withdrew from investing \$100 million in the \$3 bn. Liquefied Natural Gas project the day after Goldman Environmental Prizewinner Dr. Ken Saro-Wiwa and eight other environmental and human rights activists were hanged by the government at 11.30am on 10 November 1995. Nigeria was then suspended from the Commonwealth.

As is often the case, ethnic minorities, human rights, big money and environmental impacts led to an unacceptable situation. Shell Nigeria Corp. started to help launch Ogoni reconciliation in May 1996.

Sources: Shell.com; Goshko, J.M. US censures Nigeria's execution of nine activists, installs penalties. Washington Post 11 Nov 1995. Robinson, D. Jan 1997 World Council of Churches Ogoni report; Moffat 1995; Douglas, 2001.

Human Health “Zero long-term or epidemic diseases” and “zero lost-days of work” are standard health and safety goals of the project. This begins with Pre-hiring Health Screening. All staff need scrupulous immunizations before entering the region as Royal Dutch/Shell commendably mandated when they were involved in Peru’s Camisea project. Curing standard sexually transmitted diseases before employment could become one of the most effective preventive measures against AIDS. STD-free people have substantially lower risk of contacting AIDS, even with the same sexual behavior. Free condoms should also become standard practice. The ESA needs to ensure that vector control is adequate. If local health facilities are weak, they need to be strengthened out of enlightened self-interest for project staff. Disease vector insects will not discriminate between project and non-project staff. Mosquitoes easily fly several kms in one night and are not deterred by barbed-wire fences. Public health provisions need to be freely available for all non-project people in the project region. As big enclave projects increase prostitution and accidents, social costs also increase, such as family trauma, and impaired childcare and nutrition.

Oil Spill Prevention and Management

Oil spills tarnish corporate reputations, erode their credit ratings, lose money in lost oil, punitive fines and clean-up costs, so they have strong incentives to prevent oil spills in the first place, and to detect spills very early in order to stop the spillage as soon as possible. Twenty six of the biggest oil corporations⁶ have financed the creation of an efficient oil spill response facility (oilspillresponse.com), with fully equipped and 24/7 dedicated Hercules cargo planes in Southampton UK and Singapore. The ESA needs to ensure that corroborated oil spill response plans are in place before completion of the pipeline (Several years after first oil was carried down the pipeline, the Chad-Cameroon still fails on that criterion, according to the International Advisory Group), that performance bond are posted, that fining mechanisms have been checked, equipment and training are all in order. Tanker safety has much scope but is outside the purview of this book. Frankly, modern corporations manage to prevent spills. Most spills occur by less reputable companies deferring maintenance and safety precautions.

Water Crossings

Mitigating impacts on wetlands (Krone 1985, Hughes & Hughes 1992) is especially important. How is the wetland defined? Are tiny intermittent runnels and transient streamlets included? What are the cut-off criteria? Clear agreement to adopt Ramsar definitions of wetlands would reduce risk. Are shut-off valves routinely included both sides of all water crossings? Will tunneling under the riverbed become the standard or will the river be temporarily dammed for the crossing? Each river or water crossing needs to be listed and scrutinized for the least harmful method in the ESA.

Figure 7: The Trans-Alaska Pipeline & Exxon Valdez

Built between 1974-1977; environmental monitoring was allocated c.\$4M/yr making Alaska's North Slope one of the most studied in USA. Only 2% of the land surface was altered in certain portions of the oil fields. Habitat does not appear to be a limiting factor in Caribou herds, which have increased sevenfold since the 1970s. Their migration routes do not seem to have been constrained. The purpose of ESA is to predict impacts and to design and foster implement of mitigation. In this case, the impacts appear to have been relatively minor, and the mitigation has largely worked – with exceptions.

On 24 March 1989, the Exxon Valdez tanker spilled 11 million gallons (258,000 bbl.) of oil into Prince William Sound thus impacting fish, marine and terrestrial wildlife, including birds, and vulnerable ethnic minorities. The 9/94 jury awarded \$5 bn in punitive damages, compensatory damages of \$286M, and the Alaskan Native Class plaintiff \$20M. This may set precedent for subsequent claims by ethnic minorities elsewhere. The money involved is large, and the \$3.5 bn clean-up is of mixed success. While acute damage was massive and clear, long-term damage is slower in being documented. Biological recovery seems to have been more rapid than predicted. Herring fisheries and Murre populations, for example, seem to be thriving. Eelgrass beds still suffer, and populations of seal, sea otter, ducks and red salmon may still be below pre-spill levels. Clearly, much prevention could have been bought with much less than the c.\$9 bn. total costs of the spill.

Sources: Aspen's Oil Spill Intelligence Report On Line 2005; Owen et al. 1995; Palinkas 1992; Cohn 1998

The Trans-Alaska project agreed to elevate the pipeline, especially in seismic zones, by raising the pipeline on skids over active fault crossings. Some water crossings are better elevated too to avoid the need for trenching which is so damaging to aquatic life and fish reproduction. Leak detection equipment must be able to detect minor seepage of oil in water courses. Even though minor oil seepage may not reduce corporate revenues, it can still harm fish.

Cumulative Impact Assessment

Cumulative assessment should be standard practice by now in all pipelines. The main point is to ascertain if there is another project – existing or planned -- that may influence the pipeline under consideration. In the Chad Cameroon case, Exxon was informed in 1998 that the government's 50m-high Lom-Pangar hydrodam was under active consideration to be sited at the confluence of these two rivers. As the terrain is rather flat, the 610 km² reservoir will extend long distances up both rivers impacting far more forest and biodiversity than the oil pipeline. The 1995 environmental studies for the hydroproject, by Martin Chamba and others, expected to generate by 2008, should have been used in the pipeline's ESA. The December 2003 International Advisory Group highlighted this defect in the ESA, and pointed out that much of the Deng Deng forest will be inundated, as well as a segment of the pipeline. The cumulative or regional EA sections of the pipeline EA should have compared the impacts of the two projects especially on people and biodiversity, and seek to optimize with the reservoir, being supported by the World Bank, AES and Sonel.

Decommissioning

The whole topic of decommissioning, rehabilitation, restoration, reinstatement, reclamation surety bonds, and performance bonds after such a project is becoming the standard, and merits a separate section in the project documents. For example, Coastal Petroleum's \$224.5M bond posted to drill one exploratory well nine miles off the Florida panhandle was calculated from a \$86.5M 'worst case' spill estimate, and \$138M clean-up costs. Following appeal, this is down from the \$4.3bn set by the state cabinet last year.

Figure 8: Russia: Komi Usinsk Accident

The 20-year-old Komi/Chevron pipeline was well known for inadequate maintenance and a history of leaks such that EBRD's \$83 million upgrading project included a retroactive -- but secret -- ESA in 1993, before the spill in the Fall of 1994. Komi did not want the spill to attract attention, but Greenpeace managed to publicize it, after which the World Bank financed a clean-up. The spill is the third largest in history (after the Persian Gulf War slick in 1991, and the Ixtoc I rig spill in the Gulf of Mexico in 1979). Estimates of the spill vary between 14K to 300k cubic meters of crude, which polluted the Pechora River leading into the Barents Sea, with heavy metals, persistent organic pollutants, (now banned under the Stockholm Convention) and radionuclides. The Nenets ethnic minority most affected (e.g., contamination of fish and reindeer pasture) received \$7 per person in compensation.

Sources: Worldbank.org; Ebrd.org; 'Black Ice': Greenpeace.org

Limits to Pipeline ESAs

The ESA team needs clarity from the start to ensure that the potentially more serious impacts between the end of the pipeline and the destination of the oil or gas is prudently integrated (See Chapter 6, Conclusions). Siting the oil or gas terminal, port safety and environmental precautions, any offshore floating storage vessels, the age specifications of incoming tankers, double-hulling, and ballast flushing all need to be addressed to ensure they do not fall outside the scope of the pipeline ESA.

Chapter 2 Africa

Case Study 1

The Chad-Cameroon Oil Pipeline

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Background

The Republic of Chad, with a population of approximately 9 million, is a landlocked African country, bordered by Libya to the north, Cameroon and the Central African Republic to the south, Sudan to the east, and Niger and Nigeria to the west. The vast majority of Chadians live a subsistence agricultural lifestyle in small pre-industrial villages. Cotton is the only significant export of Chad.

The Republic of Cameroon, a west central African country of 16 million to the southwest of Chad, is also a poor country. However, its economy is much larger and more extensive *versus* Chad, buoyed by petroleum resources, shipping, timber, and a diverse climate that allows for the production of high value agricultural commodities such as cocoa, coffee, bananas, rubber, and palm oil. Like Chad, the majority of Cameroonians live a subsistence agriculture-based lifestyle.

The Chad/Cameroon Petroleum Development and Pipeline Project was approved by the Executive Directors of the World Bank Group on June 6, 2000. The project, which is the single largest private sector investment in Sub-Saharan Africa, will develop three oil fields (Kome, Miandoum, and Bolobo) in the Doba region of southern Chad and construct an export system consisting of a 1,070 km pipeline to offshore oil-loading facilities in Cameroon's Atlantic Coast (Figure 9).

Figure 9 Map of the Chad-Cameroon Oil Export Pipeline



The consortium developing the fields consists of Esso Exploration and Production Chad (40%), Inc, Chevron Petroleum Chad Company Ltd. (25%), and Petronas

Carigali (Chad EP) Inc. (35%). Shareholders in the transportation system portion of the Project include the Consortium, the Republic of Chad, and the Republic of Cameroon.

The World Bank Group involvement consists of the following components:

IFC

- Providing up to \$100 m of financing for its own account;
- \$100 m B loan from commercial banks and working with other financiers on due diligence;
- Working with sponsor and governments on environmental and social safeguards;
- Development of Small and Medium Enterprises in Chad;
- Agriculture and livestock marketing project with Africare

IBRD

- Financing of Chad's equity interest in the pipeline;
- Financing of Cameroon's equity interest in the pipeline;
- Management of the Petroleum Economy (IDA loan) – to help finance increases in capacity of Chad to manage revenues well for poverty reduction;
- Petroleum Sector Management and Capacity Building (IDA loan) – to help Government manage responsibilities including those under EMP and establish effective framework for further private sector investment in the oil sector;
- Cameroon Petroleum Environmental Capacity Enhancement project – to help finance Cameroon's capacity building of managing the environmental and social environmental impacts in the petroleum sector.

The development objectives of the project are, through environmentally and socially sound private investment in the petroleum sector: (i) to increase Chad government expenditures on poverty alleviation activities; and (ii) to increase Cameroon fiscal revenues available for financing priority development expenditures, in context of the Government's strategy for economy growth and poverty reduction. Under the International Finance Corporation Environmental and Social Review Procedure and the IBRD this project meets the criteria for Category A project.

The consortium of companies led by Exxon Mobil began the design of the project as early as 1993. A series of Environmental and Social Impact Assessments (ESIAs) with the appropriate Environmental Management Plans (EMPs) were prepared, which addressed a series of environmental and social impacts (direct and indirect) by the project. Through out the design of these documentation public consultation and disclosure were carried out. Based on the comments received during the consultation and disclosure period some aspects of the project needed to be reviewed and modified to take into account these comments, in addition, some features not

included originally in the project were added. These EMPs were again disclosed as final documents in 1999 in the World Bank Group InfoShop.

Throughout the construction phase there were several layers of monitoring for the project including: (i) self-monitoring by contractors; (ii) monitoring by the project; (iii) monitoring by the Republics of Chad and Cameroon; (iv) external monitoring performed by two entities the External Compliance Monitoring Group (ECMG) and the International Advisory Group (IAG) – reports from both of these groups can be obtained from the World Bank Group website; and (v) monitoring by environmental and social staff from the World Bank Group. The compliance performance of the project was and continues to be assessed at three levels of EMP non-compliance. Level 1 is an early warning, level 2 a expeditious action is required and level 3 is a serious impact to an identified sensitive resource.

Project Status

The first crude oil completed its 1,070 km journey through the export pipeline in September 2003 and Chad made its first sale of crude oil to world markets on October 3, 2003, marking the formal beginning of the project's export phase.

Construction activity has dropped considerably and is primarily taking place in the Oil Field Development Area in Chad, with continuation of construction of new well pads and flow lines. It is important to point out, that during the entire construction of the pipeline, there was only one level III non-compliance issue, which was mitigated and compensated by the Consortium.

The External Compliance Monitoring Group (ECMG) carried out its final mission under the construction phase to Chad and Cameroon in May 2004. Following this mission the completion certificate was provided to the Consortium and Project Completion occurred on October 29, 2004. This certificate demonstrated that the project has been constructed, operated and maintained in accordance with the Environmental Management Plan. The ECMG will continue with it's monitoring during the operations phase. The scope of the continuing monitoring includes one site visit to Chad and Cameroon facility sites per twelve month period following Project Completion Date until full repayment of the Senior Project Loan. A second visit may be conducted during the same period at the discretion of the Lender Group. In addition, the ECMG will also continue with the monitoring of the World Bank Technical Assistance.

Figure 10: Construction of the Export Pipeline



Figure 11: The Floating Storage and Offloading Vessel Mated to its Single Point Mooring Structure



Figure 12: Aerial View of Pump Station #2 near Dompta, Cameroon



Key Components

During the initial assessment of the areas of study, the Project recognized/ identified areas of special natural biodiversity, and the project established an Environmental Foundation for the management of environmental offsets in Cameroon and the funding of the activities under the indigenous peoples plan in ecological sensitive areas.

The creation of the Foundation for Environment and Development in Cameroon (FEDEC) was proposed by the Consortium and the World Bank as an approach for the Project to meet the Bank's Operational Policies related to Natural Habitats (OP 4.04) and Indigenous Peoples (OP 4.20). The EMP for Cameroon provides in Volume 4 details on FEDEC's role, responsibilities and operation procedures, as well as COTCO's capital contribution to FEDEC of US\$ 3.5 Million.

FEDEC has the goal of providing long-term financial support for ecological conservation and enhancement programs in two newly established National Parks in Cameroon (the Mbam-Djérem National Park and the Campo-Ma'an National Park) and for Bagyeli/Bakola (Pygmy) development programs. FEDEC has been working since May 2002.

Mbam-Djérem National Park

The Wildlife Conservation Society (WCS) has been working as the Implementing Organization for the Mbam-Djérem National Park since February 2003. Key milestones were reached by the end of 2003 with the appointment of a new Ministry of Environment and Forests (MINEF) *Conservateur* and WCS basing a local staff person in the area, things have gone slowly since then. The position of Chief Technical Adviser/Project Director for the Mbam-Djérem park was filled by WCS in April 1st 2004. WCS has also continued its valuable research program on the bushmeat baseline analysis. The two coordinators in charge of bushmeat and poaching surveys are now posted in Mbakaou. Socio-economic surveys have been carried out including village surveys. Village meetings for outreach and awareness have been initiated. A biological survey of the northeastern part of the park is being completed.

Campo-Ma'an National Park

WWF has been working for Campo-Ma'an since February 2003. The WWF team leader and staff are stationed in the village of Campo at the MINEF post. MINEF appointed a new *Conservateur* to the Park who is based in Campo with the WWF team. WWF-Cameroon reports that it had made impressive progress in terms of fundraising and in reaching out to local communities and organizations to build alliances between local stakeholders and park management. The MINEF *Development and Management Plan for the Campo-Ma'an National Park and peripheral zone*, was finalized in last August 2004 and then received Government approval. This plan is available in French under the following title "*Plan*

d'Aménagement du Parc National de Campo-Ma'an et de sa zone périphérique". Its preparation received technical support from WWF, Tropenbos International and SNV and financial support from FEDEC, WWF, GEF, SNV and the Government of Cameroon.

Indigenous Peoples Development Plan (IPDP)

FEDEC's Community Development Facilitator works directly in the field with the Bakola-Bagyeli Pygmy communities in the project area and continues to work well with a range of local NGOs (e.g., *Petites Soeurs de Jésus* for health care, another for child care/ education, another for training, and yet another for rural development) to implement four program areas pertaining to the IPP and a 5th program which involves the construction of houses. The CDF is recognized as the main field-based entity supporting work with the Bakola. The status of the subprojects are:

- Citizenship activity is progressing with over 500 identity cards provided to citizens of the Bagyeli/Bakola communities in the areas surrounding Bipindi, Lolodorf and Kribi. Additional ID cards in draft form (*récépissés*) continue to be prepared and delivered to adult Bagyeli/Bakola. This citizenship activity is supported in the field by an Italian NGO specialized in education and integration) and receives financial support from the Embassy of Canada in addition to the one provided by FEDEC. Accomplishments over the last period also included support to communities for inscription of 328 Bagyeli/Bakola adults on the electoral register for voters.
- Health care and medical diagnosis is implemented by the NGO *Les petites soeurs de Jésus*. The two health centers of Nkouambpoer and Bidjouka have been active during the period in providing health care, vaccination and awareness campaigns on basic hygiene and STDs including AIDS.
- Education: a project called *Projet pour l'éducation et l'intégration citoyenne des Bagyeli/Bakola* has been prepared and is being implemented in partnership with COE (Centro Orientamento Educativo), an Italian NGO; with a total budget of 83 million CFA Francs over 3 years. The provision of school supplies to Bagyeli/Bakola children, as well as to the neighboring Bantu community, has continued.
- Support to agriculture production: in 2003 the FEDEC-supported agriculture component is in place for 125 families, with the cooperation of Government Agriculture services. Support in 2003 included training and the provision of tools, selected plants and seeds for the whole crop season. FEDEC support to agriculture production has been particularly active during the first three quarters of 2004, and covered about 62 hectares of land in the Lolodorf, Bipindi and Kribi zones. Actions included provision of selected seeds and fruit trees plants, tools, training and support to Bagyeli/Bakola farmers. They

received cooperation from Government Agriculture services of Lolodorf and Kribi.

- The housing program funded by COTCO (supported by two construction technicians and FEDEC's CDF) is complete with 20 pilot houses completed in 18 camps. The second phase includes 5 applications for similar traditional houses to be constructed by local communities with support from COTCO and FEDEC's CDF, based on lessons learned from the pilot phase.

Capacity Building and Technical Assistance

Capacity building and technical assistance are key instruments for improving policies, enhancing skills, and building institutions.

As the pipeline project moves into the operation phase, the Government capacity is being strengthened :

- On the human capacity side, the trainings financed under the credit and those provided by the Bank's team, enabled the two project units (petroleum and environment) to ensure their basic monitoring mandates. Additional trainings, mostly based on on-the-job principle, have been identified, agreed upon with the teams, and will be financed under a supplemental credit. These trainings mainly aim at strengthening their ability to fulfill the most critical technical part of their mandates. The key issue on human capacity remains in the low number of competent staff. This issue has been addressed in two folds : (i) staff evaluation and non renewal of non performers and (ii) the assessment of the current functional needs and the hire of additional staffs. The first action has been completed, the second is ongoing.
- On the institutional setup, the Government of Chad took two important decisions : the creation of (i) a National Oil Company (decision adopted by the ministers' cabinet) and (ii) an Environmental Agency (decided by the board of directors). These two decisions remain to be made coherent with the institutional framework and the sectors strategies which are not yet completed. The Bank is providing technical assistance on both issues through drafting of institutional studies' Terms of Reference, and reviewing petroleum strategic documents.

Environmental and Social Compliance

The Chad Export Project is approaching full production. The facilities in Cameroon are fully operational. In Chad the Central Treatment Facility (CTF) and associated development facilities are now constructed and operational. The project is managing all the environmental and social aspects of the project according to the Environmental Management Plan (EMP), some of the key aspects are as follows:

Dust Control

The project provides the CTNSC with updated schedules of the road maintenance activities on a regular basis for their review and approval. Since last November 2004, almost 10 km of the selected road sections have been treated with molasses (Figure 13). Additional 35 km are scheduled to be treated with molasses, including the access road to the Komé 5 waste management facility and 13 villages located along the Komé to M'Béré road. Based on the inspections of some of the roads that have been treated either with molasses, it appears that the programs have been effective in controlling dust. A joint committee between CTNSC and the Project has been formed to review and update the priority areas for dust control strategies.

Figure 13: Access Road to Kome Treated with Molasses



Waste Management

Several management facilities have been constructed and are currently employed by the project to dispose of all the produced waste both in Cameroon and Chad. The Komé Waste Management Facility collects both hazardous and non-hazardous wastes generated by the project. The facility is provided with an municipal incinerator, as well as with a hazardous incinerator. The hazardous waste incinerator is designed to process both solid and liquid hazardous wastes. All the bioremediation activities of oil contaminated soil are also conducted at the Kome Waste Management Facility at a dedicated land farming area. At Belabó, the Project has constructed and engineered solid waste landfill for hazardous waste. At third party hazardous waste incinerator is being used by the Project in Douala to dispose

of its hazardous waste in Cameroon . Non-hazardous solid waste from camps are disposed of in dedicated pits at designated locations.

Figure 14: New Incinerator at Bocom



Social Closure

The Project developed and implemented a social closure process in Cameroon, involving both the Government and the Consortium, and witnessed by independent NGOs. In Chad this process has been prepared but not finalized and remains to be implemented.

Stack Emission Testing Program

As part of the EMP, the Project is required to periodically test (every third year) the stack emissions of the major permanent onshore facilities during the operation phase. The Project conducted the testing between May and July 2004. The following facilities were tested: (i) Pump stations in Dompta and B elabo (Cameroon): three combustion turbines, three reciprocating generators engines, one crude oil line heater and one crude oil topping plant heater; (ii) Pressure Reduction Station – Cameroon) in Kribi: two reciprocating generator engines; and (iii) Kom e: four turbine engines and one high temperature chamber hazardous waste incinerator. The results of all emission testing were found to be in compliance with the standards as set on the Investment Agreement with the World Bank Group.

Ambient Air Quality

The Project has implemented two air sampling campaigns between the third and the fourth quarter of 2004. The results from the samplings indicate that no exceedance

of limits as prescribed in the Investment Agreement with the World Bank Group have occurred.

Figure 15: Air Quality Monitoring Trailer



Non-Compliance

During the fourth quarter of 2004, the Project did not record a level II or level III non-compliance. However, the project recorded eight level I non-compliance with the EMP, the Project has taken steps to correct all of the non-compliance.

Safety

The performance of the Project in this area is very good . The Project has reported that at the end of 2004 the cumulative Recordable Incident Rate, it was recording at a rate of 0.38 incidents per 200,000 worker hours. In addition, driver safety trends improved dramatically over the year.

Local Employment

The Project reports that at the end of 2004 the total number of employees in fell below 3,000 people, the lowest level since construction began in 2001. The total of employment in Chad fell by over 900 workers from the third to the fourth quarter of 2004, corresponding to the formal declaration of project completion in December. Employment in Cameroon remain steady.

Figure 16: Local Employment



Figure 17: On the Job Training



Conclusion

Throughout the World Bank Group's involvement in the Chad Export Project, it can be stated that the challenges presented by this Project have been addressed in a very good manner by the consortium. It is also important to note that the early involvement of the World Bank Group helped to design the project in a manner that sensitive areas were avoided, environmental offsets were established, and indigenous peoples plan were put in place. The continuous monitoring of the Project has also largely avoided non-compliance issues.

The most difficult challenges may remain beyond compliance and include such things as maintaining proper staffing on critical areas, post construction and during transitions, and managing relationships with complex and changing local government agency counterparts.

Case Study 2

World Bank Safeguard Policies in Four African Pipelines

Chad-Cameroon Oil, Songo Songo Gas, Sasol Gas, and the West African Gas Pipeline

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About the Author

Robert Robelus studied biology with majors in Aquatic Ecology and Integrated Pest Management. He has worked since 1969 in developing countries in Africa, South and Southeast Asia and Latin America. Since 1979, he worked in Environmental Assessment for the Dutch Foreign Aid program, and for International Consultancy Firms. Since 1993 he has worked for the World Bank as an Environmental Assessment Specialist. He has experience in Environmental Assessment, Biodiversity issues, Fisheries, Aquatic Ecology, Forest issues, Water Resources Management, Environmental Health, Integrated Pest Management, Pollution Control. He has worked on large infrastructure projects, such as hydropower dams, oil and gas pipelines, large scale irrigation projects, mining projects, urban management projects, highways, forest and environment projects and biodiversity conservation projects.

Introduction

Most of the World Bank Safeguard Policies (Safeguards) have been applied for more than 10 years to all kinds of projects financed by the World Bank Group. The present paper focuses on the application of the World Bank Safeguard Policies to oil and gas pipeline projects and identifies what has worked and what has not and what are the new trends.

Any project proposed to be financed by the World Bank needs to comply with the National Environmental Policies in the countries concerned and with the World Bank Safeguard Policies and Environmental, Health and Safety Guidelines (Pollution Prevention and Abatement Handbook, 1998) triggered by this project. The first step is the preparation of an Integrated Safeguard Data Sheet, which is a screening tool that provides a description of the project, identifies potential environmental and social impacts and provides a basis to categorize the project in Category A, B, C or FI. All oil and gas pipeline projects until present have been categorized Category A projects, which means that a comprehensive Environmental Assessment (EA) needs to be prepared.

Only when a satisfactory Environmental Assessment (EA), Resettlement Action Plan (RAP) or other required safeguard documents have been produced, approved by the World Bank and the Governments concerned and disclosed in the countries concerned and in the Infoshop in Washington can the proposed project be appraised (World Bank Safeguard Policy requirement). Disclosure of safeguard documents needs to take place at least 120 days before Board presentation (Pelosi Amendment, which is a US requirement). In major infrastructure projects the preparation of satisfactory Safeguard documents can take up to 2.5 years.

The three organizations of the World Bank Group – the International Finance Corporation (IFC), the World Bank proper, which consists of the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA), and the Multilateral Investment Guarantee Agency (MIGA) – have developed Environmental, Social, Rural Development and Legal Safeguard Policies. The guidelines of these World Bank Group organizations differ from one another more or less insignificantly. The differences are based on the different clients of the three organizations.

Since 2000, there have been concerted efforts to harmonize the environmental and social standards of multinational and bilateral banks as well as of export credit insurers. With the Equator Principles initiative launched in April 2003, twenty-five commercial banks have now agreed to apply the IFC Guidelines.⁷ In 2002, these banks were responsible for approx. 70% of all very large loans worldwide. With this initiative, the Safeguard Policies of the World Bank Group, which according to an investigation carried out in 2000 were found to constitute the strictest standards in credit examination worldwide, have gained in significance once again.

The Safeguard Policies include a part which is called Operational Policy (OP) and a part Bank Procedures (BP):

- OP/BP 4.01 Environmental assessment
- OP/BP 4.04 Natural Habitats
- OP 4.09 Pest Management
- OPN 11.04 Cultural Property
- OD 4.20 Indigenous Peoples
- OP/BP 4.12 Involuntary Resettlement
- OP/BP 4.36 Forests
- OP/BP 4.37 Safety of Dams
- OP/BP 7.50 Projects on International Waterways
- OP/BP 7.60 Projects in Disputed Areas
- BP 17.50 Disclosure of Information

The “+1” in the common term “10+1 Safeguards” refers to the last-mentioned procedural regulation (Disclosure of Information), which of course also applies to other than environmental and social matters. All Safeguard Policies may be relevant to pipeline projects, with the exception of OP/BP 4.37 “Safety of Dams.”

The Safeguard Policies which are potentially triggered for oil and gas pipeline projects are: Environmental Assessment OP 4.01; Natural Habitat OP 4.04; Pest Management OP 4.09; Forests OP 4.36; Cultural Property OPN 11.04; Involuntary Resettlement OP 4.12; Indigenous People OP 4.20; Projects on International Waterways OP 7.50; and Disclosure of Information BP 17.50.

The application of the Safeguard Policies in the context of project preparation is supported by a broader sets of rules and instructions, as laid out in the following World Bank publications:

- *The Pollution Prevention and Abatement Handbook* (PPAH 1998)
- *The Environmental Assessment Sourcebook* (including the “Updates”)
- *The Greenhouse Gas Assessment Sourcebook* (1998).

While the Safeguards are predominantly qualitatively oriented and are a component of the Operational Manual of the World Bank, the guidelines of the *Pollution Prevention and Abatement Handbook* 1998 are predominantly technical standards which refer to maximum levels of emissions (e.g. NO_x and other air emissions, noise, effluent standards, etc.) and technical specifications like the use of leakage detection systems.

The *Environmental Assessment Sourcebook* and its updated single chapters (“Updates”), contain no mandatory stipulations; however, by means of instructions and examples, they do guide the analysis of impacts and the determination of avoidance and minimization measures in the drafting of EAs.

Implementation of Regional or Sectoral EAs

The World Bank OP 4.01, in Paragraph 7, identifies the implementation of a regional or sectoral EA as a possible instrument for the examination of environmental impacts during project preparation. At present the preparation of a Regional EA for large scale infrastructure project is a requirement for the World Bank, but not for IFC and MIGA. The IFC Environmental Assessment Safeguard Policy OP 4.01 explicitly states the examination of cumulative impacts. Here the examination of cumulative effects of impacts due to “existing, planned and foreseeable future projects” is, indeed, demanded, but exclusively with reference to the project area. However, the IFC defines the area of influence of the project in Annex A of the IFC OP 4.01 just as comprehensive as the World Bank OP 4.01.

The Greenhouse-Gas Assessment Handbook: A Practical Guidance Document for the Assessment of Project-Level Greenhouse-Gas Emissions (World Bank 1998) was conceived to support compliance with the corresponding requirements formulated in OP 4.01. The manual provides sector-specific instructions for the calculation of the respective quantities of emitted greenhouse gases.

The environmental, health and safety guidelines which are likely triggered are: General Environmental Guidelines, Occupational Health and Safety Guidelines, Offshore Oil and Gas Guidelines, Oil and Gas Development Onshore Guidelines, Monitoring Guidelines, Petroleum Refining Guidelines, Thermal Power for New Plants and Thermal Power Rehabilitation, as presented in the Pollution Prevention and Abatement Handbook (1998).

The following sections describe the approaches taken in the various oil and gas pipeline projects with regard to the different environmental and social issues.

New Trends: What Has Worked And What Did Not

Public Consultation and Disclosure Plan (PCDP)

The PCDP includes scoping of the TOR for the EA study and consequent public consultation with primary and secondary stakeholders. The PCDP is an IFC requirement and has been applied in the Sasol Gas Pipeline. Because this is a comprehensive approach to public consultation, the World Bank is starting to apply the PCDP approach also in other large infrastructure projects such as the Sierra Leone Bumbuna Hydroelectric Project. The PCDP approach includes a scoping exercise with primary and secondary stakeholders to identify shortcomings of the EA Draft Terms of Reference (TOR) and it also lays out the framework for future public consultations during preparation, construction and operation. The PCDP approach is a new trend and seems to work well.

Independent Panel of Experts

This panel (POE) is designed to have high levels of Environmental Assessment, Resettlement, Biodiversity or other Safeguard expertise. OP 4.01 of the World Bank, IFC and MIGA requires the establishment of a Panel of Experts, which supports the involved governments during the preparation and implementation of the EA. The period of the involvement of the Panel of Experts spans from preparation and construction to operation.

The usefulness of the Panel of Experts has been mixed. In the Chad Cameroon Oil Pipeline the panel was not very effective. In the other pipeline projects there was no Panel of Experts, but there was strong involvement of World Bank Group environmental and social specialists and strict environmental / social supervision and/or auditing mechanism, which has been working well. In other large infrastructure projects the Panel of Experts added value and worked well.

Communication Strategy

Communication with primary and secondary stakeholders is essential. Misconceptions about the project often spread if there is no adequate communication strategy. At present all large infrastructure projects, including pipeline and dam projects, have developed adequate communication mechanisms to inform and have a dialogue with primary and secondary stakeholders. This approach seems to work well.

Comprehensive Analysis of Alternatives

This comprehensive Options Analysis), especially for the selection of the lowest impact pipeline route is based on Technical, Social, Environmental and Economic factors. For pipeline projects, the major environmental (e.g. impacts on protected areas and critical natural habitat) and social impacts (e.g. resettlement) can be avoided or minimized by executing a comprehensive Analysis of Alternatives. This is required by OP 4.01 and is not a new trend, but at present it is carried out more comprehensive than 10 years ago. The Analysis of Alternatives should include an analysis of alternative routes, of the most appropriate fuel to be promoted, and the lowest project costs to achieve the objectives. The amount of greenhouse gases avoided or produced by the project is part of the overall analysis.

The EAs for both the Cameroon Oil Pipeline and the West African Gas Pipeline Projects included a comprehensive Analysis of Alternatives in order to avoid critical natural habitat, impacts on primary tropical forest areas and other sensitive ecosystems, avoid resettlement and avoid impacts on indigenous people. A comprehensive route selection process is the most essential part of the EA for a pipeline project. The route selection process through a comprehensive Analysis of Alternatives has worked well.

Global Impacts

Global impacts, such as Greenhouse Gas Analysis and impacts on Globally important biodiversity must be addressed. The EA should address global impacts such as the quantity of greenhouse gases released or avoided by the project in comparison with other project alternatives. It is also best practice and required by Bank Safeguard Policies to assess the impacts on globally important biodiversity resources.

Comprehensive Analysis of Environmental and Social Impacts

The EAs for all large infrastructure projects provide a more comprehensive analysis of environmental and social impacts than they did 10 years ago. This is a positive trend.

Biodiversity

More in-depth terrestrial and marine biodiversity analysis of endemic, rare and endangered plant and animal species is becoming standard practice. Large infrastructure projects such as pipelines and dams could have potentially significant impacts on biodiversity. At present EAs for large infrastructure projects require a more in-depth analysis of the presence of endemic, rare and endangered plant and animal species. The analysis includes groups as large and small mammals, birds, reptiles, amphibians, fish and important invertebrates such as corals, butterflies, etc. The level of knowledge should be such that an informed decision can be taken. It should be understood that these biodiversity surveys as part of the EA are not multi-year scientific studies, although these could and often should be included during project implementation. This approach should provide an opportunity to better protect endangered, endemic and rare species in the project area. If appropriate an Environmental Offset (see below) should be financed by the project to compensate for lost natural habitat.

Compensation for Displacement

Strict analysis of and adequate compensation of affected people must become standard through a comprehensive Resettlement Action Plan (RAP). People should not be worse off, but best efforts should be made to make them better off. Resettlement and compensation for land acquisition and lost assets through the preparation of a Resettlement Action Plan (RAP) is often the most difficult and sensitive part of the application of the World Bank Safeguard Policies to pipeline projects. It is time consuming and needs to start very early in the process. Appropriate communication plays a major role in the contact with affected people. The RAP should address the full replacement costs of lost houses, land, crops, lost assets and lost access to traditional natural resources (e.g. establishment of a protected area). The objective is that people should be preferably better off than

before resettlement, but should in no instance be worse off. If the RAP is well prepared and carried out with diligence this process seems to work well.

Indigenous People's Development Plan

Preparation of an Indigenous People's Development Plan is essential if there are any vulnerable ethnic minorities in the vicinity or region of the project. Only the Chad Cameroon Oil Pipeline Project prepared an Indigenous Development Peoples Plan (IDPP). This plan is prepared in a participatory manner with the potentially affected indigenous peoples. The two most important groups of indigenous peoples the World Bank acknowledges in Africa are the Bakola (Pygmies) in Central Africa and the San (Bushmen) in Southern Africa. The IDPP has as objective to protect the traditional lifestyle of indigenous people who have had only limited contacts with the modern world. The indigenous people have free choice if they want to be part of the modern world, which would require education, health care, income generating activities, maintain their traditional lifestyle or a mix of the two. Other projects proposed to be financed by the World Bank in the forest and biodiversity sectors also prepared IDPPs. At present it is not yet known how well this process works.

Induced Impacts

Induced impacts, such as camp followers (boom and bust towns), improved access to natural resources, can exceed direct impacts on occasion, hence must be managed. Large infrastructure projects create always excessive expectations for employment and income. If these expectations are not well managed people looking for employment and income (camp followers) settle in the project areas and construct boom and bust towns, without adequate social services and often prostitution. These are the so called induced impacts. The management of these expectations and induced impacts is part of the EA and communication process. In the Chad Cameroon Oil Pipeline Project there was one town which got established. In the other pipeline projects this phenomenon did not occur.

Another longer term induced impact is the improved access to sensitive natural resources. The EA should have an Access Management Plan which restricts improved access to sensitive natural resources after project construction is finished. Such a plan has been elaborated in the Chad Cameroon Oil Pipeline Project. The access restriction often involves the removal of a bridge or the closure of access roads. Local people want to keep this infrastructure in place. This has lead often to heated debates between local people, the government, and the World Bank.

Cumulative and Regional Impacts

Analysis of regional, cumulative and induced impacts is required. This means Cumulative (CEA) or Regional Environmental Assessments (REA) will be needed. Large infrastructure projects have often region wide cumulative and induced impacts. For this reason, the World Bank requires the preparation of a Regional EA

as part of the overall EA for the project. This REA analyses the region wide positive and negative cumulative and induced environmental and social impacts. These impacts need to be analyzed in conjunction with impacts caused by other existing, under construction or planned (10 year time frame) major development projects in the region. The REA provides a much more comprehensive environmental and social perspective than a project EA. This is a good approach.

Upstream and Downstream Impacts

Upstream and Downstream impacts and cumulative impacts are, where appropriate, essential parts of the ESA. The World Bank requires that project components not financed by the Bank, but which are indispensable for project operation need to be part of the EA. In the Chad Cameroon Oil Pipeline the Bank did not finance the oil field developments, but the oil field development was part of the EA. Similar the West African Gas Pipeline delivers gas to electric power plants in Benin, Togo and Ghana. These power plants need to comply with World Bank Environmental, Health and Safety Guidelines on New and Existing Thermo Power Plants (Pollution Prevention and Abatement Handbook, 1998). This approach provides a chance to improve the environmental management of upstream and downstream facilities. This is a good approach, but should be applied with sense.

More comprehensive EMPs

During the last 10 years the content of Environmental Management Plans (EMPs) has become more comprehensive. The project EMP is often included in the bidding documents for the contractor and serves as template for the Contractor and Operator EMPs which are operationalizations of the project EMP (see below). This works very well.

Compensatory Offsets

The project sponsor finances the protection of high biodiversity in the project area or in another protected area in the country in compensation for biodiversity impacted by the project.. Sometimes a project is located within a high biodiversity area. When this area is considered 'critical natural habitat' and the project will largely convert this area, the World Bank Group cannot finance the project. But if the project area is considered 'non-critical' natural habitat, then the part of the project area which is not affected should be brought under improved protection financed through the project or by the project sponsor and an Environmental Offset (see below) normally needs to be integrated.

Environmental Offsets

Creation of new national parks or improved protection of existing protected areas through monetary contributions from project sponsors works well to offset impacts on biodiversity related to the project. When a project affects a considerable natural

habitat area, the establishment of an Environmental Offset needs to be part of the project. Under the Chad Cameroon Oil Pipeline Project two new national parks were established and the project sponsor provided part of the funds for the preparation of the management plan. A new World Bank financed Forests and Environment Project will provide additional funds to improve the management of these two national parks. Other projects, such as dam projects, presently under preparation are planning as well the establishment of an Environmental Offset. This is a good principle and should be applied where appropriate.

Community Development Plan

Social benefits for people living along and in the neighborhood of pipelines, and gas and oil fields need a Community Development Plan. Large infrastructure projects, such as oil and gas pipelines and dams, should benefit communities living in the oil and gas field areas and who are living along the pipelines. In the past these communities only experienced the negative impacts of the project, now they should also be the beneficiaries. All the oil and gas pipelines that have been financed over the last years by the World Bank Group included a Community Development Plan, which is partly financed by the project sponsor and partly by the World Bank. The Community Development Plan includes often activities such as the connection to electricity, solar power panels, water supply, schools, health posts and the assistance with the setup of income generating activities (e.g. improved agricultural practices, assistance with drying of seaweed on Songo Songo Island).

Corporate Social Responsibility

Corporate Social Responsibility of gas and oil companies and other private project sponsors has become standard throughout the industry. Private sector sponsors increasingly see the benefits of good neighbor relationships with neighboring communities to their oil and gas fields and to their pipelines. The negative experiences in the Niger Delta have opened the eyes of many large oil and gas companies. At present most oil and gas companies provide a number of social services to the communities living close to their facilities.

HIV/Aids

HIV/Aids awareness training for workers and communities is essential in pipeline (and other) projects. HIV/AIDS has its highest prevalence rates in Africa. One of the most important ways of spreading HIV/AIDS in Africa is through truck drivers and construction camps. Large infrastructure projects involve large numbers of workers living away from their wives. In order to limit the spread of HIV/AIDS through construction workers and project truck drivers, the project sponsor will be required to carry out HIV/AIDS awareness training sessions for his workers and provide free condoms. The project sponsor will also be required to carry out HIV/AIDS awareness campaigns for the communities in the project area. This has worked well. For communities this is often the first HIV/AIDS awareness messages they receive.

Oil Spill Prevention and Response Plan

The sponsor of an Oil Pipeline Project will be required to prepare a comprehensive Oil Spill Prevention and Response Plan, including oil spills occurring on land, in rivers and at sea in the case of a marine oil pipeline and put equipment and mechanisms in place during project operation to prevent and rapidly response to oil spills when they occur.

It is also best practice that the World Bank assists the governments involved to prepare a comprehensive National Oil Spill Prevention and Response Plan, which will be able to prevent and to respond rapidly to oil spills caused by any activity or accident in the country. The preparation of Oil Spill Prevention and Response Plans is considered a good approach.

Internalization of Environmental and Social Costs

Internalization of Environmental and Social Costs into the project Economic Analysis has become Best Practice in industry leaders. The World Bank requires an economic analysis of the various project alternatives. This economic analysis is required to internalize environmental and social costs (e.g. resettlement and greenhouse gas emission costs, etc.). This approach is considered best practice.

Environmental Capacity Building

Environmental Capacity Building in Environmental and Social Management for responsible Implementing Agencies. Environmental agencies and other implementing agencies in the receiving countries are often ill equipped to monitor compliance with the receiving country's environmental and social legislation. The World Bank normally requires that the environmental and social monitoring capacity of the receiving country's agencies will be strengthened. The experience learns that this has to be done as early as possible and should preferably start before the pipeline project is approved by World Bank Board. If done in time the environmental and social management capacity building is beneficial for the receiving country and for a smoother implementation of the project.

Decommissioning Plan

The EA of every large infrastructure project financed by the World Bank needs to contain the principles of an environmentally sound decommissioning plan. This plan needs to be fully prepared a few years before decommissioning would actually take place and take into account the best applicable technology at that time. This approach is considered a good approach.

Control of Contractors

Operationalized Environmental Management Plans (EMPs) must specifically include rules for Contractors and Operators, which are based on the project EMP. The project EMP is the template for the Operationalized Contractor and Operator's EMPs. The Contractor and Operator EMPs are much more detailed on nitty gritty of environmental management during construction and operation. The actions to be carried out or precautions to be taken are often reflected on Environmental Alignment Sheets. The Contractor EMP needs to be prepared and approved before construction starts. Often the approach of Method Statements by subject is used, which describes in detail the environmental management actions being undertaken during the construction of a specific project component, e.g. a river crossing: will horizontal drilling be undertake or trenching during the dry season. The contractor needs to establish its own Safety, Health and Environmental (SHE) management unit. This approach has worked well in several projects.

Environmental Management Systems

The World Bank encourages the adoption of Environmental Policies and Management Systems for Private Project Sponsors, Contractors and Operators (ISO 14001 and other comparable systems). The project sponsor, the contractor and operator increasingly adopt their own environmental policies and establish their own environmental management system (EMS), which is often in compliance with ISO 14001. The adoption of an EMS indicates a commitment of top management to take environmental management serious and these companies seem to perform better from an environmental management point of view.

Environmental Training for Workers

Training of workers in Environmental Awareness and Management (see next presentation) improves implementation of the EMP. Environmental management awareness and training programs executed by companies during the construction phase of large infrastructure projects seem to result in a better implementation of the EMP. Commitment to these awareness and training programs seems to be proportionally to the commitment of senior management to environmental management.

Health and Safety Management Plan

World Bank Safeguard Policies and Environmental, Health and Safety Guidelines require the proponent to address health and safety issues according to internationally acceptable standards. These aspects are often addressed through the preparation of a Health and Safety Management Plan.

Waste Management Plan

The last 10 years has seen an improvement and increased thoroughness in waste management during construction and operation. The experience shows that the adopted waste management systems should be put in place as early as possible, since a number of pipeline projects were not able to manage their construction waste adequately during the first construction year, because the sanitary landfill was not yet finished or the incinerator had not yet arrived

The EMP, RAP and Environmental, Health and Safety Guidelines and other Safeguard Documents are part of the contractual Legal Documents for the loan.

Legal Covenants

Bank and borrower. The last years all Safeguard Documents have been included in the Legal Documents, which are signed by the project sponsor and the World Bank Group. The implementation of these Safeguard Documents has become a legal obligation.

Environmental and Social Supervision and Audits

Strict Environmental and Social Supervision by Private Project Sponsors, Contractor and Operator, World Bank environmental and social staff and independent audits is essential to ensure that the EMP is implemented. Strict environmental and social supervision during the construction and operation phases demonstrated that this improves the quality of the implementation of the EMPs. This works well.

Independent Environmental and Social Audits during construction and operation are normally needed in big infrastructure projects. Independent environmental and social auditing during construction and operation is increasingly being applied and is working well. Environmental and social auditing reports are often made public on a regular basis, which is an incentive for companies to comply.

Monitoring

The concept of monitoring based on verifiable performance indicators has become best practice. The monitoring concept of the implementation of the EMP and during operation has been strengthened over the last years through the use of verifiable performance indicators. If a World Bank Group-assisted pipeline is used in the future by parties who were not members of the World Bank/proponent corporations, the new members need to comply with similar Environmental and Social Standards for future users of World Bank financed oil and gas pipelines as World Bank Safeguard Policies and Environmental, Health and Safety Guidelines. Pipelines are over time often used by other companies than the one who constructed and financed the pipeline. The World Bank has in some of the financed pipeline projects made an agreement which guarantees that other companies who will use the pipeline to

transport their oil or gas, should use similar environmental and social standards for the development and management of their oil and gas fields as the main project.

Extractive Industries Review

The World Bank's point of view on Revenue Management and the use of funds for poverty reduction was recommended by the Extractive Industry Review. The World Bank did not adopt all the recommendations of the Extractive Industries Review. The main point expressed by the Bank's Board was that the Bank can be involved in extractive industries only if the funds received by the country are being used for poverty reduction.

Revenue Management

Investment of Revenues in areas where the gas and oil are coming from is becoming best practice. This is fostered by the Regional Development Plan and is used to allocate revenue for poverty alleviation. The Chadian Parliament adopted under pressure of the World Bank a Revenue Management Plan. This means that the revenues earned from the oil are being controlled by an oversight committee, which includes members of parliament, civil society and religious groups. It was agreed that the oil revenues would be used for education, health and infrastructure development. Five percent (5%) of the oil revenue would be reinvested in the oil producing area. For this purpose a Regional Development Plan is under preparation in order to provide access to development funds for communities in the oil producing area. The establishment of a revenue management plan will not be possible in all cases, but the Bank should agree with the receiving country that the oil or gas revenues would be used for poverty alleviation purposes before the project is presented to the Board.

Human Rights

Such issues include the right to Freedom of Speech against the project and the rights of communities to receive a share of the project royalties. Human Rights issues are increasingly being tabled during the Environmental Assessment process.

Conclusions

The Environmental Assessment process for large infrastructure projects has become much more mature than 10 years ago. Implementation of the EMP has become more effective in protecting the environment and taking care of sensitive social issues, especially resettlement. Big corporations are increasingly doing a better job in the preparation of EA/EMPs and in their implementation and are becoming more socially and environmentally responsible in their operations. There is no room for complacency, there is much left still to achieve. But the process is moving well in the right direction.

Case Study 3

The Sasol Natural Gas Project

Ensuring Environmental Quality During Project Execution

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About the Author

Bianca Steinhardt is a chemical engineer working for Sasol Technology (Pty) Limited, a subsidiary of Sasol Limited in South Africa, where she has been working since January 2001. She completed her Chemical Engineering degree at the University of Pretoria, South Africa, as well as her honours degree in Environmental Engineering. She is a member of the South African Institute of Chemical Engineers. Bianca joined the Natural Gas Project during the execution phase as a project environmental co-ordinator in January 2002, responsible for managing the various environmental role players and their relation to the project.

Abstract

The Sasol Natural Gas Project consists of eight individual projects and extends over two countries (Mozambique and South Africa). This project consists of drilling and exploring the natural gas fields in Mozambique, processing the natural gas in Mozambique, transporting the natural gas via a pipeline from Mozambique to South Africa and upgrading and converting the South African facilities.

Each of these projects underwent an Environmental Impact Assessment (EIA) which was conducted in accordance with the specific country's EIA requirements. Once the studies were completed, the challenge was in ensuring that during construction the contractor adhered to the Environmental Management Plans drawn up during the EIA. This paper focuses on the lessons learnt during the execution phase of the Sasol Natural Gas Project.

Organisational structures were put in place to ensure high quality outcomes during the construction of the project. The organisational structures included the environmental team, the project team and the authorities. The interaction of these critical stakeholders is also discussed.

Over and above the EIA, a Regional Environmental and Social Assessment (RESA) was conducted in order to comply with the World Bank commitments. The integration of this assessment with the authorities and the business owners is discussed.

Introduction

The Sasol group of companies comprises of diversified fuel, chemical and related manufacturing and marketing operations. In South Africa, Sasol supports these operations by mining coal and converting it into synthetic fuels and chemicals through proprietary Fischer-Tropsch technologies (sasol.com).

Gas is an under-utilised energy resource in Southern Africa. South Africa's gas consumption forms only 2% compared with the international average of between 15 and 20% of energy usage. The Sasol Natural Gas Project was an ambitious venture that involved the extraction, processing and effective utilisation of the natural gas reserves in the Inhambane Province of Mozambique (O'Beirne et al. 2003).

A secure supply of natural gas provides Sasol with greater feedstock flexibility, allowing Sasol to support the anticipated growth in the pipeline gas industry in South Africa as well as initiating and supporting new gas-based ventures.

During the first quarter of 2004, Sasol began to supply Mozambican natural gas both to customers and to Sasol's petrochemical plants in South Africa.

Each of the components of the Sasol Natural Gas Project underwent an Environmental Impact Assessment (EIA) in which an Environmental Management Plan (EMP) was compiled. Once the studies were completed, the challenge was in ensuring that during construction the contractor adheres to the Environmental Management Plans drawn up during the EIA. This paper focuses on the lessons learnt on the Sasol Natural Gas Project during the execution phase.

Background

Sasol

The Sasol group of companies comprises of diversified fuel, chemical and related manufacturing and marketing operations. Details are available at: Sasol website, <http://www.sasol.com>. In South Africa, Sasol supports these operations by mining coal and converting it into synthetic fuels and chemicals through proprietary Fischer-Tropsch technologies. Sasol also has chemical manufacturing and marketing operations in Europe, Asia and the Americas. Sasol's larger chemical portfolios include polymers, solvents, olefins and surfactants and their intermediates, waxes, phenolics and nitrogenous products.

The group produces crude oil offshore Gabon, refines crude oil into liquid fuels in South Africa and retails liquid fuels and lubricants through a growing network of Sasol retail convenience centres and Exel service stations. During the first quarter of 2004, Sasol began to supply Mozambican natural gas both to customers and to Sasol's petrochemical plants in South Africa. In Qatar and Nigeria two gas-to-liquids fuel joint ventures are being developed which will incorporate the proprietary Sasol Slurry Phase Distillate™ process.

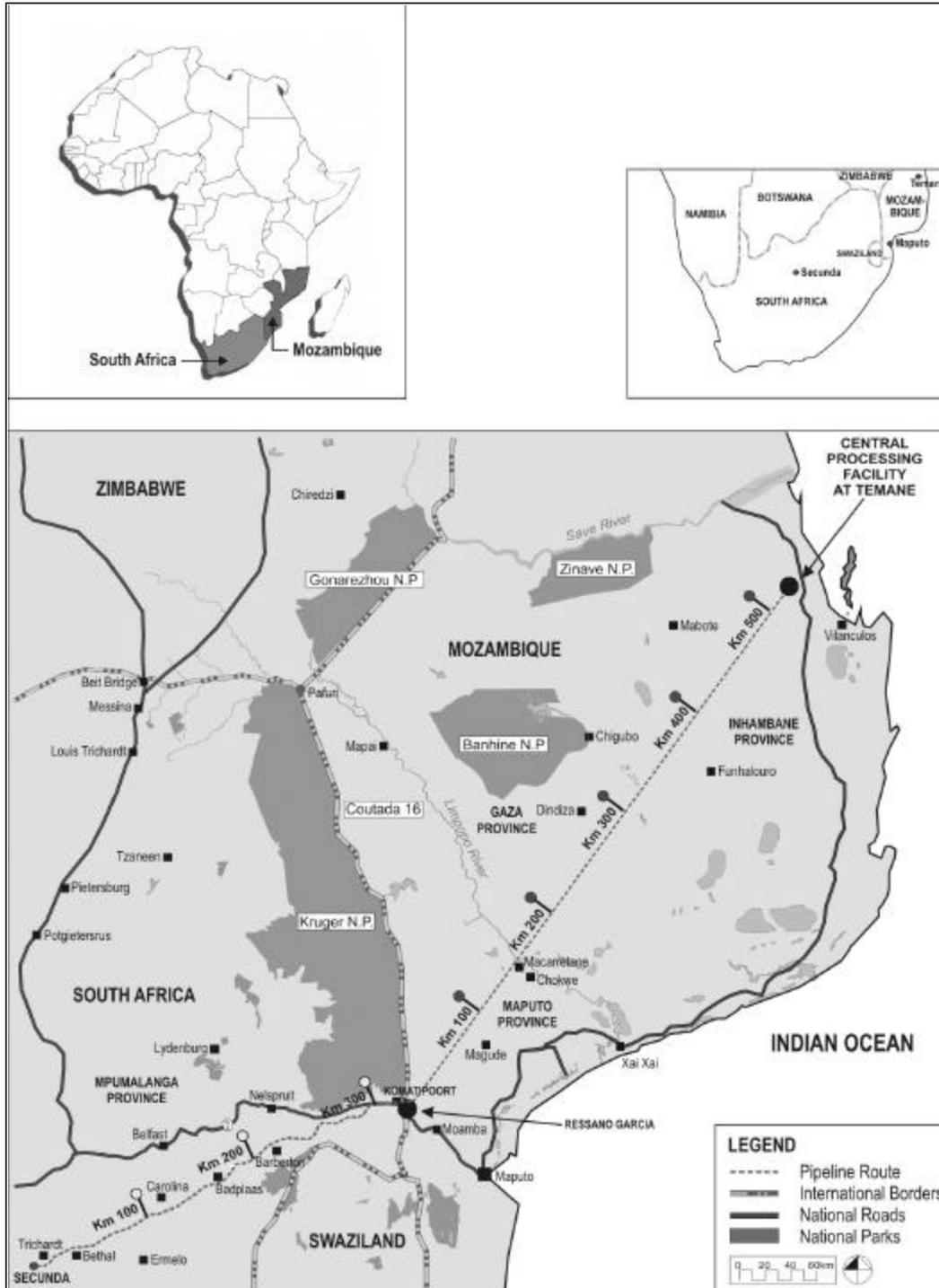
Sasol Technology is the business partner in the fields of research and development, technology and innovation, engineering and project management of *inter alia*, capital projects. The company fulfils a strategic role by supporting Sasol businesses worldwide to pursue growth and continuous improvement opportunities and to promote competitive advantage through appropriate technology solutions and services.

Natural Gas Project

The Sasol Natural Gas Project was a venture that involved the extraction, processing and effective utilisation of the natural gas reserves in the Inhambane Province of Mozambique. The Project included the further exploration and development of the gas fields, the establishment of a central processing facility at Temane and the construction of an 865 km cross-border pipeline between Temane in Mozambique and Secunda in South Africa (Figure 18). The project also entails the conversion of the Sasol network in South Africa, the conversion of the Sasolburg facility to process

gas as its hydrocarbon feedstock, and the conversion of Sasol's Secunda facility to process gas as a supplementary feedstock.

Figure 18: Sasol Natural Gas Project Locality Map



Natural Gas Pipeline

The 865 km pipeline stretches from Temane in Mozambique to Secunda in South Africa. 520 km of the pipeline lies within Mozambique and 345 km lies in South Africa. The construction of a pipeline entailed seven main steps: route surveying and marking, vegetation clearing, trench excavation, on-site pipe welding, pipe laying, trench backfilling, and compacting and rehabilitation.

Sasol appointed a multinational consortium of contractors to undertake the engineering, design, procurement, construction and commissioning of the pipeline.

The pipeline traverses the hinterland of Southern Mozambique, most of which has never been intensively settled. Seven vegetation types have been affected in the study area ranging from lowland grassland to Miombo woodland. The land has been populated with subsistence farmers who have employed traditional slash and burn methods of field clearing and crop rotation. The pipeline crosses 4 main rivers and a few perennial streams.

In South Africa the pipeline crosses 12 main rivers, a large number of small streams and several wetlands. The land uses in the South Africa section range from mixed farming, to grain, pastures and livestock, to forestation, grazing, game farming and eco-tourism. In the alluvial soils of the Lower Escarpment, and in the Lowveld Plains, high agricultural potential exists.

Environmental Impact Assessment

In order to comply with the regulatory requirements in Mozambique and South Africa and in following other adopted policies, guidelines and standards, reputable independent environmental consultants were retained to perform the Environmental Impact Assessments (EIAs) for the components of the Natural Gas Project (NGP).

A total of eight separate EIAs were performed. This separation was deemed necessary to accommodate the geographic spread of the project activities across the national and provincial borders, to facilitate effective project management and to meet the relevant legal requirements in this regard.

The EIAs were executed in compliance with and taking cognisance of the legal requirements, policies, standards and guidelines, to ensure not only legal compliance, but adherence to international best practices.

The EIA objectives for the pipeline were as follows:

- To identify and evaluate the potential impacts of the construction and operation of the pipeline

- To ensure that the activities comply with the regulations and policies regarding environmental impact studies and environmental protection
- To identify means of mitigating the negative impacts and enhancing positive impacts associated with the pipeline as a basis for the preparation of an Environmental Management Plan (EMP)

Environmental Management Plan

Following the completion of the EIA report is the Environmental Management Plan (EMP). For the natural gas pipeline a design EMP, a construction EMP and an operations EMP were compiled for each portion of the pipeline.

The purpose of the construction EMP is to set environmental standards for the construction of the gas pipeline to the contractor based on the findings during the EIA. The objective of the environmental standards is to minimise the risk of damaging or impairing:

- (a) the health or well being of the public,
- (b) land use and capability and
- (c) natural ecosystems and environmental quality.

The contractor was legally required to comply with the standards as set out in the construction EMP. The successful implementation of the construction EMP depended on the practical and realistic requirements and recommendations as prescribed in the EMP.

For the pipeline project it was found that the major environmental damage occurred during the construction phase. However, only once the pipeline construction and rehabilitation was completed could an assessment be done on the environment to identify areas where long term environmental damage occurred. This was realised early in the project and therefore the construction was closely monitored by Sasol and other environmental role players as described in the following sections. The EMPs for the gas pipeline are available at: w3.sasol.com/natural_gas/.

Appointing the Contractor During the contractor bidding of the Natural Gas pipeline project, it was seen as crucial that an environmental representative formed part of the project team. The environmental representative had to ensure that the environmental aspects were clear and understood by the contractor especially the rehabilitation requirements. Pipeline contractors understand the engineering, pipe laying, welding etc. of the pipeline construction very well; however the environmental matters and rehabilitation was sometimes thought to be unnecessary.

A lesson learnt from this pipeline is that in future projects, contractors will be asked to budget individually for environmental goals and rehabilitation in their bid. By making the contractor bid individually for environmental targets, it creates awareness amongst the contractors that environmental matters are not to be taken lightly. From this bid the environmental representative can then have an idea of how realistic the contractors bid was in terms of environmental matters.

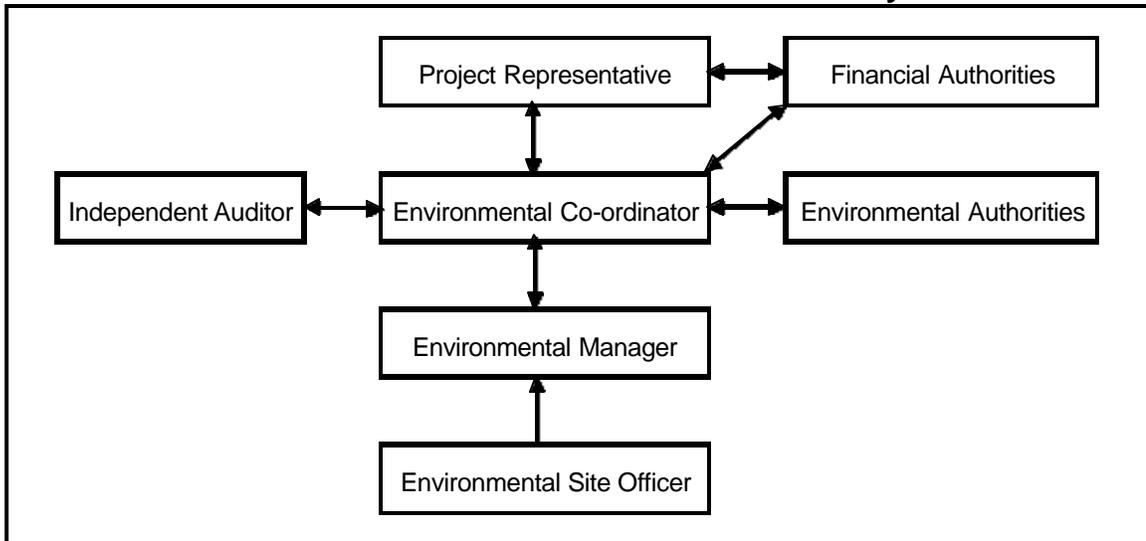
From the environmental portion of the bid the environmental representative can evaluate the contractors better. The opinion of the environmental representative is also taken into account when choosing the final contractor.

Environmental Role Players

The following environmental parties were involved in enforcing the construction EMP in the pipeline project. The schematic below indicates the environmental role player's communication channels

- Independent environmental monitoring team,
- Independent environmental auditors,
- Environmental authorities including the financial authorities,
- Environmental co-ordinator,
- Project manager / representative.

Communication Channels For The Environmental Role Players



Environmental Site Officer, Environmental Manager and Environmental Co-ordinator The independent environmental monitoring team originated from the independent environmental consultant who compiled the EIA and EMP. The environmental monitoring team was monitoring the activities during construction. The team consisted of the Environmental Site Officer (ESO) and the Environmental Manager, overseeing the environmental site officer. This site officer was on-site monitoring the daily activities during construction. The environmental co-ordinator fulfilled the role of the project environmental representative on behalf of the business i.e. Sasol Technology.

The ESO detected deviations from the EMP and would communicate these deviations to the EM and the environmental co-ordinator. A corrective action would

be recommended by the ESO and EM depending on the deviation. The environmental co-ordinator would then inform the project team and the contractor. The corrective action would then be implemented and the ESO would follow up. Ultimately the ESO was responsible to sign off work that was complete; therefore these requirements had to be met. The EM interfaced between the ESO, the environmental co-ordinator, the project manager and the contractor. Preferably the ESO also had direct communication with the project team. During the project execution / construction phase the ESO would compile a bi-weekly report. These reports were submitted to the relevant authorities and the contractors. The EM would also compile monthly reports. These reports were also submitted to the relevant authorities and to the contractor.

To ensure that the contractor does correct the non-conformance, an action list was drawn up from the ESO reports, EM reports and independent audit reports. The environmental co-ordinator was responsible for consolidating this information. Biweekly meetings with the contractor were arranged to discuss the action list. The contractors were therefore constantly reminded of the EMP requirements and of the non-conformances.

Environmental Auditor The South African and Mozambican Environmental Authorities required independent quarterly monitoring during the construction phase of the pipeline project.

Control measures on the project needed to be in place in order to track compliance to the construction EMP. On the gas pipeline an independent auditor was appointed to audit the contractor and project team against the construction EMP. The audits occurred on a three monthly basis and once when rehabilitation was complete. Once the audit was complete, corrective actions were discussed with the relevant environmental parties and were implemented. The audit report was submitted to the relevant environmental authorities and to the financial authorities.

Feedback from the auditors was given to the project team and the authorities via the environmental co-ordinator. The corrective actions were also communicated, which ensures that the problems identified on site are being taken care of and communicated effectively. The corrective actions would then be monitored by the independent environmental monitoring team. They would then provide further feedback to the environmental co-ordinator and the auditor on the next audit. This created quality improvement on a continuous basis.

This non-conformance / corrective action cycle could also lead to communication failures; hence it was important to ensure good communication and relationships between all the parties involved.

Environmental Authority Task Teams During the construction phase of the pipeline, Environmental Task Teams were set up. These teams would meet once a month. During this meeting the ESO reports, EM reports and auditor reports, as well as the

construction progress would be discussed. Any other relevant environmental issues would also be discussed between the parties.

The Environmental Mozambique Government Team consisted of members of the department of Environmental Coordination, Water, Hydrocarbon, Forestry and other relevant government parties. The Environmental South African Government Team consisted of members of Environmental National Department, Environmental Provincial Department, Water Affairs, Irrigation, Heritage, and other relevant government representatives. In both these meetings the environmental co-ordinator, project manager, contractor and the EM or ESO were present.

These meetings ensured good communications between the authorities and the project team. The project team was open and honest about unforeseen situations on site, which resulted in trust and a good relationship with the authorities. These meetings were so successful that it was decided to continue them during the operational phase of the Sasol Natural Gas Project in Mozambique, although less frequently. Other task teams, incorporating the Government, that were also implemented for Mozambique were the Social Task Team and the Project Liaison Task Team.

The Project Representative The project manager formed an integral part of the team. The project manager was responsible for the interaction between the contractor and the environmental team, ensuring that both parties' interests were addressed, while still keeping the project's interest at heart.

Sasol Technology completes projects on behalf of the Sasol operating partner. In these cases the project managers have to ensure that the operating partner's requests are implemented. The operational partner must also be aware of the latest major developments on the project.

Operational Partner Once the project execution started coming to an end, the operating partner had to start taking responsibility for the project. The operational team was made part of the project team, thereby ensuring their involvement and seamless handover. Involving the Safety, Health Environment and Risk person of the operating partner also ensured awareness of problem areas. During the last phases of the project the operational partner was made aware of critical environmental areas on the pipeline.

Regional and Social Environmental Assessment

In December 2002, the World Bank Mission held discussions with Sasol to determine whether there were any social and environmental information gaps to be closed before finalising the application for World Bank financing. The mission prepared a document the "Safeguard Recommendations" in which they required the preparation of a Regional and Social Environmental Assessment (RESA).

The purpose of the RESA was to look beyond the immediate zone of direct social and economic impacts of the project and to address induced and cumulative impacts in the geographic area affected by the eight project components. A number of these impacts had already been identified by the independent project-specific EIAs but had not been assessed, either cumulatively or in detail.

The regional impacts identified in Mozambique were:

Effects on natural resources

- Accelerated hardwood exploitation
- Accelerated wildlife and other natural resource exploitation
- Habitat loss and ancillary effects due to increases in settlement
- Pollution effects caused by discharge of effluent into the Govuro River system
- Socio-economic effects
- Economic growth opportunities
- Combined effects of the NGP and other development on existing and institutional capacity in Southern Mozambique
- Impacts on tourism in and around Vilanculos
- Impacts on agricultural development around the Temane and Pande production areas
- Impacts on spatial development initiatives in Southern Mozambique
- Impacts on safety restriction zones around the pipelines on settlement
- Impact of HIV/Aids

The regional impacts identified in South Africa were:

Effects on natural resources in SA

- Effects on air quality
- Effects on consumption of natural resources
- Impacts on job creation

Possible impacts from the gas pipeline on policies in Mozambique and South Africa were also identified. Please refer to “Natural Gas Project, Regional Environmental and Social Assessment” for further information (Sasol.com).

In future it will be necessary for Sasol to assimilate the RESA commitments into a series of responsibilities and specific actions governed by a recognised Environmental Management System. This applies principally to the operational phase of the project. Sasol is already implementing commitments made in each of the project specific EMP for the construction of the natural gas pipeline. An EMS for the operational phase of the project will assist the company to structure the roles and responsibilities for social and environmental management of the pipeline and the interrelationships between the various task teams, with social and environmental mandates, that will be operating during the life of the project.

This pipeline will result in a number of positive and negative regional impacts. Where the management of these impacts is clearly Sasol's responsibility, the actions that are needed and the relevant recommendations can be implemented without further investigation. There are, however, other recommendations in the RESA which necessitate action by other parties, in particular the Government of Mozambique and the World Bank (Hanks & Johnson 2003).

Conclusion

Key success factors for the Sasol Natural Gas Project from an environmental perspective were, first, continuous, meaningful interaction between the relevant role players, including the environmental management team and auditors, project implementation teams, operational teams, authorities and contractors. Second, control mechanisms that were put into place in order to identify and effectively follow up on outstanding environmental issues. Third, a smooth handover between project execution and operations with regards to outstanding and continuous environmental issues. Finally, the Regional Environmental and Social Assessment will ensure that the regional negative impacts of the Natural Gas Project are negated over the long term. Overall, the project was a success from an environmental perspective due to carefully planned systems and effective communication.

Case Study 4

The West African Gas Pipeline (WAGP)

A Critical Assessment

C. P. Wolf

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About the Author:

C. P. Wolf is Director of the Social Impact Assessment Center in New York City. He has written, edited, lectured, and consulted widely in the field of impact assessment, and is co-organizer and past president of the International Association for Impact Assessment (IAIA). He lived in Nigeria between 1982–1984. Since 2000 he has been been co-director of the Niger Delta Project in collaboration with IAIA-Nigeria. His Ijaw chieftancy title is "seeker of grassroot development in the Niger Delta."

Introduction

This paper was intended as a response to two presentations by ICF consultants who were involved in preparing the regional and country EIAs for the project sponsor, the West African Gas Pipeline Company (WAPCo). The abstracts they submitted appear on the IAIA web site and are appended to this paper. Apparently they did not receive the necessary clearance from project management and do not appear in the abstracts volume. The intended presenter was to be a consultant for an (unnamed) International Financial Institution who was personally involved in their project review. He felt it advisable to withdraw however because of the sensitivity of the subject.

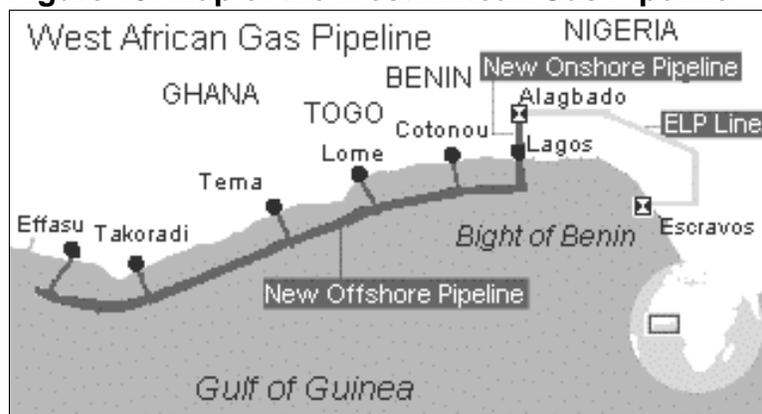
The regrettable absence of these colleagues is indicative of some institutional barriers to professional development and to development in the field of impact assessment generally. It does however serve as a fitting introduction to the present paper, and to challenges facing the field. I thank Robert Goodland for his leadership in organizing these sessions and his contributions in the advancing the field of impact assessment.

Overview⁸

First proposed by the Economic Community of West African States (ECOWAS) in 1982, the West African Gas Pipeline (WAGP) is planned to extend 678 km from Alagbado, north of Lagos, to Takoradi, Ghana. The 18 to 20 inches diameter pipes will transport natural gas originating in the Niger Delta, an area of chronic environmental degradation and social unrest.

The pipeline is to be laid mostly offshore on the seabed in 26 to 70 meter water depths at an approximate distance of 15 to 20 kilometers from the coasts of Nigeria, Benin, Togo, and Ghana (see Figure 19) at a cost exceeding USD\$1 billion for construction and energy infrastructure development in the four countries. The projected schedule for operational start-up is the first quarter of 2006.

Figure 19: Map of the West African Gas Pipeline



Source: Energy Information Agency 2003

The proponent is the West African Gas Pipeline Company (WAPCo), an industry consortium led by ChevronTexaco with the support of the World Bank and other funders. The purpose is to strengthen economic integration in the region by meeting common energy needs and creating markets to absorb this abundant resource, and curtail the wasteful and harmful practice of flaring associated gas.

The purpose of this paper is to review the assessment of pipeline impacts, both in the ECOWAS region and the Niger Delta. While upstream (construction and operation) impacts are the primary focus, attention will also be given to downstream (marketing and distribution) impacts. The paper will address issues of security of supply, regional economic and political integration, resource control, the implementation and effectiveness of mitigation measures, and alternatives for the reduction of flaring, among others. The role of international review panels—including participation by the International Association for impact Assessment—will be considered in regard to this and similar projects.

Issues Assessment

As recognized in the 1978 U.S. Council on Environmental Quality amendments to National Environmental Policy Act regulations, the purpose of environmental impact assessment (EIA) is to identify and analyze salient issues associated with a proposed decision and action. The appropriate criteria for EIA review therefore are the extent to which the assessment provides a sufficient basis for policy selection, program development, and project implementation and management. For that reason, the approach taken in this paper will be “issues-oriented.” The issues in question are considered in regard to their substantive, methodological, and institutional dimensions.

Project Justification

A logical starting point in this process is the project justification, consisting of the project objectives and benefits to be derived from its implementation. The main objective is regional integration, in terms of economic development and political unification. The former, according to WAPCo, will “Enable customers in Benin, Ghana and Togo to access Nigeria's immense resources of natural gas as fuel for power generation and industrial development.” The anticipated benefits accruing from project development will

- Provide a source of secure, clean and reliable energy for West Africa.
- Provide a foundation for regional economic growth and development.
- Prove that economic integration can work for all.

Host communities as well as countries are intended beneficiaries.⁹

To involve and benefit local communities, WAPCo has made a commitment to purchase 15 percent of all goods and services required during construction from local businesses. This “local content” value for onshore construction procurement in Nigeria is estimated at \$39.6 million.

Employment income – perhaps the largest contribution to socioeconomic benefits – will be generated in many surrounding communities as local jobs are created both temporarily during construction and permanently throughout the operation and maintenance of the project. Local workers will be hired by contractors for several aspects of construction. In general, increased employment levels are expected to boost personal income and strengthen the local economy. Moreover, payments for local contract work will be substantial, generating direct, indirect, and induced benefits for the surrounding communities.

Community Development and Health and Safety Benefits will occur through WAGP’s planned Community Development Program and improved infrastructure. This program will target education and healthcare support during the construction period. Participatory needs assessments have identified future opportunities in terms of income generation and capacity building that can be incorporated into later year operations.

Secondary benefits will be realized through new industrial development and the associated creation of employment opportunities and income facilitated by the availability of reliable energy transported through WAGP. Industrial development may also spur economic and land development, particularly in areas around major towns and cities. Local businesses such as food markets and household goods stores may see secondary benefits resulting from spending of wages earned in jobs directly and indirectly created by the project.

Flare Suppression

Increased natural gas utilization is closely related to economic development goals and carries with it environmental benefits as well. Its potential contribution to the suppression of gas associated with oil production and now being flared—an important component of greenhouse gas emissions—is widely proclaimed. Indeed, “A feasibility report, prepared for the World Bank in the early 1990's, deemed that a pipeline to transport Nigerian natural gas to Benin, Togo and Ghana was commercially viable. The report's conclusion was based on the U.S.-firm Chevron's associated gas reserves in Nigeria's Escravos region”¹⁰

They go on to note, “The major positive environmental impact of WAGP will be the development and use of gas currently flared in Nigeria. The significance of this potential impact will depend on how much associated gas is gathered and distributed through WAGP. At present, only non-associated gas is produced for distributed through the Escravos-Lagos Pipeline (ELP).

Recent supply interruptions to the Egbin power plant and the National Electric Power Authority (NEPA) grid have caused a 200 MW loss in output and rolling blackouts nationwide. The plant is expecting a complete shut down following a cut in gas supply from the Nigerian Gas Company (NGS), a subsidiary of the Nigeria National Petroleum Corporation (NNPC), a WAPCo partner¹¹ the cause of which seems to be the failure of NEPA to pay arrears, although the two agencies ostensibly work for the same government.

Nor is confidence in the security of supply from this source increased by frequent pipeline pilfering and sabotage throughout the area. The Escravos-Warri oil pipeline was recommissioned lately after a two-year hiatus caused by restless Ugborodo youths. ChevronTexaco claim to have detected a fresh plot by the militants to disrupt pipeline operations.¹²

If Chevron's 1997 Escravos Gas Project is extended to other fields for transmission through WAGP, that would imply further pipeline construction that should be included in the EIA's terms of reference. What are the existing plans for diverting flared gas, and at what cost relative to alternatives such as reinjection to maintain field pressure? In any case, it would appear that a coordinated regional energy development should be devised and disseminated, starting with the Niger Delta subregion.¹³ In fact, gas masterplanning seems to have been required on a company-by-company basis since 1999.

There is already a commitment on the part of government and industry to suppress flaring by 2008, presumably without recourse to WAGP, which was originally scheduled to commence operations in 2004. The Final Investment Decision was not made until December 2004. At the time of this writing, construction has yet to commence. Because of delays in the project schedule, there is no possibility of WAGP playing a significant role in fulfilling the goal of "flares out" by 2008.

Tight development schedules are likely to preclude the effective mobilization and training of local hire labor, thus compromising the employment generation, projected at 60,000 jobs, which in any case would be temporary and largely unskilled. Similarly with regard to the procurement of "local content" goods and services. NNPC Managing Director Funsho Kupolokun has recently described the oil sector as "an enclave economy," with weak upstream and downstream linkages¹⁴ but with considerable leakages in revenue streams.

The question remains whether the project as conceived, constructed, and managed is well-calculated to reaching the stated objectives and conferring the intended benefits. Certainly it has passed the scrutiny of major international financial institutions (the Multilateral Investment Guarantee Agency), bilateral donors (USAID), and private interests in energy development and reinvestment (Overseas Private Investment Corporation). Nevertheless, there are strong objections voiced in some quarters of

the NGO community and cautious reservations harbored among some impact assessment professionals. Samplings of both are found below.

Naturally the question cannot be answered in this paper, but it can be engaged to the benefit of all the parties at interest and risk, and to the professional community of impact assessment. We will briefly explore some sides to the issues and entertain a process development whereby WAGP—or any proposed action—can be subjected to sustained, critical examination.

“Comprehensive and Integrated Assessment”

A large share of WAGP criticism may be ascribed to its partiality, meaning both the scope of study and the advocacy of its sponsors. Concern here focuses on the former, in reference to EIA terms of reference which apparently were construed to emphasize “upstream” physical development (pipeline construction) to the relative neglect of

- “Downstream” marketing and distribution.
- Regional and national energy policies and plans,
- “Back-end” provisions for mitigation measures and license conditioning and compliance, and
- Legitimate interests of communities in the producing area—the Niger Delta.

As few examples must suffice. With regard to the “downstream” side of project development, all countries in the region are struggling with the issue of fuel subsidies—mainly for petrol, cooking gas, kerosene—which has been a continuing source of labor unrest and social disruption, particularly in Nigeria. At the same time, the governments are under international pressure to move towards privatization, which would imply leaving energy prices to the play of market forces rather than public subsidies. As in the case of Egbin power plant mentioned above, production capacity does not guarantee distributive efficiency and equity.

Because the WAGP EIA is a two-tier process, regional and country, it is not unreasonable that issues of energy policy be addressed at both levels, leading to a broader formulation of project alternatives, which in the case of WAGP are confined to alternative routes and transportation modes (pipelines vs. LNG carriers). It is precisely on the regional level that matters of policy impact assessment be addressed. Methodological guidance on this point is sparse (Environment Department 1996), as is applied experience.

As to provisions for implementation of proposed mitigation measures and their monitoring and evaluation, the World Bank¹⁵ note:

A set of general mitigation principles were applied to address the linear nature of the design and construction of the onshore pipeline installation. Examples include: avoiding sensitive receptors in site and route design,

avoid vegetation losses and/or reinstate vegetation, minimize the footprint size in site and route design, conserve and reuse topsoil, and develop and maintain alignment sheets that reduce impacts by making all relevant operational control information available by operation and geographic location.

As to the application of these principles, the Final EIA report¹⁶ states:

When potential impacts were initially judged to be high or moderate even with the implementation of planned mitigation measures, additional measures were recommended to reduce the anticipated impacts to lower levels. In assessing socioeconomic impacts, it was assumed that the Resettlement Action Plan (RAP) would be properly implemented.

The operative phrase is: “it was assumed that the Resettlement Action Plan (RAP) would be properly implemented.” Justification for such an assumption is not offered; experience in the region would indicate quite otherwise. The International Finance Corporation’s 2002 handbook on RAPs might be consulted in this connection.

In any case, assumptions can be tested against operational experience. USAID have offered to provide support for such monitoring, and have assisted in capacity building generally, but the successful outcome of that cannot be prejudged. Clearly there are serious gaps and lacks in the institutional infrastructure that can be detected and corrected.

In these and similar respects, voluminous as they are the EIA reports (one regional and four country) may be considered deficient in regard to “comprehensive and integrated assessment”—comprehensive in their coverage of assessment levels, scales, schedules, and sectors (see Figure 20) and integrated across disciplines, methods, and perspectives.

Figure 20: Assessment Levels, Scales, Schedules, and Sectors

Levels	Scales	Schedules	Sectors
Policy	Global	Far-Future	Multisectoral
Program	National	Near-Future	Environmental
Project	Regional	Baseline	Social
Product/Process	Local	History	Economic

For example, “becoming comprehensive” may mean raising the assessment level to the consideration of energy policy alternatives or broadening the assessment scale to global dimensions. A “full” assessment would include consideration of such factors as:

- The full range of policy, program, and project alternatives
- The full development cycle
- The full range of impact categories and dimensions
- The full range of interested and affected parties

According to the Energy Information Agency, “in February 2003, the four WAGP nations signed a 20-year agreement that “provides for a comprehensive legal, fiscal and regulatory framework, as well as a single authority for the implementation of the project.”¹⁷ Except for WAPCo, it is unclear what this authority might be and to whom it is accountable. Details of that and the entire framework should be available in the *Regional Environmental Management Plan* posted on the WAPCo web site (which however cannot be read).

Summary

From this brief review of WAGP project experience to date, it is apparent that some fundamental questions remain for clarification and resolution. The NGO and impact assessment communities have important contributions to answering these concerns especially in regard to institutional and capacity development.

Annex: ICF Abstracts Submitted to IAIA

Environmental Impact Assessment as a Tool in Health, Safety and Environmental Management Planning: The West Africa Gas Pipeline Project: Will Gibson WGibson@icfconsulting.com

Environmental Impact Assessment as a Tool in Health, Safety and Environmental Management Planning: the West Africa Gas Pipeline Project By John Cornwell, Health and Safety Advisor, ChevronTexaco, Kathy Thrun, ICF, Walt Palmer, ICF, and Will Gibson, ICF Health, safety and environmental systems are an essential management tool for ensuring compliance with regulations pertaining to health, safety and the environment, for facilitating good management practice with Health, Safety and Environmental issues and for improving project performance. Private-sector companies from the developed world, such as energy companies, are using HSEMS in the projects they undertake in the developing world not only to attain those objectives but also to demonstrate the attainment of those objectives to stakeholders such as the local communities and NGOs, both local and external. This paper relates how West African Gas Pipeline Company (WAPCo) proposes to construct the West African Gas pipeline (WAGP) to deliver natural gas from Nigeria to industrial customers in Benin, Ghana, and Togo. WAGP's objective to deliver a reliable source of energy to these three countries will enhance the regional environment, accelerate regional integration, economic growth, and stability, and reduce open flaring of natural gas in Nigeria. This paper outlines the WAGP ESA and describes how one of its most important elements, the WAGP ESA Management Plan, relies upon the environmental and social impact assessments undertaken by ICF Consulting and its partners in West Africa, namely how, for each of the identified potential impacts, the ESA provides relevant regulatory requirements and WAPCo operational controls, and outlines the monitoring approach /schedule required to comply with those requirements and operational controls, and measures to mitigate those negative impacts. Energy development operations can profit from a wide range of benefits that result from ESA implementation, such as operational savings, reduced occupational safety incidents and increased community confidence.

Improving EIA Quality and Investing in Capacity Building: the West African Gas Pipeline Project as a Model: Johanna Kollar, jkollar@icfconsulting.com

The topic of capacity building in Sub-Saharan Africa has been previously discussed in terms of training, technology, and monetary transfer for environmental assessment activities. The focus of transfer has traditionally been on building capacity within government institutions (i.e., institutional strengthening) in attempts to facilitate the environmental impact assessment (EIA) process. The EIA process itself, however, can be used as a tool for the formalization and reinforcement of capacity building when there is a commitment on the part of the project proponent and EIA team. Increasingly, African governments are demanding, and rightly so, that African

scientists conduct the EIAs for large development projects. However, terms of reference of donor-driven projects often define the eligibility of firms bidding for project roles by placing requirements on the country of registration of the bidding firm and setting goals for a percentage of “local content”. As private corporations seek to incorporate “local content,” the challenges of finding adequate local resources (teams of experts and support staff); overcoming logistical and communication issues; meeting schedules, and at the same time managing costs can become particularly difficult. This paper examines how the incorporation of local content on behalf of industry project proponents has furthered capacity building in Sub-Saharan Africa. One successful mechanism for driving capacity building is examined here: the contractual arrangements between clients (the project proponents) and private consultants conducting EIA work in developing countries. The West African Gas Pipeline team is discussed as one such model for capacity building techniques. Staffing solutions, “best practices,” and “lessons learned,” as well as pitfalls to be avoided are presented. Using an energy industry perspective, the discussion focuses on how to incorporate local content into EIAs, promote capacity building as part of the process, ensure the overall quality of the EIA, and simultaneously meet multiple stakeholder expectations.

Chapter 3 South America

Case Study 5

Ecuador: Oleoducto de Crudos Pesados Heavy Oil Pipeline

Atossa Soltani and Kevin Koenig

About the Authors:

Atossa Soltani (asoltani@amazonwatch.org) is the founder and Executive Director of Amazon Watch. For over 15 years Ms. Soltani has been spearheading international efforts for the protection of tropical forest ecosystems and the advancement of the rights of indigenous and traditional peoples. Ms. Soltani has closely followed major pipeline projects in South America including the Bolivia-Brazil Pipeline and the Bolivia-Cuiabá Pipeline, Ecuador's OCP Pipeline, Peru's the Camisea Gas Pipeline, and Brazil's Urucu gas pipeline. During this time, she has closely analyzed the project Environmental Impact Assessments (EIA), visited pipeline ROWs, monitored the project's aftermath and in each case worked closely with indigenous organizations and other affected communities and ecologists in attempt to minimize each pipeline's impacts on ecologically and culturally sensitive regions. Amazon Watch has provided first hand information and analysis about the environmental and social impacts of these projects often while these projects where in Public Review process -- in particular highlighting the need to analyze the induced impacts these projects have on pristine forest frontiers. Amazon Watch's aim has been to improve the policies and practices of project developers and international financial institutions while safeguarding indigenous peoples territories and frontier forests of the Amazon.

Kevin Koenig is the Amazon Oil Campaign Coordinator for Amazon Watch and has been working with indigenous and traditional communities in Ecuadorian and Peruvian Amazon as well as in Northeastern Colombia for nearly a decade. Before joining Amazon Watch in 2000, Mr. Koenig lived in Ecuador working with Ecuadorian environmental and human rights NGOs on issues related to oil extraction and the industry's social and environmental impacts in the Andean Amazon. He worked closely with indigenous peoples organizations including the Secoya, Siona, and the Shuar and Achuar, leading capacity building workshops and providing information about the oil industry and its impacts as well as educating communities about their collective rights under the Ecuadorian Constitution and international law. Throughout the planning and construction of the OCP pipeline, Mr. Koenig spent several months over multiple visits on the ground, monitoring the construction phase and working with locally affected populations along the pipeline route. Mr. Koenig holds a degree with honors in Community Studies from the University of California at Santa Cruz. He is a bilingual English-Spanish speaker.

Abstract

OCP's (Encana, Repsol-YPF, Occidental, Petrobras, Agip Oil and Perenco), underground pipeline transports up to 450,000 barrels of crude oil per day for 503 kms from the receiving Amazonas Terminal in Neuva Loja (Lago Agrio), over the Andes at 4064 m, and down to the Marine Terminal near Esmeraldas on the Pacific Ocean. It can store up to 5million barrels. The direct and induced impacts on the Indigenous Peoples in the Amazon forest and questions about fair compensation for lands taken by the c.30m-wide ROW persist. The ROW bisects a valuable biodiversity (especially for birds) area, the Mindo Cloud Forest, which is protected by financing from the World Bank which therefore criticized OCP. Private Banks involved in the project were strongly criticized and subsequently adopted the "Equator Principles" committing to follow IFC guidelines in future projects.

Introduction

In September 2003, a consortium of multinational oil companies 18 led by ENCANA inaugurated the controversial heavy crude oil pipeline in Ecuador known as the OCP (Oleoducto de Crudos Pesados). The construction of the pipeline was stalled for over a decade due to public opposition, finally breaking ground in 2001 and coming online two years later. The pipeline was designed to transport up to 450,000 barrels of heavy crude oil per day from the country's Amazon rainforest region to the Pacific Coast, along a 300-mile route. In addition to the oil pipeline, the project included the construction two terminal stations, three heating and pumping stations and two pressure reduction stations.

The OCP traverses five biologically significant eco-regions (Upper Amazon Rivers and Streams, Northern Andean Paramo, Napo Moist Forests, Northern Andean Montane Forests & Choco-Darien Moist Forests) all of which have been targeted by international conservation organizations as among the highest priority for conservation due to their outstanding levels of biodiversity and threat.

During the construction phase, the OCP Consortium came under intense public criticism for its poor handling of the project's environmental and social impacts. Although public protests have lessened for the time being, the project still faces outstanding grievances and legal challenges by affected communities.

The case of OCP offers an excellent case study on how NOT to go about building an oil pipeline with lessons for investors, project developers, engineers, government regulators and civil society stakeholders.

The project's financiers were one group to learn valuable lessons from this project namely WestLB and Citigroup. The two banks received strong criticism for financing the project. Criticism over the OCP became one of the flash points that led to the creation and adoption of "Equator Principles," where more than 28 private

banks making up more than 85 percent of the Project Finance market committed to require environmental and social safeguards modeled the after the World Bank's environmental and social safeguard policies.

The pipeline has caused irreversible and yet avoidable damage to the region's extraordinary biodiversity, unleashed an unchecked oil boom in highly fragile tropical rainforest ecosystems, and led to increased human rights abuses and social conflict. The project is a poignant case of egregious behavior by the oil industry, one which continues to justify local communities' opposition—especially the indigenous groups in Ecuador's southern Amazon to new oil projects.

It is lamentable that the so-called "independent experts" hired by the consortium to carry out the environmental assessment project produced a biased and incomplete assessment choosing to serve the interests of their industry clients rather than the public interest. These firms bear some responsibility in the impacts unleashed by the project.

In economic terms, the OCP has been a financial let down for both project developers and the government. Work stoppages and public protests contributed to more than \$300 million in cost overruns.¹⁹ In 2003, the OCP suffered a downgrade of its bond by the credit rating agency Moody's in October citing inter alia, growing environmental, political and economic risks. The new rating Baa3 dropped OCP's debt to one grade above speculative. By the end of 2004, after fifteen months of operation, the pipeline was only transporting 165,000 barrels per day (roughly 1/3 of its total capacity of 450,000 bpd). This volume falls way short of expectations by sponsors and the government.

An indication of the high risk of this project is turnover among original consortium members. Since the project's inception in 2001, the consortium lost two of its original members (KerrMcGee and Perez Companc) and as of the writing of this Case Study (mid-2005), the leading member and operating partner of the OCP, ENCANA was looking to sell its majority stake in the project. Occidental Petroleum, the second largest consortium member and largest U.S. firm involved, currently faces calls for the cancellation of its entire Ecuador contract from the country's Attorney General over contractual violations for transferring 40 percent stake in its block 15 oil concession to ENCANA and because of ongoing tax disputes with the Ecuadorian government.

Project Fails to Comply with World Bank Operational Policies

According to some reports, the OCP's contract stipulated compliance with WBG policies; although due to the secret nature of the contract it has not been possible to confirm whether this was required or voluntary. Even so, Westdeutsche Landesbank (WestLB) -- the pipeline's lead financier -- publicly stated that compliance with World Bank environmental guidelines is an 'indispensable condition for any financial engagement' with OCP." WestLB, the largest publicly owned bank in Germany

provided a significant portion of the financing to the OCP Ltd. Consortium through a \$900 million, 17-year loan agreement.

The pipeline's Environmental Assessment, produced by Entrix Inc., stated that the consultants used World Bank standards as a basis for preparing the EIA, specifically the 1994 policy on 'Consultation' in environmental assessment, and the Operational Policy on Environmental Assessment (OP 4.01). Following criticism, the OCP consortium hired an engineering firm, Stone & Webster Inc., to confirm the project's compliance with WBG policies. Stone & Webster's report stated that the project complied with WBG policies. However, this assessment was strongly refuted in two additional independent studies commissioned by international and Ecuadorian NGOs: the first released in November 2001 by Patricia Caffrey, former country director of WWF-Bolivia, and the second in September 2002 by Robert Goodland, the author of most of the World Bank Group's policies during his 25 years of service as the chief of the Environment Department for the WBG.

The independent report entitled "*Independent Compliance Assessment of OCP with the World Bank's Environmental and Social Policies,*" (Goodland 2002) found "substantial non-compliance with all four applicable WBG's Social and Environmental Safeguard Policies." The abstract for Goodland's report sums it well:

The pipeline route was chosen before the Terms of Reference for the EIA were set, and without adequate public consultation, especially of affected people. The EIA does not evaluate the main impacts of OCP, namely those imposed by a doubling of oil production in the Amazon. Thus, the most important tenets of **the WBG's OP 4.01** were not complied with. The EIA does not comply with OP 4.04: **Natural Habitats Policy** because OCP violates the protected area financed by the Global Environment Facility and six other protected areas. OP 4.04 prohibits degradation of such critical natural habitats. The EIA fails to address effective means of minimizing the loss of other natural habitats and the need to create offsets. OP 4.12: **Involuntary Resettlement Policy** requires resettlement plans and an equitable compensation process, which are absent in the EIA. Finally, OD 4.20: **Indigenous Peoples Policy** requires an analysis of the OCP's impacts on vulnerable ethnic minorities and Afro-Ecuadorians, and an indigenous peoples' development plan, which are lacking in the EIA.

The report states: "The World Bank has repeatedly written to Government of Ecuador requesting it to cease claiming that OCP meets World Bank policies, as the WBG's own staff are concerned that OCP does not comply with WBG policies. WBG's spokesperson, Elena Serrano, stated in the First German Television Channel 'ARD': "...we are concerned that our standards are not being complied with, but that our name is misused to justify a project."

Faulty Environmental Assessment and Public Review Process

Entrix was hired by the OCP consortium to carry out the EA process. Entrix began work on the EA in 1999 before the Terms of Reference (TOR) were approved for the EIA. Furthermore, the draft TORs were not made available to potentially affected people and other stakeholders before the EA process began. The scoping and screening phases of early EA process were not carried out as required by the Ecuadorian law or by WBG policies, and stakeholders do not seem to have participated in any way in the design of the EA.

The EA review process and public consultations were grossly inadequate. The OCP made the executive summary of the draft EIA available in nine locations for three weeks between April & May 2001. Communities were given less than a month to provide comment on the 1,500-page EIA. The OCP made three public presentations to the affected people about the project and its EIA in May 2001. Entrix and others confirmed that the third presentation was not even begun because of protests, and that the second presentation deteriorated, such that most attendees had left before OCP's presentation had started.

The poor handling of the impact assessment and review process is evident in the public outcry that followed the OCP's ground breaking, generating extensive negative publicity in the national and international media. Concerns over the chosen route as well as the direct impact of the project on the environment, health and livelihood of local populations ignited street protests, occupations of government offices, legal actions, a general strike in Lago Agrio and blockades of construction machinery.

Entrix's independence was seriously questioned in Robert Goodland's independent review of the project's compliance with WBG policies, specifically Operational Policy 4.01 which stipulates that ***“EA needs to be carried out by independent experts”***:

The EIA for OCP was carried out by Entrix, which has served the oil industry since Entrix was established in Houston, Texas in 1984. Entrix's logo asserts that the company has stood for “Environmental Excellence since 1984.” Entrix has worked on other pipelines in Ecuador, such as Arco's 200 km pipeline in 1998. The President of Entrix Ecuador, Ing. Miguel Aleman is also [former] Environmental Coordinator of OCP. Miguel Aleman's address, fax and phone numbers are the same as OCP's [former] President Hernan Lara. President Aleman often represents and speaks for OCP. He sends official letters to Ministries on OCP letterhead. His business card documents his employment by OCP, rather than by Entrix...Because of the above-mentioned facts, Entrix cannot be said to meet the criterion of independence required by the WBG.

Upstream Impacts From Doubling Amazon Oil Production To Supply The Pipeline

Perhaps the biggest flaw of the OCP's Environmental Assessment is that it makes no mention of induced impacts from new oil production to feed the pipeline. The basic error seems to have occurred very early on in the EIA process, namely the incorrect decision to exclude the impacts of doubling oil extraction from the Amazon region.

Current heavy crude production is 150,000 barrels per day. Oil activities currently impact approximately 20 percent of the Ecuadorian Amazon. It is predicted that with the OCP Project, oil exploration and production from the Ecuadorian Amazon will double, thus considerably impacting at least an additional 20 percent. The increased activity will require additional feeder pipelines and access roads in protected areas, seismic activity, additional oil wells, related services and influx of people. The OCP consortium [estimates] that approximately 600 kms. of feeder pipelines, additional pumping stations and many new oil wells will be constructed in the Amazon to feed the OCP pipeline. Plans for exploring additional reserves are of particular concern because new oil development is planned within 4 very important protected areas in the Ecuadorian Amazon including Yasuni National Park, Cuyabeno Wildlife Reserve, Limoncocha Reserve, and Pañacocha Reserve. The EIA has not considered these upstream impacts nor has it considered downstream impacts resulting from the increased capacity to heat, store and transport oil such as air pollution (Patricia Caffrey 2001).

The OCP is a project with sectoral impacts because it doubles Ecuadorian oil exports. OCP is a project with regional impacts because it impacts the oil producing Amazon region (mainly) as well as other regions. OCP's impacts are cumulative because OCP intensifies the impacts of the project.

Despite WBG's OP 4.01 [Operational Policy on Environmental Assessment] and despite the severity, 30-year duration, and well-known nature of impacts including those on Amerindians and the Amazon forest resulting from doubling oil extraction in Ecuador, neither sectoral, nor regional EAs were included in OCP's EIA.(Goodland 2003).

Indigenous communities in the Amazon who will be most affected by the project over the next 30 years due to additional oil drilling required to fill the OCP were neither previously consulted nor engaged in identifying these induced impacts during the EIA review process.

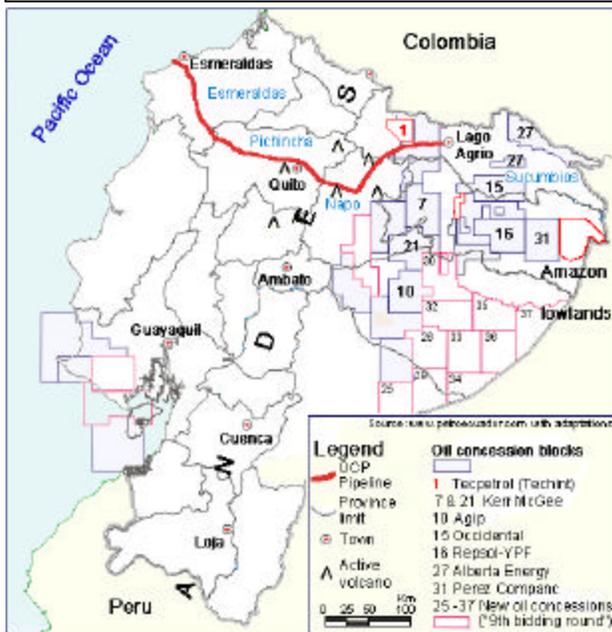
Without much planning or debate, new oil wells, roads, flow lines, and associated processing plants are under construction in the country's last remaining old growth forest. In fact the largest oil reserve that would allow the OCP to run near capacity would be from two areas –Block 31 and Block 20 or the Ishpingo Tambococha Tiputini field both of which are deep inside the Yasuni National Park. This region

includes some of the most outstanding examples of black water flooded forests in all of the Amazon. Currently access roads associated with Occidental Petroleum's block 15 and Petrobras' block 31 are being built in and around the Yasuni National Park. The park, twice the size of Rhode Island, was created in 1979 and designated a United Nations Biosphere Reserve in 1989.

The Association for Tropical Biology and Conservation sent a letter in February 2005 signed by among others Dr. Jane Goodall and the evolutionary biologist Dr. E. O. Wilson calling for the cancellation of oil roads inside Yasuni. The letter stated that the road will be "a completely new artery through primary rain forest into a virtually undisturbed part of the Park."²⁰ Yasuni is also the ancestral territories of Ecuador's largely isolated Taegeri indigenous peoples, as well as the Huaorani and Kichwa communities, all of whose livelihoods depend entirely on the forests' resources.

In the Central and Southern Ecuadorian Amazon, conflict with local communities over industry's plans to enter new frontiers is escalating to the point where oil companies will be able to enter these areas only by force, and with escorts of the Ecuadorian armed forces. In blocks 23 and 24 for example, Burlington Resources had to declare *Force Majeure* repeatedly since 2001 due to indigenous opposition. Last year attempts by these companies to enter the Sarayacu community by force led to human rights abuses against indigenous leaders. In this case, the Ecuadorian Government has received strong condemnation by the Inter-American Commission

Figure 21: Map of Ecuador with OCP Concession Blocks



on Human Rights for abuses of Sarayacu's leaders and could soon be facing legal action at the Inter-American Court on Human Rights. The OCP pipeline has indeed created a second oil boom in the rainforests of Ecuador.

The failure to previously consult indigenous peoples in such a critical decision that affects their territories and resources is also a violation of WBG policies as eloquently summarized by Goodland (2002):

“Because this kind of non-compliance can lead to intensified impacts, the WBG emphasizes the need

for participation by civil society in scoping, screening and preparation of Terms of Reference for the design of the EA process, under the scrutiny of an

internationally recognized panel of environmental and social experts. OCP does not seem to have complied with these checks and balances. Thus, potentially, OCP could lead to massive social impacts on the Indigenous Peoples as the 30 years of the SOTE pipeline operation so clearly show. Martinez-Alier et al. (2001): ‘Construction of OCP on indigenous territory without proper consultation....shows a total abandonment....of compliance with treaties and international agreements on human rights,’ as well as non-compliance with WBG policies.”

As OCP will double oil production, much of which will be inside or will impact on Indigenous Peoples²¹ lands, OD 4.2 mandates preparation of Indigenous Peoples Development Plans. As the impacts on vulnerable ethnic minorities and the Amazon oil producing area are omitted from OCP’s EIA, this requirement has not been complied with. The basic error seems to have occurred very early on in the EIA process, namely the incorrect ruling to exclude the impacts of doubling oil extraction from the Amazon region.

Faulty Environmental Assessment Leads to Poor Route Selection

Starting in Lago Agrio, the selected OCP pipeline route runs parallel to the existing TransEcuadorian Pipeline (SOTE-Sistema Oleoducto TransEcuatoriana) until just east of Papallacta. From this location to the Pacific coast of Balao, the pipeline deviates from the old SOTE pipeline and takes a controversial northern route through Andean Choco cloud forests.

Conservationists agree that there are few places on the earth that parallel the biodiversity and level of threat that one finds in Northern Andean Montane Forests & Choco-Darien Moist Forests. The OCP cuts through the middle of the Mindo Nambillo Cloudforest Reserve and the surrounding ecologically sensitive forests. This area is home to more than 450 species of birds -- 46 of which are threatened by extinction -- and has been designated by BirdLife International as the first "Important Bird Area" of South America and "Endemic Bird Areas." The World Bank is financing the establishment of an ecological corridor (Chocó-Andean Corridor) in the Chocó and Northern Andes through the Global Environmental Facility. The Chocó-Andean Corridor project document describes the biodiversity and conservation status in the area that will also be impacted by the OCP pipeline as follows: “For its biodiversity and deforestation pressure, the region is ranked among the first 5 of the 18 biodiversity hotspots of the world (Myers, 1988). For bird fauna, it is considered the earth’s highest bird endemism area (Terborgh & Winter, 1982). The rich biodiversity of the area is at risk. The rate of regional deforestation is even higher than the national annual rate of 2.3% (Salazar et al., 1998). At such rate, irreversible destruction of the biodiversity could happen within the next 40 years.”

The pipeline is a direct threat to the area's burgeoning eco-tourism industry, which had been generating an estimated \$100 million a year in tourism. Local communities and environmentalists argue that the inevitable ruptures in the OCP will cause

ecological disaster by spilling more oil into forest ecosystems than the existing SOTE oil pipeline, which has been ripped apart countless times by landslides, earthquakes, volcanic eruptions and insurgent bombings.

In his September 2002 report entitled “*Independent Compliance Assessment of OCP with the World Bank’s Environmental and Social Policies*” Robert Goodland’s states “From the available documents, it appears as though the critical decision for the Northern routing was taken sometime between early and mid-1999... This fundamental decision was confirmed by OCP as being made prior to August 1999, more than a year before the Terms of Reference were completed for the environmental assessment. Some preliminary construction works on the Northern route began early in 1999. Thus, arguably the most important decision of the entire OCP construction -- that should have been taken by means of the EIA process -- was taken long before the EIA began.... EA is a process to aid good decision-making. It is a major wastage of resources to carry out *post hoc* EA, and causes major risks to the Republic of Ecuador. Using the EA process for retroactive justification of major decisions, such as the routing, undermines the entire EIA.”

In all, the Project traverses seven protected areas and the buffer zones of four protected areas that would be classified as having Category I to VI levels of protection according to IUCN criteria.

Oil Industry’s Crude Legacy

Indigenous Peoples in the north including the Cofan, Quichua, Secoya, Siona, and Huaorani have born the brunt of the environmental and social impacts of three decades of poorly conducted oil operations. Since the arrival of Texaco -- the first oil company in Ecuador -- in 1968, these communities have lost most of their land and the forest resources and have been devastated by epidemics and widespread pollution. The original SOTE pipeline facilitated the encroachment of settlers in the Amazon as the SOTE’s right of way became the principal highway in Ecuador (National Highway No. 1). About 2.5 million hectares of original rainforest has been lost along the SOTE pipeline since its construction.

Today, the historic trial to force ChevronTexaco to clean up its pollution in the region is underway in Ecuador -- originally filed as a class action lawsuit in New York in the late 1990s (Kimerling 1991a,b,1994,1997). The legal case is charging that the company purposefully chose not to install re-injection technology and instead designed and operated a system that led to the contamination of an area 3 times the size of Manhattan from frequent oil spills, daily discharges production waters and toxic drilling muds directly into local streams and lagoons. The company extracted over 1.5 billion barrels of oil between 1972-1992 and left behind more than 600 toxic oil pits. Remediation experts for the plaintiffs in the trial estimate that toxic releases equal to 30 times the 1989 Exxon Valdez spill have been discharged in this area. Clean-up costs could exceed \$6 billion, not including health and personal damages (Global Environmental Operations Inc, 2003). Contaminated rivers,

lagoons, soil, felled forests, and an exploding health crisis continue to take their toll. High rates of cancer, birth defects, spontaneous miscarriages among women living near the oil facilities have been well documented by medical researchers (see health studies in www.chevrontoxico.com). Despite an estimated \$60 billion in cumulative revenues generated over 30 years, the region remains among the poorest in Ecuador.²² Basic services including health services and infrastructure are lacking and rampant poverty, malnutrition, prostitution, violent crime rates are among the highest in the nation. With the arrival of OCP, the next generation of oil projects is intensifying social conflict in the region.

The New Round of Oil Licensing

Although the Environmental Assessment process chose to omit the induced impacts, plans to bring in more than \$2.5 billion in new oil investments to utilize the capacity provided by the OCP pipeline had been widely publicized by the OCP consortium and the government. The plan initially called “Apertura 2000” was touted the principal instrument for the country’s economic recovery. It was also one of the major stipulations of the Government’s structural adjustment agreement with the IMF for making good on the country’s debt payments and had been endorsed in the World Bank’s 2000 Country Assistance Strategy (CAS).

Not wanting the prospects of a 2/3rd empty pipeline, the Ecuadorian government announced plans for a new round of bidding on 11 Amazonian oil blocks -- 200,000 hectares each -- before summer 2005. These eleven blocks, some 2 million hectares, cover virtually all of Ecuador’s remaining Amazonian rainforests and extend to the border with Peru. The government attempted to auction off these blocks in 2002, but heavy opposition from Indigenous Peoples whose land encompasses the same area forced the government to shelve opening most of the blocks in the Amazon.²³

Due to the experience of their indigenous neighbors to the north, many groups in the central and southern Ecuadorian Amazon have vowed never to permit oil development on their territories. These groups inhabit some of the country's last stretches of untouched old growth rainforest and consider their resistance to oil a matter of life and death.

Failed Community Relations and Continuing Conflict along the Pipeline

The OCP is responsible for the destruction of roadways and bridges caused by the incessant traffic of heavy trucks and machinery traversing the 503 kilometer pipeline. This major impact was omitted from the EIA and has not been addressed by the OCP or the authorities. In addition, neither the government nor the consortium has provided compensation or mitigation or held anyone accountable for egregious mishaps that have occurred during construction, such as the loss of radioactive material in the Quininde river, the deaths (be they voluntary or accidental) of over two dozen workers, the contamination of the Papallacta lagoon following a rupture

of SOTE caused by OCP machinery and the impact it has had upon Quito's water supply.

Throughout the entire trajectory of the pipeline, the OCP has been accused of violating agreements between OCP and local communities and municipalities. In Sucumbios and Napo Provinces, the Amazon Network for Life, which represents over 250 families whose lands are directly affected by the pipeline route, keep seeking to be duly compensated for the impacts that were not anticipated in the contracts (such as loss of crop land, loss of water resources). In Quijos, the association known as "Unified We Are More," which consists of 255 people, filed a lawsuit against OCP for environmental damages. In Mindo, Action for Life also placed a lawsuit against OCP for violating the property rights as well as violations of laws affecting protected areas.

The epicenter of conflict for the OCP ROW revolved around the town of Mindo, where local community members engaged in prolonged civil disobedience high atop the cloudforest ridgelines where the pipeline was slated to pass. The Ecuadorian police and OCP private security cracked down on Mindo residents and their supporters, which led to community claims of rights violations. Residents, together with a local NGO, purchased several thousands hectares of land, much of it along the ROW. The legal dispute over property rights between OCP and the community owners continues to wend its way through Ecuadorian courts.

Conclusions

Most experts agree that had the OCP project could have been planned and designed more carefully and with much more upfront public involvement and participation with the results being less conflict and reduced environmental and social impacts. In a more democratic and transparent development process, perhaps the analysis of alternatives including the "no project scenario" would have been more rigorous allowing the government and civil society to make decisions that advance the collective public interest. Careful assessment of environmental externalities and induced impacts, such as economic losses in the case of Mindo's ecotourism industry, the impoverishment of indigenous communities due to loss of forest resources, the loss of highly biodiverse rainforests due to increased oil production, would have factored in decisions of whether or not to build a second oil pipeline in Ecuador which committed the country to double the industry's already severe damage to the environment.

Goodland (2002) points out that in a rigorous EA process, the analysis would include: "improving efficiency and conservation, boosting the capacity of the existing pipe, accelerating the velocity of oil in existing pipelines (e.g., with more powerful pumps), reducing leaks and ruptures, retrofitting remote check valves, electronic leak detection, automatic safety systems, increasing the pressure by stronger pipe wall thickness or stronger steels, increasing volume by replacing current diameter pipe with larger diameters, diluting oil viscosity, expediting spill

response capabilities, expanding refinery capacity in the Amazon region, using river or rail or road transport, tunnels, etc. All this is standard practice in Analysis of Alternatives.”

However, in many cases in the developing world oil industry exerts undue power and influence. In the case of the OCP in Ecuador:

- The consortium members’ lacked commitment to corporate social responsibility
- The Ecuadorian’ governments lacked the capacity and political will to protect the interests of its public and environment, coupled with an inadequate system of justice where the rights of minorities and affected communities could be upheld.
- Environmental compliance authority was assigned to the Ministry of Energy and Mines, while the Environment Ministry’s role was diminished.
- Pressure by international creditors for the repayment of Ecuador’s debt led to myopic vision where the GOE could only seek investments in oil as the fix to its flailing economy.
- Lack of transparency from the terms of the contract to compliance mechanisms and due diligence cost the Consortium, its financiers, and the country in the long term.
- Professional consulting firms, unless truly independent, essentially justify decisions already made by their industry client.
- Expert independent monitoring is needed for the life of the project given there is little trust in the company’s or the government’s monitoring.
- Mishandling of all of the EA and community relations process led to project delays, cost overruns, and ultimately exacted a heavy political cost for the Consortium, its financiers, and the image of the industry in the eyes of affected communities and the public.
- Current opposition from Indigenous Peoples to new exploration projects being undertaken by OCP Consortium members and non-members has much to do with the OCP project’s missteps.

For project developers, energy and environmental professionals, the OCP should offer an invaluable manual of the pitfalls to avoid in future pipeline projects. Although often by the time the project reaches the EIA phase, we would argue that it is probably too late to make the kind of changes needed to make the project least harmful.

One positive outcome of the OCP case has been the adoption of the Equator Principles by private banks. WestLB and Citigroup were among the first to come on board. Today, given the majority of private banks that would finance a pipeline project subscribe to these principles, we could expect that future OCP-style projects will be nearly impossible to finance.

Case Study 6

Bolivia-Brazil Gas Pipeline Project (GASBOL)

Minimizing project footprint

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About the Authors

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Juan David Quintero (jquintero@worldbank.org) joined the World Bank in 1993 and is presently Senior Environmental Specialist. From 2001 to 2004 he was Coordinator of the Bank's Latin America and Caribbean Quality Assurance Team, which monitors compliance with environmental and social safeguard policies. He specializes in environmental assessment of infrastructure projects, mainly roads, hydropower, oil and gas, urban transport, and water supply and sanitation. He has received the Regional Award from the International Association for Impact Assessment (IAIA) for promoting improvements in environmental impact assessments throughout Latin America. He is a civil engineer with postgraduate degrees in Environmental and Sanitary Engineering.

Abstract

Extending over 3000 Km through largely unpopulated areas between Bolivia and Brazil, Gasbol is among the largest gas pipelines in South America. Despite its extension, and overcoming differences between the countries' infrastructure network, legal structure and stakeholders agreements, the project's overall footprint is minimal. Because of its length, the route would have to traverse sensitive areas. The crossing of natural ecosystems was designed with three criteria in mind: 1) avoiding sensitive ecosystems when possible, 2) reducing the size of impacted areas, and 3) devising techniques that caused minimum disturbances on the landscape and ecosystem functions. This approach set forth numerous innovative measures: a) the pipeline was deviated to avoid sensitive ecosystems, b) the width of the right of way (ROW) was reduced in many transects, c) tree removal was done manually, d) 13 rivers were crossed by drilling under the river beds and other special works, e) wetlands were crossed using a pushing and pulling method during the rainy season; f) steep terrains were avoided by tunneling; g) extensive revegetation was carried out along ROWs, and h) a comprehensive ecological compensation plan provided funds to support a total of 13 protected areas. The project set high social standards for negotiations with indigenous communities and served as the single most important archeological survey in recent years both in Bolivia and Brazil. The pipeline was built in a year and a half; such short timeline was achieved by virtue of an outstanding management. Gasbol had its own environmental committee, environmental supervision unit and a team of environmental inspectors. The project's EA was exemplary, and earned several international awards, for its environmental achievements.

Background

A new market for the Bolivian reserves of natural gas and an additional source of power for Brazil were the main drivers for what is now the Bolivia-Brazil gas pipeline (GASBOL), one of the most complex projects of its kind in South America. The pipeline extends 3,150 km: 557 lie in Bolivia, owned by Gas TransBoliviano (GTB), and 2600 km run through Brazil, managed by Transportadora Brasileira Gasoducto Bolivia-Brasil S.A. (TBG). The pipeline starts in central Bolivia, at Rio Grande running west and then south to Porto Alegre, Brazil. The project includes 18 compression stations and 35 city gates, distributed along 5 states in Brazil - Mato Grosso do Sul, Sao Paulo, Paraná, Santa Catarina, and Rio Grande do Sul. It has a capacity of 30 million cubic meters per day (MMm^3/d) with an agreed delivery of 16 MMm^3/d .

The bi-national nature of the project required the team to reconcile different regulatory and legal structures in each country, accommodate to disparate infrastructures and comply with prior country specific multistakeholders agreements. The environmental achievements detailed in the next sections stem from the efficient and exhaustive nature of the second environmental assessment. The first was rejected during routine quality screening. The time and financial investment in this first stage

paid off; the new, revised EA subsequently earned the project the International Association of Impact Assessment's Environmental Award (IAIA in 2001) and the 2001 World Bank Green Award among others. The project became effective mid May 1999 and closed by the end of December 2000. Total project budget was approximately US\$ 2.1 billion of which the Bank financed 130 million. The pipeline was inaugurated in February 1999.

Natural Habitat Issues

Two thirds of the pipeline route runs through uninhabited areas and encounters several sensitive ecosystems (see Box 1) between Rio Grande, Bolivia and Porto Alegre, Brazil. These include the Gran Chaco Forest, the Pantanal, portions of Mata Atlantica and the Aparados da Serra. Several national parks, reserves and ecosystems with legal protected status, as well as high biodiversity hot spots triggered the Bank's Critical Natural Habitat policy. Aside from the route itself, there was the potential of the ROW to provide undesired open access to unexploited areas, facilitating illegal activities such as logging and hunting. Some of the areas to be crossed had traditionally being used by indigenous communities and there was concern on their part that the gas company would not take full responsibility for the environmental impacts caused by the project, particularly when it came to impacts on sensitive ecosystems. The project would directly impact indigenous lands in Bolivia, as the route would go through the *Kaa-Iya del Gran Chaco National Park*. In Brazil the project affected fewer communities and impacted indigenous lands indirectly as those affected were lands lying on the area of influence, within 30 Km from the ROW.

Finally, during preconstruction several significant archeological sites were discovered and multiple artifacts were rescued. Because the route would run along previously unexplored areas known to have been inhabited by prehispanic cultures, these finding meant there has a high probability of encountering more sites and material of archeological importance once the actual construction began.

Crossing Sensitive Ecosystems

The main types of sensitive ecosystems to be crossed included the Gran Chaco forest, the Pantanal, Mata Atlantica and Aparados da Serra.

Gran Chaco Forest or Chaco is an extensive 647,500 Km² lowland alluvian plain divided among Bolivia, Paraguay and Argentina. The vegetation is predominantly xerophytic deciduous forests, but also includes semi-evergreen riverine forests, palm woodlands, savannas, halophytic shrubby steppes, grassy steppes and wetlands. The area is estimated to harbor over 2,300 plant species, 300 birds and 89 reptiles and amphibians. The more than 100 mammal species include the endangered tapirs, peccaries, guanacos and jaguars. Within this ecosystem the pipeline crosses the protected areas Bañados de Izozog and the Kaa-Iya del Gran Chaco. This last area is comprised by lands traditionally used by several indigenous communities.

Figure 22: Sensitive Ecosystems and Protected Areas Crossed by Gasbol

Bañados de Izozog and Parapetí River form the largest and most important wetland in the Santa Cruz Chaco and sustain several communities of fauna and flora typical of the rivers in the Chaco biogeographic region. The area is 615,882 Ha with one-third of the site lying within the Kaa-lyá del Gran Chaco National Park; 110 km of pipeline cross this area.

Kaa-lyá del Gran Chaco National Park and Integrated Management Area: covers 3.4 million hectares, an area larger than the U.S. states of Connecticut and Massachusetts combined. The Chaco harbors over 2,300 plant species, 59 large mammals, 300 birds, 89 reptiles and amphibians. About 140 km of pipeline cross the northern portion of the park.

Otuquis Pantanal Reserve: comprises 1,005,950 Ha, of which 903,350 Ha are a national park and 102,600 an integrated management area. The pipeline crosses the northern part of the Otuquis Pantanal, the right-of-way covers 30 m, including the working space. The area is inhabited by six and nine species considered endangered and threatened respectively by the IUCN

Mato Grosso Pantanal Reserve: 150,000Ha. Encompassing one of the richest wildlife sanctuaries. The vegetation is an exclusively grassy formation, interspersed with brittle ligneous plants and small acaulescent palm trees. It is generally found in the lower areas, which are periodically flooded, and which are, during the dry season, the “domain of the fields”. It is green during the rainy season, straw-like color during the dry one. Seventy kilometers of the pipeline run through it.

Mata Atlántica (Atlantic Forest) and *Aparados da Serra*: only 7 to 10% of the original forest remains. The high level of endemism is partly due to the fact the area is isolated from the major south-American forest blocks by the savannas and woodlands of the Cerrado region. Some endemism statistics include: 40% of the 20,000 plant species are endemic; 60 of the 190 reptiles species are endemic, 3 are threatened with extinction; 55 of the 250 mammal species are endemic. Two thirds of the primate species are endemic, including the black lion tamarin, one of the most highly endangered primates in the world. In all there are 29 critically endangered vertebrate species. Other vulnerable species include tapirs, ocelots, pumas and the locally endangered blue-and-yellow macaw. The Mata Atlántica holds the world record for the greatest diversity of tree species per hectare. Four sections encompassing thirty two hectares are crossed by the pipeline.

Bonito National Park: located in the southwest of State of Mato Grosso do Sul, the area has most of the region's rivers spring on top of the Bodoquenas mountain range. Calcium carbonate is the major mineral component in the soil, the area is a system of waterfalls, rivers and caves. The dominant type of vegetation is the Cerrado associated with gallery forests and elements of Mata Atlántica.

Pantanal is the world's largest wetland (100,000-175,000 km² depending on the season) shared by Brazil, Paraguay and Bolivia. Its size is similar to that of Greece. The Bolivian Pantanal covers about 10% of the total Pantanal area. The Bolivian portion comprises several zones, two of which, Otuquis and San Matías, became part of the National System of Protected Areas in 1997. Within Bolivia, the pipeline crosses the pantanal region known as Otuquis. The Brazilian Pantanal is

approximately 145,000 km² or ~80% of the Pantanal area and the pipeline goes through the Mato Grosso area.

Mata Atlantica (Atlantic Forest) is characterized by Ombrófila Densa Forest and associated with Ombrófila Mista Forest. Brazil's most urbanized and industrialized areas are found within this biome, and thus only about 7% of the original forest remains in fragmented portions. The pipeline crosses isolated patches in four states, totalling 124 Ha. and the Bonito National Park which has elements of mata atlantica and lies in the Bodoquena mountain range contiguous to el Pantanal..

Aparados da Serra is located within the Mata Atlantica biome, but has varied floristic formations. There is an area of rocky formations where canyons and cliffs dominate the landscape. Rivers drop into gorges of canyons, many over 700 m high, arriving to the bottom as moist mist. Steep terrains are prone to erosion and slope instability, hence their environmental sensitivity. The route goes through the Aparados da Serra National Park and the section affected is characterized predominantly by Campos de Altitude and Cerrado Gramineo-Lenhoso.

Minimizing Project Footprint

Although one plausible scenario would be for the route to avoid all sensitive areas, there is a trade-off between a longer route that would require more hectares of right of way (ROW) and a shorter one, which would minimize the ROW area but cross sensitive ecosystems. Despite modifications the route would have to go through challenging landscapes: large rivers, steep terrains and wetlands. The design team followed three criteria: 1) avoid sensitive ecosystems when possible, 2) reduce the size of impacted areas, and 3) devise innovative techniques that caused minimum disturbances on the landscape and ecosystem functions.

Deviations to Avoiding Natural Habitats The general guidelines of the route for crossing vegetated areas, whether protected or not, specified: i) to go around, next to the limits and avoid fragmentation, ii) to run through the most degraded sections, and iii) to cross through parts of lesser extension. For example, in Bolivia the pipeline avoided the Cañón de la Victoria, a hydrologic and biological connection between the wetland systems of Otuquis and the Brazilian Pantanal. In Brazil the route went around the Tabuleiro National Park. Within the Brazilian Pantanal region, deviations totaled almost 30 Km.; and deviations in the State of Santa Catarina to preserve the Mata Atlantica totaled 30 Km. Modifications to the route were also made for high visibility archeological sites.

Reducing ROW Width In Bolivia, there were almost no access roads to the pipeline so the ROW width was set to 30 meters to allow equipment movement, instead of opening additional, new access roads. In Brazil however, there were roads nearby the remaining 2600 Km of the route, so the ROW did not have to double as a road. The ROW was reduced down to 20 m, significantly reducing the total area impacted.

Felling Trees Manually, with chainsaws, reduced the impact during vegetation removal. Trees were felled within the ROW to avoid damage to surrounding vegetation preventing the so-called domino effect.

Crossing Rivers was done by drilling (directional boring) under the river bed for two rivers: Paraguay and Itajaí-Açu. The drill hole was enlarged to accommodate the 32" dimension of the Gasbol pipeline. An underwater installation was performed for other 11 river crossings. This method required a ditch to be opened in the river bed, the pipe was installed by flotation, dragging or launching barge. Subfluvial crossings do not interfere with river flows, have a lower impact on the environment and on both the aquatic vegetation and fauna. Of the thirteen major crossings of rivers/dams 3 were located in Bolivia and 10 in Brazil. All smaller crossings were performed with more conventional techniques, but with mitigation actions to protect waterways from increased sediment load stemming from the civil works.

Protecting Steep Terrain to avoid erosion, sediment accumulation, slope instability and landscape alterations in the steep terrains of the Aparados da Serra in Brazil, it was decided the best option would be to drill on the top in addition to a tunnel from the slope to keep the slopes integrity with minimal visual impact. The special tunnel was built 780 m in length and 320 m in height. The ongoing monitoring program screens for aggregate loss of hill mass by de visio checking the inclination angle of strategically placed stakes. Indirectly, slope status is checked by strain gages monitored by the Operation Center in Rio de Janeiro.

Crossing the Pantanal was accomplished by a "push-pull" technique. For his method, a pre-assembled floating section of pipe was pushed and pulled over a flooded ditch. Once in place, the buoys were removed and the pipe, being concrete coated, sank into position in the ditch. The temporary mounting platforms were removed later. This technique has fewer impacts than conventional ones: it requires less clearing/ removal as the only construction space necessary is that for the dragshovel to cross the tract of land and that needed for storage of excavated soil. The pipe was assembled off-site, so there was no need for working space adjacent to the ditch. The push and pull technique made it possible for the construction activities to leave no visible footprint.

Restoration of Impacted Areas in Bolivia, a 13 m strip of the ROW was restored by planting new vegetation once the construction phase was completed. In so doing the ROW was narrowed from 30 to 17 m wide. Reforestation was also done in areas designated for support activities and in the affected sections of Mata Atlantica. At Pantanal, wetlands were restored to their original configuration and contours

Special rules for ROWs to discourage illegal activities and further impacts, the management of ROWs stipulate it shall not be used as a road, even in Bolivia. Maintenance works shall be done using helicopters, all terrain vehicles, existing roads, etc.

Monitoring environmentally sensitive areas, including approximately 300 critical areas (i.e. river crossings, wetlands, areas with steep slopes, garbage disposal sites) are monitored regularly to ensure proper functioning and management. Aerial reconnaissance of the ROW is also carried out . The monitoring includes checking for the need of occasional revegetation along the route.

Ecological Compensation Plan

The project provided funds for a total of 13 protected areas, 12 in Brazil and 1 in Bolivia (see Figure 23). In Brazil, 0.5% of project funds had to be designated for conservation units by law. The 12 protected areas supported by the project in Brazil total over 250,000 Ha, are distributed among all 5 states crossed by the pipeline and were chosen in collaboration with IBAMA (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis). Within Bolivia, the Kaa-Iya del Gran Chaco is 3.4 million Ha. The funds were used for demarcation and signalization, cartographic maps, land, vehicles and equipment acquisition, buildings restoration, construction of support buildings (visitors, research, administrative) and Management Plans.

Figure 23: Protected areas supported by GASBOL in Brazil and Bolivia

	ha
Parque Nacional da Serra da Bodoquena	77,232
Floresta Nacional de Ipanema	5,397
Parque Estadual Albert Loefgreen	174
Parque Nacional Superagui	33,928
Parque Estadual do Cerrado	420
Parque Estadual do Guartelá	799
Parque Estadual de Campinhos	204
Parque Estadual da Serra do Tabuleiro	87,405
Parque Botânico de Morro Baú	750
Parque Nacional de São Joaquim	42,838
Parque Nacional de Aparados da Serra	13,081
Reserva Biológica Estadual Mata Paludosa	113
Parque Nacional Kaa-Iya del Gran Chaco y Area Natural de Manejo Integrado (Bolivia)	3,441,115

A Trust Fund for Kaa-Iya del Gran Chaco was established to pay for recurrent costs in perpetuity. The 1 million USD fund will thus provide incremental annual revenues to improve the protection and management of the park

Working with Indigenous Communities

Compensation programs were set in place for indigenous peoples both in Bolivia and Brazil. The Bank's Indigenous People²⁴ safeguard policy (OD 4.20) was triggered as the route would either go across indigenous lands (Bolivia) or impact them indirectly (in Brazil the lands would be in the area of influence of the ROW, 30 km from the right of way). Once again, the project team took on the challenge by having

extensive consultations with the indigenous communities and put together a plan that satisfied their expressed needs.

Bolivia

The Kaa-Iya National Park, was established in 1995 and is constituted by the Boreal Chaco best conserved tropical dry forest and covers 3,441,115 Ha. It is one of the largest legally protected National Parks in Latin America. The park and its Integrated Management Area include Izoceña, Ayoreode, and Chiquitana's indigenous communities as well as part of Charagua, Pailón, San Jose de Chiquitos, and Roboré townships in the Cordillera and Chiquitos provinces, Santa Cruz Department. The pipeline's area of influence extends 140 kilometers within the Park.

Securing Traditional Land for Indigenous People

A land titling program allowed the local indigenous people to secure title to their lands adjacent to the park. An approximate 1.5 million Ha were titled and demarcated. Funds were also provided in Otuqui, to facilitate the consolidation of native territories, particularly providing support for their land claims. The Land Titling Program is the first in Latin America to provide legal title to indigenous people's lands.

Coordinated Supervision and Management Plan

To implement the Environmental Management Plan of Gasbol within the Park, an Executive Committee formed by both Gas Trans Boliviano and Indigenous Peoples from the area was created. Management of the park is carried out by Capitanía del Alto y Bajo Iozog, an indigenous organization, The Wildlife Conservation Society and Bolivia's National Protected Areas Agency. A total of USD 456,000 from the project's funds were allocated for the Environmental Management Plan of the Park itself (published in 2001) and an additional 1 million USD was established as a Trust Fund to assist in the management of the Kaa Iya National Park.

Benefits for Indigenous Communities

The total budget for the Indigenous People Development Plan for Bolivia was \$3.7 million USD. The benefits included (but was not restricted to) building wells, installing solar panels and radio communications, as well as construction/repair of houses and other buildings. The involvement of the Bank was crucial in setting the high social and ecological standards that have characterized subsequent negotiations between Kaa-Iya and other energy companies thereafter.

Brazil

A multistakeholders collaborative process was responsible for the Indigenous People Development Plan (IPDP) in Brazil. The IPDP carried out consultations in local

communities to assess their needs. The result was a total of 1 million USD invested in land acquisition, ambulances, buses, and construction material. Facilities such as houses, schools, hospitals, and energy networks were constructed. Agreements with local authorities were signed to ensure the project's sustainability during operation. While the project constructed the schools and hospitals, the authorities were responsible for finding the teachers and physicians as well as replacing materials. Additionally, a total of 22 indigenous towns received 50.000 reais each.

Showing remarkable solidarity, the Terena groups decided to share their funds with other groups such as Moreira and Passarinho. Other indigenous groups, like the Guarani, also shared theirs to help acquire lands for the Aldeias Morro dos Cavalos e Massiambu. Together, PETROBRAS and TBG bought the first land titled by FUNAI (Fundação Nacional do Índio) in Santa Catarina for the Guarani groups.

The Project as an Archeological Expedition and Survey

During pre-construction activities, several sites of significant importance were discovered. Both Bolivia and Brazil showed an avid interest in the archeological potential of the project. In accordance with the Bank's Cultural Property policy (OP 11.03), a full Archeological Heritage Evaluation and Rescue Program was set forth. Taking the route as an archeological transect, and with the joint participation of local universities and project funds, the construction of the pipeline can be considered one of the major archeological surveys in the area ever to take place.

The archeological activities were divided in two phases: those prior to soil alteration, dealing mainly with prospective aspects and those conducted during soil alteration, dealing mostly with salvation of material. The evaluation of each site would either result in a diversion of the pipeline route (and subsequent salvation) for highly visible areas or salvation of material for those of low visibility. The archeological richness of the area traversed by the pipeline route could not have been foreseen by the development team. Over 16,000 artifacts were rescued and more than 300 sites identified. Local museums, the Museo Arqueológico de Santa Cruz de la Sierra in Bolivia and Museu da Universidade de Campo Grande in Brazil, exhibit some of the material recovered and provide information about the cultures and sites identified. A compilation of the archeological findings in Bolivia was published in the book: *Al Este de los Andes, al Sur del Amazonas. Descubrimientos Arqueológicos en los Bosques Secos de los Llanos de Bolivia*. The amount and quality of the findings changed the perception of human settlements throughout the region, but particularly in the area of the Bañados del Izozog.

Successful Strategies

The following comprise some of the key elements set forth by the project team that made Gasbol exemplary in its social and environmental achievements:

Institutional Structure

An environmental management institutional structure of its own meant Gasbol had its own environmental committee, environmental supervision unit and a team of environmental inspectors. The large scale of the project required continuous and accurate monitoring of environmental issues, their follow up and report on progress. The complexity of this management need prompted the development of an institutional framework capable of satisfying the needs for availability of information and fast response to conflicts. This framework enabled the project to keep actual timelines very close to those scheduled.

The feedback thus facilitated greatly enhanced collaboration and information exchange among stakeholders. This in turn improved the decision making process between competing alternatives during the design, engineering, implementation and operational stages.

Taking the Time

Taking time for a high quality EA was a bold decision, as discarding the first EA, brought new expenses and more time (over a year). The investment in this first stages paid off substantially. It not only proved to be an environmentally successful project, but it set new environmental standards for the energy sector in Brazil as well. The EA also allowed for a better use of engineering resources, as it identified and classified ecosystems according to their need for special construction works. A Strategic Environmental Assessment ²⁵ to understand possible synergies with other projects was carried out.. The study examined the upstream impacts of oil and gas extraction in Bolivia and the downstream impact of fuel replacement in Brazil.

Innovative Techniques

Fostering the use of innovative techniques to protect the integrity of fragile ecosystems was crucial throughout design and construction. The techniques called for specific timing during the year, highly specialized contractors and a commitment to preserve ecosystem functions unaltered.

Open Dialogue

Open dialogue with indigenous communities required frequent consultations and flexibility on all parts. The indigenous communities showed great flexibility in terms of their compensation while the project team ensured those actions were sustainable and long term. The Bank also played a central role in getting the indigenous communities better recognized by local and federal authorities.

Priority for Both Civil Works and Cultural Heritage

Granting civil works and cultural heritage equal priority allowed the project team to transform policy compliance into a full archeological expedition and rescue mission. Both prospective and salvation activities were scheduled side by side to civil works, ensuring evaluation and allocation of time and resources was done in an efficient and coordinated manner.

Gasbol is evidence that a complex project can be carried out with high environmental and social standards. It is proof that the technology is available to provide basic infrastructure with minimal costs on natural habitats and that provided the political will exists, harmonious and mutually beneficial relationships can be established with indigenous communities.

Case Study 7

Peru: Camisea Gas and Gas Liquids Project

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About the Author

Aaron Goldzimer (agoldzimer@environmentaldefense.org) is a Social Scientist. He promotes environmental and social reforms in international financial institutions, with a major focus on Export Credit Agencies (ECAs) and the Inter-American Development Bank. He works on developing policy documents and proposals for environmental and social reforms of ECAs in international arenas such as the Organization for Economic and Co-operation and Development, G8 process, and the United Nations. Works with grass roots non-governmental partners of the International Program in Latin America, Africa, Indonesia, Western Europe, and Japan to further develop and strengthen international campaigns. Aaron founded and was the first President of the Progressive Caucus, John F. Kennedy School of Government. He won the National Envirocitizen Award, (2000); Dean's Fellow, Harvard University, (1997-2000); International Program Fellow, Environmental Defense, (2000). M.P.P., Public Policy, Harvard University.

Abstract

Since August 2004, this 730 km underground pipeline and a parallel 560 kilometer pipeline have carried natural gas and gas liquids from the Amazon forest in Peru's Urubamba valley, over the Andes to the coast, where the gas liquids are fractionated and exported in the buffer zone of the Paracas Marine Reserve, and the gas is carried further on to Lima. Many of the wells and a part of the pipeline ROW are inside Indigenous (eg: Nahua-Kugapakori Territorial Reserve for isolated indigenous peoples, Machiguenga Communal Reserve) and other reserves. The proponents are the consortium Transportadora de Gas del Peru, which consists of PlusPetrol and Techint of Argentina, Hunt Oil of Texas, and other companies -- supported by the Inter American Development Bank and others. The impacts on the Indigenous Peoples, unplanned access along the ROW into the forest, and severe erosion along the ROW have been criticized.

Introduction

One of the largest new infrastructure projects in Latin America, the \$1.6 billion Camisea Gas and Gas Liquids project in southern Peru involves 1) exploration, exploitation, and processing of gas deposits in one of the most culturally and biologically diverse areas of the Amazon rainforest; 2) pipelines to transport the gas and gas liquids from the Amazon across the Andes to the coast; and 3) a fractionation plant and export loading facility in Paracas Bay, which is also home to Peru's only marine protected area.

The IDB, through its Private Sector Department (PRI), approved a \$75 million loan and a \$60 syndicated loan in September 2003 for the pipeline component of the project – less than two weeks after the U.S. Export Import Bank Board, in an unprecedented decision, rejected the project's final application on environmental grounds. The U.S. Overseas Private Investment Corporation had also reportedly declined involvement – and Citigroup had declined further involvement – at least in part because of environmental concerns.

The construction of Camisea to date has been negligent and has likely already caused significant and irreversible harm to indigenous peoples and critical natural habitats. The chain of events set in motion by the project, as well as major expansions now getting underway, present even greater risks, which are also not being addressed properly.

Impacts on Indigenous Peoples and the Nahua-Kugapakori Reserve

Seventy-four percent of the project's concession (Block 88) and three of the project's four drilling platforms are located within the Nahua-Kugapakori Territorial Reserve for isolated indigenous peoples. Some of the peoples living in the Reserve actively avoid contacts and relationships with outsiders and are highly vulnerable to

introduced diseases, such as flu and colds, to which they have no natural immunological defense. These risks are highlighted by the tragedy that befell the Nahua people in this area, almost half of whom were wiped out from introduced disease when Shell undertook exploratory operations here in the 1980s.²⁶ Indeed, the Nahua-Kugapakori Reserve was created because of this tragedy.

Now, a recent study from the Peruvian Ministry of Health cites epidemics as the main factor behind high death rates and malnutrition in two vulnerable indigenous communities in the Reserve. Only two of the 31 children evaluated were not malnourished, and 75 percent of all deaths occur among children under 12. The study identifies Camisea project work camps as the most likely initial sources of the outbreaks.

In addition to the serious health risks connected with the project's presence inside the Reserve, the project's location in an area inhabited by peoples avoiding contacts with outsiders violates their rights to self-determination (the company itself documents contacts between project workers and "isolated indigenous groups"). The national indigenous federation, AIDSESEP, also alleges there has been involuntary resettlement within the Reserve.²⁷ They have documented the case of a small Machiguenga community inside the Reserve whose inhabitants fled the area after feeling threatened by project employees and activities. Involuntary resettlement of indigenous peoples is a clear violation of IDB policy.

In addition, Peruvian and international civil society protested to the IDB on numerous occasions a provision in a Supreme Decree, enacted just before IDB approval, that established the provisional "tutelage" of a government agency over the isolated indigenous groups in the Nahua-Kugapakori Reserve. Although the IDB never appeared concerned, AIDSESEP challenged the provision legally, and in November 2004 it was deemed unconstitutional.

Many titled indigenous communities in the Lower Urubamba, outside the Reserve, are also affected by the project both directly and by the general increase in traffic in the area brought on by the project. These communities have reported severe declines in fish and game and turbulent, muddy and polluted water sources, among other impacts – likely stemming in part from poorly designed and implemented erosion control and revegetation efforts by the project companies. Moreover, the Camisea project was initiated without a comprehensive environmental or social baseline study of the area, nor was there adequate consultation with impacted communities inside or outside the Reserve before the project began.

Impacts along the Pipeline Right-of-Way (ROW): “Significant and of Great Magnitude”

Soil Erosion, Slope Failure, and Stream and River Crossings

According to a U.S.-based specialist from Global Village Engineers who inspected locations along the ROW (in Shima and Monte Carmelo) three months before IDB approval, pipeline construction “has created significant and perhaps irreversible adverse ecological impacts.” The specialist noted that, in many places, up to 100 tons of soil and vegetation per meter of pipeline had eroded into sensitive streams. Erosion control and other protective measures were absent or had failed without correction or repair, and numerous landslides were evident. Due to inefficient planning and operations, large portions of the ROW had been left exposed during the rainy season. In many places, no soil remained for effective revegetation. The specialist also observed that many stream and river crossings (for both pipelines and access roads) were made without any consideration for protecting aquatic habitat.

Invasive Alien Species

Moreover, project companies are using invasive non-native, exotic species (such as vetiveria) to revegetate and have also allowed kudzu to spread on the ROW (non-native species, including kudzu, are also being used to revegetate the upstream area), in violation of IDB loan conditions.

Leaked Government Observations

As just one indication of the persistence and magnitude of the project’s environmental mismanagement, a leaked document from the Peruvian Government, dated five days before IDB approval, states flatly, regarding a section of the pipeline through a key protected area, “There have not been environmental considerations in the construction of the Right of Way” (underlined in original) and, “After reviewing and overflying the entire Right of Way... the mission concludes that the negative environmental impacts generated during the construction period are significant and of great magnitude”.²⁸

Problems in Siting, Environmental Assessment, and Offset/Mitigation

Paracas National Reserve

The project’s fractionation plant is in the buffer zone of Peru’s only national marine Reserve – an area that was rezoned from residential to heavy industrial zoning right before the land was purchased for the project. (A group of Peruvian NGOs went to the *Tribunal de Garantías Constitucionales* arguing that the change of zoning was unconstitutional, but the case was dismissed.) Paracas is also a noted United Nations

RAMSAR site. The Secretary General of the RAMSAR Convention on Wetlands wrote to IDB President Iglesias and Peruvian President Toledo, urging them to honor Peru's international environmental commitments under RAMSAR and not build these facilities in Paracas. Nevertheless, in a legally questionable move, Peruvian authorities gave a conditional and partial approval to begin part of the Paracas construction before all of the facilities had been approved, eroding and undermining the integrity of the environmental assessment process. The U.S. Government and others have determined that the environmental assessment for the Paracas facilities was inadequate. There was also a lack of biodiversity baseline data; and the alternatives analysis, which was released long after the site was purchased, did not seriously consider environmental factors. Other sites would have had far fewer risks.

Finally, though the siting was partially justified with promises to mitigate the serious fishmeal pollution problem in the Bay, progress on that front has been disappointing to nonexistent. Pluspetrol initially promised a large sum of money for the management of Paracas; but in the end most of that money was to come from interest accruing over 40 years on a much smaller contribution. The Commission for the Sustainable Development of Paracas Bay was not funded until at least six months after its inception; and its master plan (deadline of September, 2004) is still to be prepared. Of course, the fractionation plant and export facilities are already built and operating.

Failure to Assess Induced and Cumulative Impacts

The project failed to address associated facilities and induced, regional, and cumulative impacts. Much of the project area in the rainforest, including the Lower Urubamba valley, had previously been largely inaccessible by land. However, the project's ROWs and related infrastructure threaten to open access for and lure loggers, colonists, and others to indigenous peoples' lands and nearby national parks and reserves. Indeed, the first reports of new migrants are already arriving, including unconfirmed reports of migration along the ROW. There is no clear and effective system in place, including the requisite financial, technical, human and organizational resources, for surveillance and controlling of access. At least by the time of project inauguration and operation, guard posts required to help monitor access had not been built. Promised vegetative plugs, which might impede people traveling by foot or pack animal, are no longer planned. There is also the fear that project revenues will allow regional and local governments to build roads that will increase access into the Lower Urubamba and/or nearby protected areas.

Furthermore, Camisea companies are already beginning a \$2 billion second phase of the project (dubbed "Camisea II" or Peru LNG), which entails expanding extraction into adjacent rainforest and indigenous areas (Block 56) and increasing pipeline capacity in order to eventually export liquefied natural gas. The Paracas fractionation plant and facilities will also be expanded. Although this major second phase was clearly planned and foreseeable, these activities – and their direct, cumulative, and regional impacts – were not considered or addressed in the environmental assessment of Camisea. There is just one loan condition addressing

the issue (out of more than twenty loan conditions added just before loan approval under pressure from the U.S. Government): a Peruvian Government commitment to “the necessary policy and legal changes that will require all future hydrocarbon concessions with output flowing through the Camisea pipeline to conform to internationally-recognized environmental and social safeguards and standards, such as those of the International Finance Corporation” (IFC). However, to date there are no indications that project sponsors are complying with such safeguards and standards -- like the IFC’s Indigenous Peoples safeguard policy. Hence, the new exploration and exploitation of Block 56 is threatening to repeat many of the mistakes made in Block 88.

Revenue Management

There are no clearly defined plans for regulating the use of the main project revenues accruing to the Peruvian Government to ensure that the monies are spent effectively and in a transparent, participatory manner, for the needs of the country and affected communities. Indeed, 50 percent of the revenues are earmarked for the regional government of Cusco, which could mean that a road across natural barriers and into the Lower Urubamba will finally be built, opening the area to colonists from the highlands.

Failure to Provide for Adequate Monitoring and Compliance

There are multiple, inadequate, un-integrated and largely non-transparent monitoring mechanisms, resulting in confusion and a lack of information about 1) project impacts, 2) whom to report problems to, and 3) whether and how issues are resolved. None of the monitoring mechanisms address some of the project’s most critical impacts, such as most social, health, and biological issues. (On biodiversity, for example, the upstream consortium did not conduct any biodiversity monitoring during construction; and the downstream consortium says it is monitoring biodiversity, but the data are not publicly available.) The community monitoring program has also been particularly flawed. Moreover, there has been no monitoring (other than a 4-member team reporting to IDB) that is independent of the Peruvian Government and the companies; and there are no independent monitors empowered to enforce compliance by, for example, stopping construction or operation when necessary. Indeed, TGP was fined approximately US\$1,000,000 by the government for several violations during construction; TGP not only continued building, they finished the pipelines and are now in a legal battle to avoid the payments. Other projects that have been supported by other development banks -- projects no more controversial than Camisea -- have at least had the benefit of independent and transparent monitoring systems to monitor, investigate and disclose project problems and allegations, such as the Chad-Cameroon project’s Independent Advisory Group. No such system has been instituted by the IDB for Camisea.

In addition, despite repeated requests, and in violation of the loan conditions, the monitoring reports from the IDB’s own monitors (the firm URS) have not been made

public – only the monthly summaries have been disclosed. And now URS has been let go by the IDB, resulting in the Bank being without its own project monitors for some months.

In spite of a public commitment to developing a credible system of independent monitoring by IDB Executive Vice President Flannery at the IDB Annual Meetings in Lima in March 2004 and despite loan conditions requiring major strengthening of monitoring systems, virtually nothing has been done. Long after project inauguration and financial closure, discussions between the IDB and Peruvian civil society continue, with the objective of resolving the many outstanding issues related to creating and implementing a truly credible independent monitoring system.

Failure to Engage Meaningfully with Civil Society

Throughout the IDB's due diligence process, different elements of Peruvian and international civil society devoted significant resources to engagement with the Bank in an effort to improve the project. In the end, many of these groups believed that the IDB did not engage in good faith, that civil society expertise and input was not heeded, and that the IDB was more interested in getting the project done than in getting it done right. In July 2003, after extensive consultations, exchanges, and working groups, a group of 23 Peruvian civil society organizations (including the colleges of architects and biologists, indigenous federations, development groups, environmental and human rights groups, and others) released a joint position paper, which raised many of the issues above and others and provided recommendations for each -- to be adopted *before approval of financing*. Nevertheless, despite this unprecedented unity among a diverse array of Peruvian civil society organizations, the IDB approved financing for the project in September 2003, without adopting the group's recommendations. Many local affected indigenous communities feel particularly excluded from the decision-making process.

Lack of Due Diligence

The project failed to require basic environmental due diligence prior to loan approval. Even though the project came to the IDB Board more than a year after the start of construction, the proposed loan conditions to be required for financial closure and disbursement included items such as: 1) an acceptable Revegetation Plan; 2) an acceptable Access Control Plan; 3) biodiversity monitoring; 3) numerous plans related to the Paracas facilities; etc. These and other items clearly should have been developed before construction and, without question, before presentation to the Board for approval. In essence, IDB management was asking the Board to approve the transaction before these most basic components of environmental and social due diligence had been adequately prepared, thereby implicitly asking the Board to trust in the proper further preparation of this project, after Board approval and more than a year after the start of construction. Indeed, many of these items were still not in place until six months later, just months before project operation began; and many never happened at all (e.g., loan conditions requiring "full baseline reconnaissance

and further impact assessment” for Paracas, “complete and thorough review” of the proposed Paracas facilities, etc.). Meanwhile, construction always continued apace.

Noncompliance with Social and Environmental Loan Conditions

In spring and summer 2004, Peruvian civil society provided substantial evidence of noncompliance with social and environmental loan conditions.²⁹ After a site visit, the U.S. Government also expressed similar concerns. Peruvian civil society requested an independent audit of compliance with social and environmental loan conditions before financial closure and disbursement. Nevertheless, without responding substantively to civil society’s contentions, the IDB insisted that the project was in compliance and went ahead with financial closure in the summer of 2004.

Inadequacy of Environmental Safeguards: Natural Habitats Policy

The lack of a Natural Habitats policy at the Bank (it currently does not have **any** natural habitats policy and has proposed only weak natural habitats language in its November 2004 draft Environment and Safeguards Compliance Policy) meant that adequate safeguards were not in place to protect critical natural habitats. The International Finance Corporation’s (IFC’s) Policy on Natural Habitats (OP 4.04), for example, states unequivocally that, “the IFC does not support projects that, in IFC’s opinion, involve the significant conversion or degradation of critical natural habitats.” There is no dispute that the Camisea project directly impacts critical natural habitats, including areas within World Wildlife Fund’s “Global 200”³⁰, The Nature Conservancy’s “Last Great Places” conservation campaign, and Conservation International’s “Tropical Andes” hotspot³¹. Even the Camisea project sponsors state, “We believe the area in Block 88 would be considered a ‘critical natural habitat.’”³² According to World Wildlife Fund, The Nature Conservancy, Conservation International and the Smithsonian Institution, “The high conservation value accorded to the Camisea Project region...is due to its high species richness, endemism, number and diversity of habitats, and biogeographical and evolutionary processes. In all, the Camisea project would affect one of the areas of highest biological and ecological value of all forested regions in the world”³³.

The project involves clear threats of significant conversion and degradation from both direct impacts (clearing, pollution and erosion in pristine waterways, risk of spills and accidents, etc.) and indirect and cumulative impacts (increasing access to previously isolated and nearly inaccessible regions, possibly enabling road-building into the region by local and regional governments with project royalties, luring job-seekers and resource extractors, etc.), which would have made Camisea ineligible for World Bank or IFC funding under their Natural Habitats Policy, absent significant and fundamental changes.

The Camisea Consortium has argued that while the habitats affected are “critical natural habitats”, the conversion of habitat that the project risks is not “significant,”

since “the quantity of land affected by the Camisea project is small compared to the overall surface of Block 88.”³⁴ However, this neglects to take into consideration both the direct project impacts that extend beyond the project sites and the indirect project impacts. Conservation International, et al., emphasize that the secondary and cumulative impacts of the project on critical habitats risk being “more significant and more difficult to control over the long-term than direct impacts (e.g., construction of the infrastructure) themselves...Opening access to Block 88 could well be a starting point for significantly greater resource extraction and irreversible primary forest destruction...”³⁵

Moreover, the project’s natural gas liquids fractionation plant and loading facility are located just adjacent to Peru’s only marine reserve – a noted United Nations RAMSAR and Western Hemisphere Shorebird Reserve Network site in the Humboldt marine ecoregion, which is “one of the highest priority marine areas in all of Latin America and the Caribbean.”³⁶ Indeed, the Peruvian Government in 2002 applied to the International Maritime Organization (IMO) to declare the Paracas Reserve a Particularly Sensitive Sea Area and prohibit the navigation of tankers within the sea area of the reserve. (The same government then put the fractionation plant and export loading facilities in the Reserve’s buffer zone, thereby increasing tanker traffic.) The Peruvian Government’s application for the Particularly Sensitive Sea Area designation is one of the most eloquent descriptions of the international importance and sensitivity of the Paracas area and natural habitats and was approved by the IMO in July 2003, two months before IDB approval of Camisea.

Considering Financing During Construction – A Fait Accompli

One of the biggest problems with regards to Camisea was that the IDB was actively considering financing the project while it was being built, which meant that the IDB had very little ability or leverage to shape the design and implementation of the project to improve its outcomes, since the most important decisions (including where the project would be located) were fast becoming facts on the ground. This threatens to set a dangerous precedent: prospective project sponsors now know that it pays to build a project first, re-making “the facts on the ground”, and simultaneously seek IDB financing while most of the important decisions (including the siting of the project itself) are becoming irreversible.

Chapter 4 Asia

Case Study 8

A Decade of Environmental and Social Impact Assessment of Pipelines in the Caspian Sea

Lessons and Challenges

Ronald Anderson

About the Author:

Ronald Anderson (roanderson@rogers.com) recently retired from the International Finance Corporation (the private sector arm of the World Bank Group) after a 12 year career where he was the Chief Environment Specialist in the Environment and Social Development Department. He specialized in the oil and gas sector and was involved in IFC oil and gas investments in the Caspian Sea, as well as the Chad/Cameroon Oil Export project. Following retirement, he assisted IFC in the first stage of its revision of the environmental and social safeguard policies. Currently he is an Associate with Sustainable Finance Limited, which provides sustainability services to the Equator Banks.

Abstract

Over the last decade offshore oil and gas developments in the Caspian Sea have picked up in pace. This same decade has witnessed an evolution in the way environmental and social impact assessment (ESIA) has been used in support of the environmental and social objectives of these oil and gas developments. In the late 1990's the ESIA for the Azerbaijan/Georgia Early Oil Project was used for far different purposes than the ESIA for the BTC project currently under construction. In a word, the ESIA process has evolved. In spite of this evolution there remains a dilemma. How does one take the recommendations in the ESIA through to implementation so that the environmental and social objectives of oil and gas developments are realized in an efficient and timely manner? Many of the evolutions and implementation challenges are not unique to the Caspian Sea region. . The author proposes a new ESIA paradigm. The new paradigm has universal relevance to improving investment project outcomes.

The Projects

The Early Oil Project (EOP) was approved by the International Finance Corporations' Board of Directors in 1998. The EOP involved the early development the Azeri-Chirag-Gunashli oil field in the Caspian Sea approximately 120 km offshore from Baku, Azerbaijan and the evacuation of produced oil from the process facility at Sangachal (immediately to the south of Baku) via two pipelines: a refurbished pipeline from Sangachal to the Black Sea coast at Novorossiysk, Russia's Northern Route Export Pipeline, and a newly built & refurbished pipeline from Sangachal to the Black Sea at Supsa, Georgia (Western Route Export Pipeline). The project produces approximately 135,000 bbl/day of oil.

The Baku Tbilisi Ceyhan (BTC) project is an extension of the EOP. It entails the further development of oil in deeper waters of ACG in the Caspian Sea and the evacuation of product via a pipeline from Sangachal via Tbilisi, Georgia to then to Ceyhan, Turkey on the Mediterranean Sea. The project will produce approximately 1,000,000 bbl/day of oil.

Figure 24 provides a schematic of the oil fields and pipelines. The associated gas project (Shah Deniz) and associated pipeline (South Caucasus Pipeline) is also illustrated.

Figure 24: Map of Oil and Gas in the Caspian Sea Area



The Two Environmental and Social Impacts Assessments

The Early Oil Project and BTC Project ESIA

For the Early Oil Pipeline assessment, the project was the sole focus. While this has been the tradition of the discipline, this focus was reinforced by the TORs generated by the host governments who were relatively new to the process. The ESIA was prepared for permitting purposes. Hence, the ESIA focused entirely on meeting the requirements of the Permit’s Terms of Reference.

Figure 25: Comparison of the Environmental Impact Assessments for the EOP and BTC Projects

	Focus	Objective	Content
Early Oil Pipeline (EOP)	Project	Permitting	Baseline data, Mitigation
Baku-Tbilisi-Ceyhan (BTC)	Project +	Financing	Environmental & Social Mitigation Plan

The Early Oil Pipeline ESIA (Figure 25) was a traditional product from a permitting exercise: front end loaded with environmental baseline data and limited social baseline characterized primarily by the description of income and education levels. Compensation for social impacts (for example, livelihood loss) was a concern, but this was primarily conducted outside the ESIA. Consultation with affected communities was little more than information dissemination on a very limited basis. Similarly, predicted impacts focused on the environmental, while social impacts were primarily restricted to the employment opportunities to be generated by the project. The proposed mitigation was a 'shopping list'. The ESMP was negotiated between the lenders and project proponent outside the ESIA. The ESIA executive summary was written separately from the ESIA so that the contents of both the ESIA and ESMP would be captured.

While the project remained a key subject in the BTC ESIA, "outside the box" issues also were addressed. For example, the ESIA included a cumulative effects assessment (CEA) in the context of the EOP project, the South Caucasus Pipeline, and potential other future projects. The assessment of alternative project configurations was undertaken, and there was considerable effort expended on a justification for the pre-selected project configuration.

Rather than permitting being the primary focus (indeed this remained a key objective of the ESIA), producing a satisfactory ESIA for the potential lenders was the paramount objective. As such, there was a shift from the EOP emphasis on specific project issues flagged in the TOR to demonstrating how the project would comply with the World Bank Group environmental and social safeguard policies.

The BTC ESIA was a stark contrast to that for the EOP ESIA. While retaining strong baseline and mitigation sections, the focus was on producing an environmental and social management plan (ESMP) complete with responsibilities, timelines and budgets. I would go so far as to say that the social component was given greater weight than environment. Certainly consultation with affected parties was key. The ESMP itemized how the World Bank Group environmental and social safeguard policies would be complied with on an ongoing basis.

Why the Evolution?

The maturing of the discipline itself certainly had a role in differentiating the EOP and BTC ESIA's. However, other important factors were at play.

By far the largest player in this evolution was the lenders, in particular the World Bank Group. Protests by NGOs at the World Bank Group annual meeting in Prague, Czech Republic, in 2000 alleged that lender financing of the EOP project had not resulted in any developmental impact or benefits to impacted communities. In response to this the President of the World Bank Group initiated the Extractive Industry Review (EIR) in 2001. This review had both a tremendous impact on how the existing environmental and social safeguard policies (which were the same for

both projects) were interpreted/applied to BTC, and greatly raised awareness amongst IFC (and other potential) investment staff on the meaning of developmental impact.

The other driver was the Chad/Cameroon Oil Export project. Approved by the World Bank Group Board of Directors in 2000, this project was a watershed in the institutions ongoing 'snails pace' shift in emphasis from assessment to implementation, particularly developmental impact and benefits to local affected communities. The ESIA for this project largely facilitated the transition between the EOP and BTC ESIA's. Implementation experience with the Chad/Cameroon Oil Export project provided environmental and social assessment practitioners with valuable insights on what works and does not work.

Separate from the lenders one should not underestimate the drivers at play in this evolution in the Caspian Sea region itself.

(1) The BTC project marked a new stage in oil and gas developments in the southern Caspian Sea region. It marked a seven-fold increase in production compared to the EOP project. Together with the Shah Deniz offshore gas field and pipeline (Figure 25), BTC would generate huge revenues to Azerbaijan and significant revenues to the governments of Georgia and Turkey, involve infrastructure investment, employment, local supply chains, etc. As such, the project(s) mark a long-term business relationship between the developer and the three respective countries. An initial step in this relationship necessitated the need to better understand broader issues, (rather than project-specific issues alone) facing the developer and the respective countries. The result was the February 2003 "Regional Review: Economic, Social and Environmental Overview of the Southern Caspian Oil and Gas Projects" (Review). The issues covered in this Review are complex and controversial, and in many ways outside the direct control of the project developer. Nevertheless, the developer recognized that they could provide both a positive influence and example in contributing to the wellbeing of the people in the three countries. It marked an attempt to think outside the traditional narrowly defined "box" around a project which characterized the EOP ESIA.

(2) Following receipt of the environmental permits for the EOP project respectively in Azerbaijan and Georgia the road through construction and operation was not a smooth one, either for the developer or for the respective governments. For example, the environmental permit in Georgia came with conditions relating to implementation (sometimes the conditions were far from clear, such as in the instance of responsibilities for the remediation of historic oil contamination along those portions of the pipeline in Georgia which were to be refurbished); hence striking a cord with the developer that environmental and social concerns did not end with issuing of the permit. The fast flowing rivers of Georgia and frequent heavy rains created erosion problems with the accompanying risk to pipeline integrity. And while illegal taps of the pipelines dropped dramatically with the project, this was largely due to a community relations program that used communities along the ROW

to monitor for suspicious activities that may result in illegal taps of the pipeline, an issue that was not covered in any detail in the EOP ESIA. These and other construction and operation related issues drew attention to ongoing environmental and social issues which heightened the need for an ESMP to manage such issues on an ongoing basis.

(3) Several years of planning, construction and operations experience with the EOP project were accompanied by the developer having in place staff with practical, project specific environmental and social expertise. As such, staff shifted from a primary concern with baseline data, impacts and mitigation to ways and means of dealing with project environmental and social issues on an ongoing basis. Hence, an evolution to concerns about responsibilities, timelines (schedules), and budgets to realize project environmental and social objectives. This 'in house' transformation was valuable input into preparation of the ESMP for the BTC project

A Dilemma

With the emergence of 'outside the box' analysis, a focus on financing which raised the bar from where it was placed in the permitting scenario, and the emergence of the ESMP as a key ESIA deliverable, one could easily be led to believe that we now had a state of the art process from the perspective of environmental and social parameters. A few comments are warranted here.

Efforts to "look outside the box" in the BTC ESIA are also commendable. There certainly remains a challenge for all players involved in the project to use a portion of project revenues to deal with the pervasive social issues identified in the Review. The CEA component of the BTC ESIA also highlighted important issues. However, both the Review and CEA (as well as other "outside the box" analysis) highlighted challenges of sponsor (developer) capacity as well as the capacity/commitment of third parties. For example, the Review acknowledged that many issues identified in the Review could be directly addressed by the developers undertaking a commercial project. Many are predominantly, if not exclusively, the domain of sovereign governments. To date there is no formal mechanism in place across the project's area of influence to deal with the social issues raised in the Review, nor with the inevitable cumulative effects that will arise as oil development in the Caspian Sea expands and export volumes increase. Neither is there a strategy in place to deal with the unavoidable cumulative effects of oil and gas developments in the area of the Caspian Sea.

Right of way (ROW) selection issues and pipeline routing controversies were more pervasive on the BTC than they were on the EOP project. For example, the Borjomi, Georgia ROW/routing issue led to delays in the World Bank Board of Governor's consideration of the project. The issue is still unresolved today in the political arena, more than one and a half years after financial close.

The ESMP output of the BTC ESIA is commendable. It had the potential to be a defining input to the project. It was ahead of practice in the discipline. Yet the ESMP had growing pains. For example, construction on the project had begun before the ESMP was completed. In the early stages of construction (late 2003-early 2004), lenders and the project developer were running after the contractors to educate them on the ESMP provisions and agreeing on sequencing ESMP provisions into their existing contractual obligations. Seemingly, more time and resources were being spent on educating contractors on the provisions of the ESMP than on actual implementation of same by the contractors. Also, contractual agreements with project builders had already been agreed. For example, Botas, a state entity of the government of Turkey, had already been allocated a budget for construction work in Turkey. How was it to budget for the financial obligations associated with the ESMP? Would it want to? Could it afford to?

Finally, there remains an ideological/philosophical gap (perhaps chasm) among oil and gas stakeholders in the area of the Caspian Sea. Whether the issue is the developmental impact of investment in the sector, benefits to affected parties, ROW/routing issues, or some other issue, a polarization remains in spite of the growth in the consultation efforts of ESIA over the decade.

But a dilemma remains. How could issues such as these -- and there are many others -- remain, given the improvements in the ESIA process over the last decade?

A New Paradigm

How can the shortcomings discussed above be circumvented? Figure 26 presents a proposed new ESIA paradigm that has the potential to address them.

Figure 26: A New ESIA Paradigm

Pipeline	Focus	Objective	Content
EOP	Project	Permitting	Baseline data, Mitigation
BTC	Project	Financing	ESMP
Way forward	Strategic	Outcomes	Implementation

ESIAs need to begin upstream in the decision-making process, such that they focus on generating strategic environmental and social advice to decision makers in project selection. Project justification, assessment of alternatives and selection of the preferred configuration would be key considerations of the ESIA. This may not result in selection of the best project (and I don't think we should be doing only the best projects), but it will lead to the selection of projects in which more options would be considered to realize environmental and social objectives. Opportunities would be present to deal with broader environmental and social (outside the box) issues, cumulative effects, etc., in a more pragmatic manner than is currently the norm.

Also, the respective agreements between the governments and the developer for the EOP and the BTC projects had already defined the end points (Supsa and Ceyhan) for the pipelines. These end points were defined without the benefit of a rigorous environmental and social assessment. Could a rigorous environmental and social assessment as part of the concession agreement negotiations have identified better alternatives than Supsa and Ceyhan? Had the Borjomi issue been dealt with at this stage, the avoidance option could have been assessed on an equal footing with mitigation options for the Borjomi routing. What the BTC ESIA did (and it was a commendable effort) was to provide justification for the pre-selected route through Borjomi; it discounted on a sound technical, environmental and social basis, other potential routes in and round this controversial area in Georgia.

The objective of ESIA's should be to facilitate better project outcomes, including maximizing environmental and social outcomes. Of course, this objective can be realized only if the ESIA moves upstream. Permitting and financing objectives should serve as the foundation upon which project outcomes can be maximized. Critical here is the need for ESIA's to propose environmental and social indicators to measure project outcomes over space and time. Five years after the Prague World Bank annual meetings, we still do not have indicators in place in the Caspian Sea area to measure the developmental impact of oil and gas sector investments.

Facilitating stakeholders toward mutually accepted environmental and social outcomes should be the objective of ESIA's and the basis upon which ESMPs are prepared. . This can be achieved only if environmental and social objectives are mainstreamed among all project players in such a way that the ESIA is viewed as a political process as well as a technical/scientific exercise.

We need to break the mindset that longer ESIA's/ESMPs are better products. (The EOP ESIA was several volumes; the Chad/Cameroon Oil Export Project ESIA/ESMP has been proudly touted as being in excess of 19 volumes; while the BTC ESIA/ESAP reached 29 volumes.) Voluminous ESIA's/ESMPs become bogged down in data collection exercises. They perpetuate the perception among project decision makers that ESIA practitioners are not practical, efficient, outcome-oriented professionals.

Challenges for the New Paradigm

Challenges to realization of the potential benefits of the proposed ESIA paradigm are fourfold.

The first is the willingness of project participants to mainstream, and to give equal collective commitment to environmental and social objectives. Environmental and social considerations can no longer be left to the traditional practitioners, who to date have been merely an appendage to the decision making process. Environmental and social objectives must be given equal weight to financial and economic considerations in decision making. Without mainstreaming, ESIA's will continue to

be prepared solely by practitioners and read only by practitioners, and remain largely unread on the shelves of the majority.

Second, is the capacity and willingness of project developers (sponsors) to undertake such a task. Environmental and social matters, while embraced by some developers, are poorly understood, and believed to be handled best by a specific group of professionals who remain largely an appendage to the decision-making process.

Third, is the willingness and capacity of third parties (particularly governments and NGOs) to hold up their end of the partnership. The performance of third parties is critical to project outcomes.

Finally, the willingness of ESIA practitioners to ‘let go’ and mainstream their expertise with other project participants in order to improve the environmental and social outcomes of projects. ESIA practitioners will need to begin to think “outside the box” of traditional environmental and social considerations.

Conclusion

In “Shake Hands with the Devil: The Failure of Humanity in Rwanda” the UN commander sees the UN being obsessed with assessing situations, failing to be decisive on implementation, and largely unconcerned with the outcome of genocide that was unfolding in Rwanda. The stakes are not as high here, but the missed opportunity would be a major loss to all stakeholders. We need to move from assessment to improving outcomes. The ESIA can be a powerful tool in facilitating this transition.

Case Study 9

Russia: Sakhalin II Gas and Oil Pipeline

Behemoth with a Bad Attitude Shuns Best Practices, Risks Extinction, and Threatens an Island's Fisheries

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Doug Norlen (dnorlen@pacificenvironment.org) is Policy Director for Pacific Environment. Serving on staff since 1995, Mr. Norlen specializes in the reform of international finance institutions (IFIs) and export credit agencies (ECAs). Mr. Norlen was instrumental in successful efforts to reform the environmental policies of the US Export-Import Bank and Overseas Private Investment Corporation, and he is a leader in the international ECA Watch campaign to reform all ECAs. Mr. Norlen has extensive experience monitoring extractive sector projects financed by International Finance Institutions and Export Credit Agencies in Russia and Central Asia.

Introduction

The Sakhalin II on-shore and off-shore oil and gas project at Sakhalin Island in the Russian Far East is an industrial project involving two off-shore oil and one off-shore gas drilling platforms, undersea platform-to-shore pipelines, on-shore oil and gas processing facilities, 800 kilometers of on-shore pipelines, one of the world's largest LNG processing and export facility, oil export facilities and consequent outgoing tanker passage. The project proponents claim that, at a cost of \$12 billion, Sakhalin II is the largest single integrated oil and gas project ever undertaken.

Sakhalin Island off-shore waters are some of the most abundant yet threatened marine environments on the Pacific Rim. They contain 25 marine mammal species, 11 of which are endangered, including the world's most critically endangered gray whale species, the Western Gray Whale. These marine environments are rich with crab, herring, cod, and salmon, including the unique masu salmon and endangered Sakhalin taimen, the most ancient salmonid. Fishing in these rich waters has long been the economic mainstay of Sakhalin Island.

The Sakhalin II project will operate in difficult climatic and seismic conditions: high earthquake activity, heavy ice pack, frequent storms and fog. Sakhalin II also creates conditions for potential catastrophic oil spills, including tanker spills on the scale experienced in the Exxon Valdez incident.

Registered in Bermuda, the Sakhalin II project is managed by the Sakhalin Energy Investment Company, Ltd. (SEIC), a consortium led by Royal Dutch/Shell and whose partners include Mitsubishi and Mitsui. Phase 1 of Sakhalin II is now complete. Royal Dutch/Shell is now negotiating external financing for its much larger Phase 2. The Sakhalin II project seeks an estimated US \$5 billion financing from several public sources including the European Bank for Reconstruction and Development (EBRD), U.S. Export-Import Bank (Ex-Im Bank), U.K. Export Credit Guarantee Department (ECGD), and the Japanese Bank for International Cooperation (JBIC). Project sponsors also seek additional financing from private banks. Credit Suisse First Boston is serving as the project's financial advisor, and was the target of environmental protests at its offices in New York City and Zurich, Switzerland on April 5-6, 2005.

In the Fall of 2003, the EBRD declared that the Sakhalin II Environmental Impact Assessment (EIA) is "unfit for purpose" (bank-speak for lousy), and it postponed any decision on financing until problems are remedied.³⁷ At the EBRD's 2004 Annual Meeting, President Jean Lemierre said, "... The answers we have received (from sponsors) are not appropriate. We are not going to take a decision quickly because we are not satisfied."³⁸ Financing from all public finance institutions has stalled pending submission of EIA Addenda from Royal Dutch/Shell (expected in 2005). Meanwhile, in June 2004, leading socially responsible investment funds, including Investec Henderson Crosthwaite and Morley Fund Management, have divested all

stock in Royal Dutch/Shell over concerns about environmental issues including the Sakhalin II project.³⁹

Royal Dutch/Shell and several public finance institutions have explicitly claimed and/or inferred that Sakhalin II complies with World Bank and IFC environmental policies. Many private banks that are considering financing the project have also recently signed the Equator Principles on environmental and social performance, which also commits them to assure that their projects comply with IFC policy.

Project Elements and Their Impacts:

Off-Shore Platforms and Undersea Pipelines: The Sakhalin II project threatens the marine environment with one existing and one proposed off-shore oil platforms and subsea pipelines near the Western Gray Whale's migrating and primary benthic feeding habitat.⁴⁰ Just over 100

Western Gray Whales exist, and just over 20 are females capable of calving. The 2004 report of the Scientific Committee of the International Whaling Commission states:

“[T]he Committee noted with great concern that the evidence is compelling that this population is in serious danger of extinction...[and] recommends as a matter absolute urgency that measures be taken to protect this population and its habitat off Sakhalin Island.”

The Committee report also states that the:

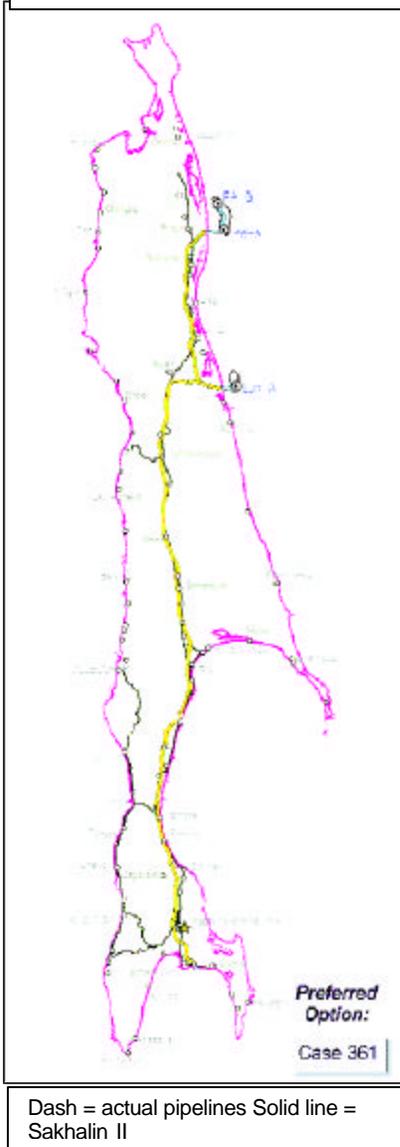
“[R]ecent onset of large-scale oil development programs off Sakhalin Island [including Sakhalin II] pose new threats to the future survival of the 100 remaining western gray whales.”

Several project-related impacts could harm the Western Gray Whale, including construction and operation of drilling and production platforms and undersea pipelines, significant increases in vessel and aircraft traffic, seismic activities, and the potential for oil leaks and spills. Given how close the Western Gray Whale is to extinction, any negative impact could imperil the species. Thus, as currently designed, the Sakhalin II project violates IFC's OP 4.04 Natural Habitats Policy: *IFC does not support projects that, in IFC's opinion, involve the significant conversion or degradation of critical natural habitats.*

And:

“[C]ritical natural habitats (include) areas with known high suitability for bio-diversity conservation; and sites that are critical for rare, vulnerable, migratory, or endangered species.”

**Figure 27:
Map of Sakhalin**



finance institutions, in the Fall, 2004, Royal Dutch/Shell agreed to commission the International Union for the Conservation of Nature (IUCN) to convene an Independent Scientific Review Panel (ISRP) to evaluate project impacts and to assess alternatives and mitigation measures to protect the Western Gray Whale. The ISRP issued its findings in a report on February 16, 2005.⁴¹

The ISRP report concludes that Sakhalin II and other oil and gas projects in the immediate area threaten the Western Gray Whale population with extinction. The ISRP found that:

“[E]xisting and planned large-scale offshore oil and gas activities pose potentially catastrophic threats to the population.”

And: "The most precautionary approach would be to suspend present operations and delay further development of the oil and gas reserves in the vicinity of the gray whale feeding grounds off Sakhalin, and especially the critical nearshore feeding ground that is used preferentially by mothers and calves."

And: [T]he loss of one additional female per year (over and above the death rates experienced in recent years) would be sufficient to drive the population towards extinction with high probability.

Regarding the proposed location for the additional oil platform (aka PA-B Platform):

“[I]t appears that the site was chosen prior to analysis of spill trajectories. If so, then risks to key areas such as the nearshore foraging habitat for gray whales were not understood and considered in the site selection process.”

And: "Clearly, from the perspective of gray whale conservation, the further away the platform is from the foraging grounds the better."

The ISRP was also critical of the project sponsor’s lack of rigorous analysis of project impacts ranging from the potential from oil spills, the smothering of benthos, noise impacts, ship collisions. Moreover: "The Panel was precluded by a lack of

information and specificity from completing a comprehensive review of a number of important Sakhalin II Phase 2 elements."

And: [F]rom the route of Sakhalin II's perspective of gray whale conservation, the available information precludes a conclusive assessment of the effects on primary feeding habitat. The CEA and other documents do not adequately reflect the uncertainty that exists and in many cases reflect an overly optimistic view."

In the Fall, 2004, Royal Dutch/Shell provided the Panel with a Comparative Environmental Assessment (CEA) to evaluate alternatives including different subsea pipeline routes.⁴² However, according to Royal Dutch/Shell, the CEA does not present any alternatives to the proposed new off-shore PA-B oil platform. The failure of Royal Dutch/Shell-SEIC to consider alternative locations for the PA-B platform means that the ISRP was unable to obtain sufficient information to fulfill requirements under its Terms of Reference to assess alternatives and additional mitigation measures. This also represents a violation of IFC policy:

OP 4.01.2:...EA...examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation.

According to Royal Dutch/Shell, the CEA does not evaluate the cumulative impacts of the Sakhalin II project in the context of the many other oil and gas projects in its vicinity. This also violates IFC policy:

IFC Procedure for Environmental and Social Review of Projects: Annex C—Types of Environmental Assessment: "The EA considers the following, as appropriate to specific project...Cumulative impacts of existing projects, the proposed projects, and anticipated future projects..."

Following the ISRP and CEA reports, on March 30, 2005, Royal Dutch/Shell announced that it would re-route undersea pipelines, which were originally proposed to be built directly through the Western Gray Whale's feeding habitat. The newly proposed subsea route extends from off-shore platforms to shore 20 kilometers South of the Western Gray Whale's primary feeding habitat. Environmental organizations welcome this decision as a first step towards reducing project impacts on the Western Gray Whale. However, most of the additional serious concerns expressed in the ISRP report have not been addressed, and environmental organizations continue to call for a moratorium on off-shore portions of the project.

On-Shore Pipelines

The project's on-shore facilities include two 800-kilometer pipelines (oil and gas) that will cross 1103 watercourses. Many of these watercourses provide spawning and rearing habitat for unique and important wild salmon including the endangered Sakhalin taimen. The salmon fisheries is the traditional backbone of the local economy and an important part of the culture of the indigenous Nivkh people.

Royal Dutch/Shell proposes to cross virtually all 1103 watercourses by trenching, which is essentially the excavation of a trench across the bottom of a stream or river, and the placement and burial of the pipeline in the trench. Royal Dutch/Shell proposes only a small number of watercourses to be crossed by alternative means, such as Horizontal Directional Drilling, and no aerial crossings. Trenching of pipelines can, *inter alia*, affect fish spawning behavior and reduce overall spawning levels, can destroy salmon spawning beds, and can indirectly smother those beds with suspended sediments that flow downstream from excavated pipeline trenches. Trenched pipelines that leak (especially smaller, imperceptible leaks) could saturate soils and watercourses with oil long before being noticed, and longer still before pipelines could be fixed or removed. NGOs point out that this practice lags far behind the global best practice of aerial crossing, which was done on the Trans-Alaska Pipeline. Royal Dutch/Shell claims that it decided on trenching in part due to costs and in part due to fears of sabotage. However, sabotage of oil pipelines on Sakhalin Island has not occurred, in contrast to war-torn regions in other parts of the world where Royal Dutch/Shell operates.

The Wild Salmon Center, an non-governmental organization that specializes in the conservation of wild salmon, has additional concerns about the pipelines:

- The construction of roads increasing poaching access;
- Insufficient quality and sufficiency of background (baseline) fisheries data;
- Failure to adopt Russian government recommendations for aerial crossings of 29 watercourses;
- Construction in known wild salmon spawning grounds;
- Quality control over subcontractors;
- Lack of completed oil spill response plan;
- Pipeline routing through seismic, landslide and mudslide areas;;
- Adequacy of fisheries damage calculation/compensation;
- Potential construction schedule pressures;
- The need to archive pipeline inspection records⁴³

In March, 2005, pictures of reckless pipeline construction in Sakhalin's Poronay river basin were leaked to the international press. These pictures show pipeline construction slashing through forests and turning wild salmon tributaries muddy brown, clearly demonstrating violations of public and private banks and Russian government requirements to protect wild salmon streams.

Meanwhile, Sakhalin Island is a very active seismic zone, a fact perhaps best illustrated by the 7.2 magnitude Neftegorsk earthquake in 1995, which killed 2000 people. Royal Dutch/Shell proposal to trench pipelines across earthquake faults, despite that Russian legislation prohibits this practice and that proven-effective global best practice on the Trans-Alaska Pipeline involves above-ground crossing of faults on flexible rails.⁴⁴

Despite the high seismic risks, the EIA and associated documents fail to fully evaluate this risk, and contain incomplete and inaccurate information. For example, the EIA is missing fault crossing and seismic zone information; fails to interpret baseline data of reported ground movements at faults; does not provide evidence that its definition of active and inactive faults is compatible with the complex geological conditions on Sakhalin; provides information on seismicity ratings and on the number of earthquake fault crossings that contradicts other information contained in the source documentation; fails to provide adequate design criteria; does not present information on site-specific risks at individual fault crossings and strategies to mitigate those risks; and presents a risk analysis based on risks to people, not to the environment (including salmon, other fish and wildlife and habitats).⁴⁵

Based on these issues, it can be concluded that the Sakhalin II EIA evaluation of on-shore pipeline impacts contains premature conclusions, and is based on incomplete and inaccurate information, perpetuating its status as “unfit for purpose.”

Liquid Natural Gas Plant

At the Southern terminus of the Sakhalin II on-shore pipelines, Royal Dutch/Shell is constructing one of the world’s largest Liquid Natural Gas (LNG) projects. During construction of the LNG terminal, 1,000,000 cubic meters of construction dredging materials will be dumped into Aniva Bay and over 500,000 cubic meters of wastewater will annually enter into this fisheries-rich bay.

According to the Sakhalin II EIA:

“Aniva Bay is recognized as a sensitive area, based predominantly on the salmon population. It is currently not classified, however if Aniva Bay were to be classified as a high water category in the future, SEIC would need to apply for exemptions for the proposed development. Depending on the classification and the permitting process, changes may be required during the detailed design process.”

However, Volume 5 2.4.3 states:

“Aniva Bay is designated a zero discharge site, details of effluent permitting are currently under discussion with the relevant authorities.”

Thus the EIA contradicts itself, and relies on a hope that Aniva Bay will have its classification lowered rather than proposing adequate alternatives or mitigation measures. Local NGOs have litigated to halt construction of the LNG plant based in part on these concerns, and they have also recently won a court victory concerning the illegal construction of a jetty in the vicinity of the plant. Meanwhile, on April 8, 2005, it was reported that Russian authorities are investigating potential illegal dumping of dredged material into crab, sea-urchin and scallop spawning areas in Aniva Bay, one of the most important fisheries areas on the island.⁴⁶

Concerning solid waste management needs for such a massive construction effort, the Sakhalin II EIA also states:

“[M]anagement of solid wastes remains one of the main vulnerabilities associated with the project..” [and] “the existing local and regional infrastructure is insufficient to accept and store the projected amounts of solid waste associated with pipeline construction, and SEIC will therefore undertake to upgrade such facilities to an appropriate standard....”

However, despite the fact that LNG plant and other project construction has commenced, there is still no sufficient solid waste infrastructure.

Meanwhile, the massive influx of people and material involved in the construction of the LNG plant is having very significant and unexpected socio-economic and social impacts on the neighboring city of Korsakov. These include the overwhelming of the city’s water, waste, housing, medical and transportation infrastructure from massive amounts of construction equipment and the influx of personnel. Korsakov has suffered the brunt of 1500 imported workers who descended on the area, overcoming its social services and dramatically increasing communicable diseases including AIDs and tuberculosis.⁴⁷

Much of these unexpected impacts are the result of Sakhalin II contractors cutting costs and failing to apply required safeguards, harming project workers and the city of Korsakov alike. The promise of employment for Sakhalin natives has fallen far short. Schemes to compensate the Korsakov have failed and that the city is forced to suffer these impacts without sufficient resources to manage the worsening community crisis. By the Fall of 2004, another 1,500 workers arrived, raising the total to 3,000. As a result, a local population that originally welcomed Sakhalin II now look at it with increasing antipathy and aggression.⁴⁸

Risks of Oil Spills

A fundamental risk associated with any large oil project is the potential for oil spills. This is especially true of the Sakhalin II Project in light of the challenging natural conditions in which the project operates.

In 1999 independent experts from Alaska and the Shetland Islands issued a report on the risk of oil spills associated with first phase of Sakhalin II entitled, "Sakhalin's Oil: Doing It Right." The report warned that the oil spill prevention and response measures leave the coastlines of Sakhalin and Hokkaido vulnerable to a catastrophic spill. The report recommended 78 specific measures -- including designation of mandatory tanker routes, increased monitoring of tanker traffic, notifications to fishing vessels if a tanker is in the area, increased spill response equipment and improved access to the shoreline where it would be deployed.⁴⁹ Royal Dutch/Shell has for the most part failed to act on these recommendations. As a *Wall Street Journal* article reports, "Spill response in Canada, Norway and Britain is generally far more comprehensive," and in Alaska, following the disastrous Exxon Valdez spill, "state and U.S. officials ordered the industry to set up a massive spill-response system for Prince William Sound."⁵⁰

Sakhalin II Phase 2 presents a much more diverse range of oil spill risks than Phase 1. It is true that under Phase 2 oil and gas will be piped to shore, thus eliminating the risks associated with its loading of tankers directly at its off-shore platforms. However, there are new risks associated with off-shore and on-shore pipelines and dramatically increased export tanker traffic in the congested Aniva Bay and La Perouse Straights.

The Sakhalin II EIA contains a very brief and cursory discussion of oil spill risk and mitigation measures and provides only a few paragraphs for each project element. Several paragraphs of brief discussion are not an evaluation of oil risks associated with this project or a demonstrated plan on how to reduce them. Volume 1, Common Elements, Chapter 6.6 *Health, Safety and Environmental Management in SEIC, Oil Spill Response Planning*, refers to separate Oil Spill Response Plans that are being developed for each element of the project. These plans are only at a preliminary stage and are unavailable on SEIC's website. It appears that Royal Dutch/Shell will instead undertake these plans after the EIA is completed and after public and private financial institutions have been asked to decide to support or reject the project. Hence, the EIA fails to perform one of its most basic functions—evaluate the project's most fundamentally risky and potentially harmful impacts.

Moreover, the EIA provides no evidence that the promised oil spill response plans will evaluate potential risks and impacts of oil spills that could occur as export tankers move along dangerous and accident-prone shipping lanes from the project's export facilities at Anvia Bay through the La Perouse straights.

The fact that Sakhalin II remains woefully unprepared for oil spills throughout its operations was recently made painfully clear. On September 8, 2004 the Cristoforo Colombo, a dredge contracted by Sakhalin Energy (Royal Dutch/Shell's Sakhalin II operating company) ran aground at Kholmsk, spilling an estimated 1,300 barrels of fuel. It took nine hours for Royal Dutch/Shell's contractor for oil spill emergency response to arrive and conduct visual observation and more than 48 hours to it to

transport necessary equipment to the site. According to Russian regulations, Royal Dutch/Shell should have localized the spill with equipment within four hours.

As a result, six kilometers of shoreline, including a popular public beach, were coated with toxic oil. Dozens of Kholmsk residents reported to hospitals with headaches and respiratory problems. Citizens in Kholmsk and Yuzhno-Sakhalinsk launched demonstrations and Sakhalin's Environmental Prosecutor undertook a criminal investigation.

Over 100 non-governmental organizations then demand the moratorium until Royal Dutch/Shell adopts an internationally accepted Oil Spill Prevention and Response Plan that includes recommendations from an independent international panel of experts and is approved by international finance institutions and the Sakhalin Government. The moratorium demand has gone unheeded by Royal Dutch/Shell.

Indigenous Protest

From January 20-24, 2005, over 200 members of Sakhalin Island's Nivkh, Uilta, Nanai and Evenk Indigenous Peoples endured minus 30 degree Celsius temperature to blockade the Sakhalin I and II projects. They protest these projects' impacts on their native fisheries, reindeer pastures and overall livelihoods, demanding an independent cultural impact assessment and a development fund for Sakhalin's indigenous people.

Indigenous leaders are justifiably concerned about the impacts of these projects including, *inter alia*, fisheries, reindeer pastures, and forest animals. Indigenous leaders indicate that compensation from oil companies is insufficient, and that they do not trust the oil companies' environmental, social and health impact assessments. They indicated that some companies, including Royal Dutch/Shell, have rebuffed their attempts to create a meaningful dialogue, sending public relations staff to meetings rather than company officials with any authority to act on their concerns.

The protest by the indigenous leaders represents a very serious escalation of conflict, and it is another indication that the Sakhalin II project has failed to provide minimal environmental and social safeguards necessary to comply with the policies of your institutions. The indigenous organizations have called upon the public Banks to dispatch representatives of their organizations to help mediate the dispute and to witness potential illegal pressure from oil companies and government authorities.

Project Sharing Agreement

Royal Dutch/Shell is drastically over-stating the income to be received by the Sakhalin II project, according to a study of the project's Production Sharing Agreement (PSA) from a leading energy economist.⁵¹ Shell recently launched a

charm offensive to boost the controversial Sakhalin II project, claiming that the state will receive USD 45 billion in direct income over the 49 year lifetime of the project.

According to economist Dr Ian Rutledge, this figure is totally unrealistic and misleading as "no oil company would measure its own cash flow or profits in this manner". Many aspects of the contract represent a major departures from standard PSA terms worldwide:

“The benefits which flow to the Russian party under the Sakhalin II PSA (‘Base Case’) fall a long way short of those which would have been received had a standard type PSA been used...(in which) the Russian party would receive 45% more economic rent.”

The study describes the highly unusual, pro-consortium terms of the Sakhalin II PSA (Production Sharing Agreement) whereby most of the project's investment risk will be carried by the Russian state and, moreover, the Russian government is set to receive its share of the revenues only after SEIC's profit is assured.

In summer 2004 SEIC announced a reported 20 per cent cost increase on Sakhalin II, from USD 10 billion to USD 12 billion. Given the inequities of the PSA, the economic impact of any cost over-run will be felt primarily as a loss of income to the state, rather than as a loss of profits to the consortium.

The lower than expected revenues received by the Russian side also have social and socio-economic impacts, since a percentage of the Russian-side’s diminishing revenues are to be shared with regional and local authorities to provide services to support the project. Meanwhile, many environmental costs of the project are booked prior to profit sharing, providing a disincentive to adequate safeguards.

Meanwhile, the PSA overrides preexisting environmental laws. Article 96 of the Russia Water Code in Article 96 forbids the discharge into water objects, or storage in them, of production, sewage, or other wastes. In Article 144, the Water Code forbids discharge of flows and drainage waters in spawning and wintering areas for valuable and protected fish species and in habitat for Red Book protected wildlife and plant species. Meanwhile, the Sakhalin II PSA provides:

“After corresponding processing and treatment, drilling muds, drilling cuttings, and liquid extracted from wells can be discharged to the sea from marine platforms and should not be reviewed as wastes or flows forbidden for discharge to the sea.”⁵²

The Sakhalin II PSA apparently also seeks to put a chill on efforts to strengthen environmental laws by linking strengthening to compensation:

(f) The Russian Party shall compensate the Company for any damage caused by the former in connection with adverse changes in Russian laws,

subordinate laws and other acts taken by Government bodies after December 31, 1993 (including changes in their interpretation or their application procedure by government bodies and by the courts in the Russian Federation). Compensation shall be adequate to avoid deterioration in the commercial position of the Company in comparison to the position it would have held had there not been unfavorable changes.⁵³

Despite the fact that the Sakhalin II PSA has highly significant social, socio-economic, traditional economic and environmental impacts, it is a confidential document and there is no analysis of it in the Sakhalin II EIA.

Lessons Learned

NGOs and community organizations began to watchdog the enormous Sakhalin II project in the mid 1990s. Since then several lessons learned have emerged:

- **Economy versus environment is a false dichotomy.** In the early days of Sakhalin II, some observers believed that the Sakhalin II project represented a necessary compromise between environmental concerns and the needs of Russia to develop economically. However, the Sakhalin II PSA has shown that the project will result in far less economic gain than originally envisioned. Moreover, economic and socio-economic costs of the project at the regional and local level (eg., Korsakov) are far higher than anticipated. Economic impacts on traditional economies such as fishing are feared to also be higher than expected. As a result, while once there was widespread optimism about the project, now there is increasing skepticism, antipathy and protest extending well beyond environmental NGOs (eg., indigenous and fisherman protests). Meanwhile, there is increasing antipathy in Moscow due to what government officials believe is an unfair PSA regime. Rather than being a choice between environment and the economy, Sakhalin II has negative impacts for both;
- **Social impacts as great as environmental impacts.** In the early days of Sakhalin II, some of its greatest perceived impacts were its threats to biodiversity, including the critically endangered Western Gray Whale and wild salmon. However, while these threats remain, unforeseen social and socio-economic impacts arose, such as the overwhelming of the water, sewage, transportation, and medical infrastructure, and increase in communicable diseases in Korsakov. Impacts to indigenous peoples' lives and livelihoods was also underappreciated in earlier days;
- **Sakhalin II betrays Royal Dutch/Shell's stated commitment to sustainable development.** Since the beginning of the Sakhalin II project, NGOs and community groups argued that the project should apply global best practices. Had it done so, much potential conflict around the project

would have been defused. Instead, Royal Dutch/Shell applies globally inferior practices. This includes situating off-shore oil platforms adjacent to the only feeding grounds of the critically endangered Western Gray Whale; trenching pipelines through 1100 watercourses and through highly active faults; dumping construction wastes into the fisheries-rich Aniva Bay; failure to develop an adequate oil spill prevention and response plan, etc. Moreover, many recent project impacts, such as the Kholmsk oil spill or pipeline construction damage to wild salmon streams are the result of contractor violations. Royal Dutch/Shell's inability to control the actions of its contractors threatens its ability to deliver on its environmental commitments. As a result, there is growing antipathy towards Sakhalin II and Royal Dutch/Shell at the local, regional, national and international levels. High profile media stories about the project continue to mount.

- **Sakhalin II EIA Remains Unfit for Purpose.** Royal Dutch/Shell has been unwillingness to adopt global best practices, or even *internationally accepted minimal practices*, as reflected by its “unfit for purpose” EIA. As a result, billions of dollars of financing has been delayed for over two years, and the company's reputation has been tarnished. Royal Dutch/Shell was served notice by EBRD and other banks over a year ago that they cannot finance the project unless fundamental environmental issues are resolved. Yet, a year later, many of these problems remain. As project construction commences, more unanticipated impacts and violations arise. Conformity with IFC policies, a basic measure of compliance with public and private banks' and the company's own requirements, appears even more distant. It remains unclear whether sufficient improvements are even possible, thus putting public and private external financing in question.

Case Study 10

Myanmar-Thailand: The Yadana Gas Pipeline

Katharine Redford

EarthRights International

About the Author

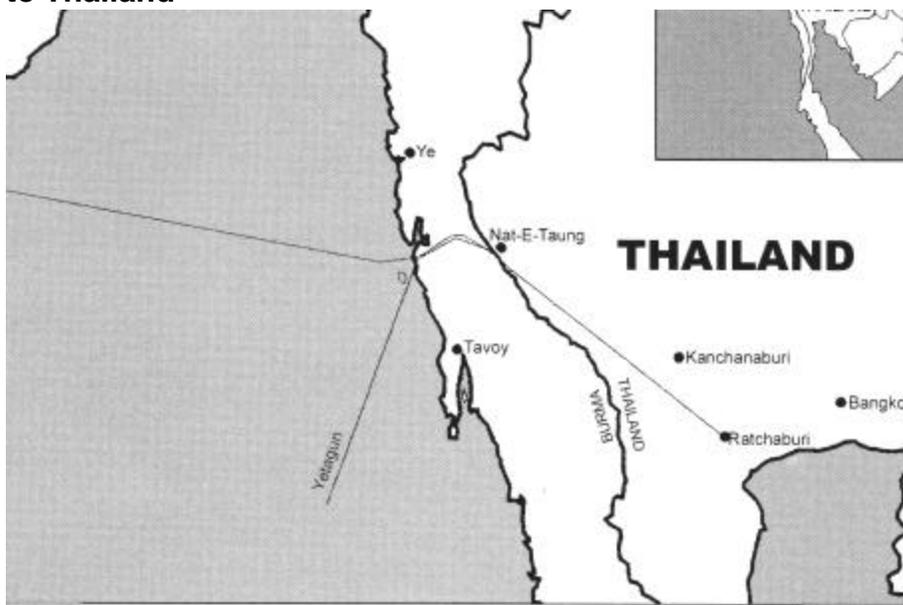
Katharine J. Redford, Esq. Co-founder and Co-director of ERI, and directs ERI's U.S. office and the EarthRights Resource Center. ERI is a 501(c)(3) nonprofit group of activists, organizers, and lawyers with expertise in human rights, the environment, and corporate and government accountability. ERI has offices in the U.S. and Southeast Asia. ER documents human rights and environmental abuses in countries where few other organizations can safely operate. ERI organizes the human rights and environmental activist communities around earth rights issues. We are at the forefront of the movement to hold corporations accountable for fair human rights, labor, and environmental practices no matter where they do business. ERI litigates in U.S. courts on behalf of people around the world whose earth rights have been violated by governments and transnational corporations.

Introduction

Since the early 1990's, a disturbing situation has been unfolding in Southern Burma⁵⁴. Two western oil companies – Total and Unocal -- bent on exploiting natural gas, entered partnerships with the brutal Burmese military regime to build the Yadana natural gas pipeline.⁵⁵ In carrying out its part of the contract, the regime created a highly militarized pipeline corridor in what had previously been a relatively peaceful area. The results, predictable to anyone familiar with the recent history of Burma, were violent suppression of dissent, environmental destruction, forced labor and portering, forced relocations, torture, rape, and summary executions.

Because of the Burmese military's notorious human rights record⁵⁶, the Yadana Project quickly became the center of controversy. Human rights groups, prodemocracy organizations and environmental NGOs were quick to warn the companies about the likelihood of human rights violations, the dangers of partnering with the Burmese military, and the risks to the Tenasserim region's ecosystems due to the lack of transparency, public participation and accountability under Burma's military regime. Certainly social and environmental concerns are necessarily raised in all projects undertaken in closed and militaristic societies. The Yadana Project, however, was ultimately subjected to intense and unprecedented scrutiny as it became the centerpiece of a worldwide movement for divestment in Burma and a groundbreaking lawsuit in United States federal and state courts. Unlike other projects of this nature, much of what occurred on the ground in this highly militarized nation has been made public as part of court documents and published judicial opinions. As such, the project must serve as a sobering example of the potential impacts of pipelines upon the lives, livelihoods and ecosystems that they traverse.

Figure 28 Map of Yetagun and Yadana (top) Gas Pipelines from Burma to Thailand



The Project⁵⁷

*[The] decision-making [was] not transparent. . . Instead, there were only public relations. . . [and] the old paradigm that the power of a state. . . is above the rights and freedom of the people.*⁵⁸

-- Anand Panyarachun, Prime Minister of Thailand in 1998

The Yadana Gas field, located in the Andaman Sea off of Burma's western shore, was first discovered by a Japanese firm in the early 1980s. Without the necessary financing, however, the field remained undeveloped until the early 1990s, when Thailand's desire for energy and SLORC's need for foreign investment spurred the project forward.

In 1992, MOGE licensed the French oil company Total S.A. to produce, transport and sell natural gas from deposits in the Yadana Field. The Yadana consortium includes Total (France), Unocal (United States), the Myanmar Oil and Gas Enterprise (MOGE) and the Petroleum Authority of Thailand Exploration and Production (PTTEP) also acquired interests in the Project. Under a separate sales contract, the Petroleum Authority of Thailand (PTT) agreed to buy the gas and build the pipeline from the Thai side of the border to its endpoint in Ratchaburi, near Bangkok, Thailand. With 100% of the Yadana gas for Thai consumption, PTT pledged to deliver and sell the gas to a power plant built and owned by the Electricity Generating Authority of Thailand (EGAT).⁵⁹

With 5 trillion cubic feet of reserves, the Yadana has an estimated development price tag of US \$1billion.⁶⁰ The involvement of MOGE in the projects is significant in conjunction with this number as it formalizes the investors' relationships with the Burmese military: The money generated by the projects goes directly into their coffers through this state economic enterprise.⁶¹ The companies are well aware of the fact that their money goes to the regime. As Jan Diederik Bax President-Director of IHC Caland, a Dutch company and subcontractor of the Yetagun Pipeline project, acknowledged, "The money is of course going to the [generals]."⁶²

Militarization and Human Rights Abuses Connected to the Yadana Project

Certainly the provision of hard currency into Burmese military accounts has been of great concern to supporters of democracy in Burma, eager to see the regime isolated, financially weakened and thus unable to maintain its ironfisted rule over the country. In this way, the argument goes, investment in Burma contributes to the overall human rights and environmental problems in the country by strengthening the military junta that is responsible for the majority of such abuse.

The connection between the investment in the Yadana Project and human rights abuses is even more direct. From the beginning, SLORC security was integral to the success of the pipeline project.⁶³ As a U.S federal court stated in court documents, “It is undisputed that the Myanmar Military provided security and other services for the Project, and that Unocal knew about this.”⁶⁴ Thus, before the project could move forward, Total and Unocal required a secure area for their investment, with one Total executive stating that “unless the area is pacified, the pipeline won’t last for its thirty year period.”⁶⁵ While it is still a matter of dispute as to the need for such a militarized pipeline corridor⁶⁶, there could be no doubt that a vast mobilization of troops in their project area would be to the extreme detriment of the local population. The army did their part; swiftly and fiercely bringing the populations under their control.

The consequences of this militarization have been profound. Before Unocal’s pipeline was constructed across Burma’s southern Tenasserim, fisherfolk and farmers in the region made their livelihoods relatively free from restrictions; they were able to provide for themselves and occasionally earn extra money.⁶⁷ Once the pipeline construction began in 1991, everything changed. Since 1991, at least 16 military battalions (with each battalion averaging 500 soldiers) have occupied the forty-one miles of pipeline across the Tenasserim.⁶⁸

One of the first orders of SLORC business upon arriving in the pipeline region was building their barracks.⁶⁹ As the region had previously been unmilitarized, the new troops sent in to secure the pipeline corridor for investment needed housing. Thus, in 1991, thousands of villagers were forced to build military barracks at Kaleinaung, the first major military base in the pipeline corridor housing LIBs 408, 409 and 410. Villagers were forced to work at what amounted to slave camps at Kaleinaung, and later at other locations along the pipeline route such as the Heinze Islands, near where the pipeline came onshore; Kanbauk and Ohnbinkwin, where the companies had their headquarters; Michaunglaung, in the center of the pipeline, and Nat Ein Taung, where the pipeline crossed into Thailand. This practice was confirmed by Consultants for Texaco (then the operator of the Yetagun Project):

Military housing and all local infrastructure is provided by underpaid or unpaid labor. The harsh conditions of those carrying out such labor -- including young children -- and the testimony of local people who will go to extremes to avoid it, belies the Government claim that such work is voluntary.⁷⁰

The military build-up in the Yadana Gas Pipeline Region quickly led to myriad abuses including massive forced relocations, rape, forced labor and forced portering, torture, extrajudicial executions, environmental destruction, economic dislocation, and attacks on indigenous cultures. Thus, a brave group of 11 individuals from Burma’s Tenasserim region filed what was to become an historic lawsuit against Unocal in 1996. Marking the first time that a US federal court declared jurisdiction over a corporation for human rights abuses committed overseas, *Doe. v. Unocal*⁷¹ made legal history. The plaintiffs in *Doe v. Unocal* represent examples of otherwise

unexceptional individuals whose lives, cultures, rights, and environments have been destroyed by pipelines and other petroleum activities. The military forced them to leave their homes; took their property; forced them to clear trees, build military barracks, and haul heavy equipment; prohibited them from farming and took their livestock; and in some cases, raped the women.⁷² The Court noted, “the deposition testimony recounted numerous acts of violence perpetrated by Burmese soldiers in connection with the forced labor and forced relocations.” It went on to state:

“Here, plaintiffs present evidence demonstrating that before joining the Project, Unocal knew that the military had a record of committing human rights abuses; that the Project hired the military to provide security for the Project, a military that forced villagers to work and entire villages to relocate for the benefit of the Project; that the military, while forcing villagers to work and relocate, committed numerous acts of violence; and that Unocal knew or should have known that the military did commit, was committing, and would continue to commit these tortious acts.”⁷³

The mere presence of the Burmese military, perhaps predictably, led to these kinds of human rights abuses that have, in turn, led the US government and other nations to exert some of the strongest economic and political sanctions in force. But perhaps the most alarming of these violations, at least from the perspective of Unocal and Total’s complicity, is the evidence of slavery and forced labor on pipeline infrastructure and security operations, and the companies’ clear knowledge of this abuse. In spite of the Burmese military’s notorious human rights record and its widespread use of forced labor and portering, the companies allowed them to recruit villagers to work as porters on the pipeline infrastructure.

One of the clearest indications linking the companies to the abuses is the fact that Total actually paid villagers who were forcibly recruited by the army to carry their ammunition and supplies (portering) and build infrastructure such as helipads. Under the UN International Labor Organization’s definition, “*the term ‘forced or compulsory’ labor shall mean all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily.*” Total’s own briefing materials provide evidence of payment to villagers “hired by the army.”⁷⁴ Thus, villagers forced to build helipads and other infrastructure, clear areas for roads and for the pipeline route itself were working as forced laborers, regardless of whether they were ultimately paid.

Even before Unocal invested in the Project, its own consultants and partners informed the company of the military’s dismal human rights record and the fact that that same military would be likely to commit human rights violations and employ forced labor in connection with the Yadana Pipeline.⁷⁵

On December 11, 1995, Unocal Consultant John Haseman, a former military attaché at the U.S. Embassy in Rangoon, reported to Unocal that SLORC was, in fact, using forced labor and committing other human rights abuses in connection with the

Yadana Project. He stated that “Unocal was particularly discredited when a corporate spokesman was quoted as saying that Unocal was satisfied with . . . assurances [by the Myanmar Military] that no human rights abuses were occurring in the area of pipeline construction.” Haseman continued: “Based on my three years of service in Burma, my continuous contacts in the region since then, and my knowledge of the situation there, my conclusion is that egregious human rights violations have occurred, and are occurring now, in Southern Burma. The most common are forced relocation without compensation of families from land near/along the pipeline route; forced labor to work on infrastructure projects supporting the pipeline . . .; and imprisonment and/or execution by the army of those opposing such actions. . . . Unocal, by seeming to have accepted [the Myanmar Military]’s version of events, appears at best naïve and at worst a willing partner in the situation”.⁷⁶

Each of these particular abuses has created a domino effect leading to other violations of fundamental human rights. For example, the forced relocations have led numerous farmers and fisherfolk to lose their access to their traditional livelihoods, which in turn has led some of their daughters into prostitution to support their families.⁷⁷ In the same way, restrictions on freedom of movement -- people must obtain military permission to go outside the village -- have led to increased incidents of disease.⁷⁸ Villagers regularly reported that “after the company came, there was a higher incidence of illnesses . . . such as malaria.”⁷⁹ Or “The health situation is worse than before because there are more people around, and some people have brought cows and buffalo very close to the village. There are more insects around now, and the people are getting diarrhea, and more people are dying.”⁸⁰ Or “the company enlarged the hospital when they came, but there are many more patients now. There are more diseases, especially malaria, since the company has come, and the road and work accidents have also increased.”⁸¹ And so on.

Unocal claims that it is “improving lives in Myanmar” through a program of socio-economic initiatives directed at thirteen villages in the pipeline region⁸². Even if Unocal’s statistics about increased access to healthcare, education, and economic development were true, they are rendered meaningless by the fact that these programs never would have been necessary but for the pipeline. The people of the pipeline region were never consulted about their wishes regarding this “development.”⁸³ They, in fact, do not want the pipeline⁸⁴; and they believe their lives were better -- even without Unocal’s socio economic programs -- before the pipeline arrived. As one pipeline villager stated “All in all, I want to say that if there was not a pipeline, there would be no foreigners. If there were no foreigners, there would not be soldiers, so we could have our own . . . life as we had it before.”⁸⁵

Conclusion

The key problem with Unocal and Total’s Yadana pipeline -- and pipelines in many countries -- is the military build-up that often accompanies pipeline construction

Figure 29 The Yadana Pipeline, Human Rights and the World Bank: Editorial comment

One day before the Board presentation of Thailand's power sector loan in 1998, World Bank staff responded to the allegations of slavery in the construction of the Yadana gas pipeline in Burma, which, it was proposed, would be the source of fuel for the Ratchaburi gas turbine plant to supply electricity to Metropolitan Bangkok. The commendable response by the Bank was to drop the most expensive component of the loan, namely the 2800 MW Ratchaburi gas turbine generating station. The Bank's US Executive Director, Jan Piercy, wrote to Katharine Redford, Director of EarthRights International on the 24th. September 1998, that the Bank specifically declined to guarantee bonds for huge Ratchaburi gas turbine station because of its intimate relationship with the Burma pipeline and the surrounding controversy.

The lead beneficiary of the World Bank-supported program loan was the Electricity Generating Authority of Thailand (EGAT), a huge parastatal that the Bank had helped to create and had been partnering for decades. This chapter well outlines the use of slavery to build the Burmese segment of the pipeline. The Bank had nothing to do with the Burmese segment, but was indirectly involved in the Thai segment of the pipeline. The Royal Thai cabinet approved the project before the National Environment Board had started the environmental assessment (as mandated under the 1992 Environment Act).

The 20 m-wide and 297 km-long pipeline was completed in July 1998. PTT obtained exceptions and waivers to national laws from other government agencies (e.g., Cabinet, Royal Forestry Department) prohibiting violation of national parks, watersheds and protected areas. The environmental view is that exceptions to laws should not be made. There may occasionally be some overriding exceptions, but these should be very rare, widely publicized and debated before decisions. Frequent exceptions render laws meaningless. The question becomes, should laws be suspended because a pipeline project wants to traverse parts of the Sai Yok National Park, some 1st and 2nd class watershed forest, the proposed Thung Pha Phum National Park, some reserved forest, and impact on nine species of endangered mammals, Kitti's hog-nosed bat (the smallest mammal in the world), and the queen crab?

Some years later, gas-fired electricity and a short gas pipeline linked Ratchaburi with Bangkok. Do those two links, which depend on a slavery-assisted pipeline, suggest the Bank has violated Human Rights policies? The World Bank has no Human Rights policy, apart from the one on Indigenous Peoples. The private sector and investment guarantee arms of the World Bank Group, the International Finance Corporation, and the Multilateral Investment Guarantee Agency commendably adopted two of UN ILO's four Core Labor Standards in 1998, namely against slavery and extreme forms of child labor. The rest of the Bank Group annually refuse to join that lead in this regard.

Half way through the independent Extractive Industries Review (EIR) of the World Bank Group's oil, gas and mining portfolio, EIR urged the Bank Group to adopt a Human Rights policy or at least adopt the two (slavery, extreme child labor) human Rights norms already adopted by IFC & MIGA. IFC's Vice President, Peter Woicke, repeatedly advocated adoption of a new Safeguard Policy on Human Rights from 2002 to 2005. Managing Director Mamphele Ramphela started to draft such a Human Rights position (with Alfredo Sfeir-Younis) in 2002. Woicke, Ramphela and Younis left the Bank Group in 2005, and there seems to have been no progress on Human Rights since then.

Commentators have recognized that "as globalization extends the reach of corporate interests around the world, a matching military capacity must be deployed to protect those interests.⁸⁶ Certainly gas and oil pipelines are no exception. There is a

prevalence of armed forces used to protect pipelines and their infrastructure and in the case of Burma, this meant forced labor, rape, torture, killing and widespread destruction of land, forests and livelihoods.

The case of Unocal arranging to hire the Burmese military for security is but one example -- albeit a good one -- of a transnational oil company utilizing local military forces to “protect” its investment at the expense of local peoples, who are, in fact, the ones truly in need of protection from their country’s own army. Yet it is not an isolated example.

In Colombia, Occidental Petroleum (OXY) of California hired AirScan, a private U.S. security firm, to protect their oil operations in that country. In collaboration with the Colombian military, AirScan launched an “anti-guerrilla” raid on the village of Santo Domingo in which eighteen civilians, nine of them children, were killed. OXY’s Caño Limon pipeline, completed in 1996, has been attacked by guerrillas more than 500 times, and of 38 assassinations, 18 massacres, 31 incidents of torture, 44 kidnappings, 151 illegal detentions, 2360 incidents of harassment and 150 displacements of people in the region, all have been connected to the pipeline.⁸⁷

Similarly, in Nigeria, Chevron hired Nigerian military and police forces to secure its oil activities in the Niger Delta. In response to peaceful protests by villagers around the egregious environmental degradation in their homelands, Chevron pilots in Chevron-leased helicopters approached the demonstration. Inside the helicopters were soldiers and other Chevron representatives. The soldiers opened fire on the protestors even before the helicopters landed. Two protestors were killed and others were wounded, one of whom was bayoneted after already having been shot. The leader of the protest was taken off by the soldiers and later tortured because he refused to sign a confession stating that he was a pirate.

Seven months later Chevron-leased helicopters flew over the fishing villages of Opia and Ikenyan and opened fire. Shortly thereafter, Chevron-leased boats filled with soldiers attacked the villages. As a result of these air and amphibious assaults, at least seven people are known to have died and most of both villages were burned to the ground. Many more were injured or remain missing, and nearly everyone lost their homes, boats or other possessions in the fires. EarthRights International represents plaintiffs in a lawsuit against Chevron for these and other abuses in Nigeria.⁸⁸

Companies such as Unocal, Total, Chevron and Occidental put the Universal Declaration of Human Rights on their websites; they speak of multi-party stakeholder processes; they attempt to join the international humanitarian community. Meanwhile, their business partners in the Burmese military torture villagers, force them to build helipads and other pipeline infrastructure, and then steal what little the villagers are able to salvage for themselves.

But perhaps the tide is turning. In what can only be described as a David and Goliath struggle, the villagers from Burma known only as John and Jane Does have won against Unocal. On April 2nd, 2005, lawyers for the plaintiffs and defendants announced a settlement in their 8 year lawsuit. For the first time outside of the holocaust context, a private corporation has paid money to compensate individuals for human rights abuses. In addition to compensating the villagers, most of whom are destitute and living in hiding from the Burmese regime, the settlement funds will also enable the plaintiffs to develop programs to improve living conditions, health care and education and protect the rights of people from the pipeline region. These initiatives will provide substantial assistance to people who suffered hardships from the pipeline project.

As a result of this settlement, is now impossible for a company to tell its shareholders, the public, and indeed itself, that human rights abuses are cost free. As one person from Burma stated prior to this victory: “We will not let them defeat us. We know the companies and their military partners have lots of money, guns, power and influence. But they do not have what we have. We have truth, we have justice, we have courage, and most importantly, we have each other to protect human rights and the environment. We will win.⁸⁹

Chapter 5

Environmental Review of MDB Hydrocarbon Projects: Lessons Learned from U.S. Government Experience

Leslie Johnston and Keith Kozloff

NOTE: The views expressed by the authors are their own and do not necessarily represent the policy positions of the US Department of the Treasury or the US Agency for International Development.

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Overview of USG Environmental Review Process

The process of preparing and considering a hydrocarbon project for financing by a multilateral development bank (MDB) typically involves the project sponsor, host country government, and the management and Board of Directors of the relevant MDB. Prior to USG engagement and in many cases even before MDB engagement, project sponsors may engage with host government representatives to explore project feasibility. Once the MDB is approached, the staff work with the sponsor and host government to prepare the project for consideration. After the project sponsor prepares an EA, the MDB makes a formal decision to appraise the project and bring it to its Board for approval. The USG controls significant, but not blocking vote shares at each MDB. For large hydrocarbon projects, the USG is likely to engage with MDBs, project sponsors, and host governments before the MDB Board (hereafter Board) vote both to determine how it will vote, and often to suggest ways to strengthen the project before it comes to the Board.

Environmental dimensions affect the USG position on MDB financing of projects from both legal and policy perspectives. Under the International Financial Institutions Act, Title XIII (1988), the USG legal review of MDB projects is divided into two elements. First under Section 1303, the U.S. Agency for International Development (USAID) analyzes the environmental and social impacts of MDB proposals to determine their contribution to the sustainable development of the borrowing (host) country well in advance of the loan board date. These reviews are to address the adverse impacts on the environment, natural resources, public health and indigenous peoples while providing recommendations for measures, including alternatives that could prevent or mitigate adverse impacts. If there is reason to believe that any loan is likely to have substantial adverse impacts, USAID's Administrator, in consultation with the Secretary of Treasury and Secretary of State, undertakes an affirmative investigation of the impacts.

Second, under the Pelosi Amendment (Section 1307 of the International Financial Institutions Act as amended), Treasury instructs the U.S. Government's representative (Executive Director) to the MDBs to oppose a project which would have a significant negative effect on the human environment, unless for at least 120 days before the Board vote, an environmental assessment (EA) had been disclosed, and it or a summary had been made available to both the Board of Directors and to affected people in the host country. The EA must analyze cumulative and associated impacts as well as impacts from alternatives to the proposed project. Treasury is required to consult with USAID, U.S. Department of State, and U.S. Environmental Protection Agency. Even if a project meets the requirements of the Pelosi Amendment, the USG may still oppose it on environmental grounds.

As part of the deliberations on large extractive or infrastructure projects, Treasury may host inter-agency meetings and solicit views from civil society, and the U. S. Executive Director on the Board may consult with other board Chairs. Additionally,

USAID routinely requests input from other federal agencies on technical issues and solicits views from civil society.

Observations about MDB-Financed Hydrocarbon Projects

The following eight observations are based on USAID and Treasury reviews of six MDB-financed hydrocarbon projects: the Baku-Tblisi-Ceyhan (BTC) oil pipeline; the South Causasus gas pipeline and Shah Deniz gas fields; the Camisea natural gas project, Sakhalin II phase 2 oil and gas development; and the West African gas project (WAGP); and the Chad-Cameroon oil pipeline. It must be noted that these lessons are derived from a small sample size and hence conclusions are preliminary.

Observation 1: The EA process for hydrocarbon projects is susceptible to being compromised by economic and political factors.

The environmental assessment and mitigation obligations of project developers are subject to a larger set of interactions between the developer and the host government, which can be driven by broad political and economic considerations. With respect to economic incentives, once the developer agrees to a delivery deadline and price for transporting product, it has an incentive to meet environmental obligations with minimum cost and delay. Contractual agreements may include substantial monetary penalties if project target dates are not met. Any delay in construction activities results not only in penalties to either the government or project sponsor (depending on the circumstances), but also in an outflow of money to contractors and subcontractors. Contract provisions that preclude unanticipated time or design costs associated with environmental mitigation from being passed through to off-takers creates an incentive to avoid mid-course corrections. For its part, a host government faces potentially competing incentives as a receiver of hydrocarbon royalties and as environmental regulator of the sector. With the Camisea project, the same Peruvian government ministry is responsible for both promoting and regulating the hydrocarbon sector.

Besides economic incentives, political imperatives may influence environmental assessment of hydrocarbon projects. Political factors can arise from both internal and external forces and may be perceived as greater than the economic importance of the project. These projects may be seen as visible national symbols of country development, provide an environment conducive for attracting other foreign direct investment, important either to regional integration or international importance, and to diversify fuel sources. Such projects may become national priorities disproportionate to their economic benefits. They may become associated with national energy security (Camisea), transition into a market economy (BTC), or regional integration (WAGP). Hydrocarbon projects that serve export markets may also face pressure from the importing country if the project is seen as strategic.

As an example of a project being influenced by political factors, the Camisea Natural Gas Project is of great importance to the Government of Peru (GoP) and the

Peruvian President. In order to meet the August 2004 flow date of natural gas into Lima, aspects of the EIA process were accelerated. In this case, the GoP allowed for a two-step process for the approval of the fractionation plant separately from the marine terminal. This decision enabled immediate construction of the less controversial component of the coastal facilities, thereby putting pressure on the GoP agency responsible for approving construction of the marine terminal. The risk of not meeting contractual deadlines for gas delivery may also have played a role in accelerating the approval process.

MDB's should use their influence with host governments and project sponsors to ensure that: 1) the environmental assessment is incorporated into the project development process regardless of political pressures; and 2) impact prevention and mitigation measures are not precluded by politically-driven project construction schedules.

Observation 2: Associated facilities need to be included in MDB safeguard reviews.

Associated facilities are non-MDB financed projects that are physically related to the project under consideration by the MDB or are inevitable if the primary project is developed. Environmental and social impacts of the associated facility can be at least as serious as those from the MDB-financed component. In the cases of Camisea and WAGP, the pipelines are being financed by an MCB while gas field development and infrastructure for distributing the gas are not.

To avoid the costs and environmental impacts from building additional pipelines in the future to serve growing hydrocarbon supply, pipelines are often designed with initially excess capacity. With Camisea, WAGP, the Chad-Cameroon pipeline, and the BTC, project sponsors designed pipeline capacity that is greater than the oil/gas fields developed under the MDB-financed project. Some capacity may be dedicated to transport product from specific suppliers, while capacity above that level is treated as a common carrier for unspecified owners of new fields. Oil/gas production subsequently flowing through the pipeline(s) from future development may not require MDB financing and thus not necessarily be subject to the same environmental and social standards as the initial field.

Combined with the expectation of future hydrocarbon concessions being granted that would be served by this surplus capacity, some have argued that the impacts of the additional gas fields need to be assessed. With Camisea, the IDB acknowledged that the pipeline and initial gas field concession needed to be consistent with its environmental assessment and other safeguard policies, even though it was financing only the pipeline. The IDB did not, however, require an assessment of future gas field development and LNG export facilities, asserting that these developments were too speculative at the time the first phase was being considered.

Similarly, the World Bank treated upstream gas supply to WAGP as an associated facility up to the volumes needed for WAGP to be financially viable, but not additional volumes that might be developed in the future. In that project, the environmental implications of the upstream gas supply will depend on how much of the additional gas volumes transported are derived from new wells versus gas that is currently flared from oil wells.

Associated facilities may also be relevant when a pipeline crosses multiple countries. The South Caucasus gas pipeline was constructed to transport gas from fields in Azerbaijan, through Georgia, to Turkey's domestic market. The EBRD financed the section of the pipeline from Azerbaijan to the Georgian-Turkish border. The remaining portion in Turkey was not considered as an associated facility by EBRD for EA purposes, even though the EBRD-financed section was not economically viable without the Turkish section.

As part of project preparation, MDBs need to ensure that associated facilities are subject to environmental assessment and designed to meet other relevant environmental and social standards and policies. One option is to require that all other future oil/gas flowing through the project pipeline be produced and transported in a manner that meets internationally-recognized social and environmental safeguard policies and standards for hydrocarbon extraction, such as those adopted for the MDB-financed project. As with Camisea and the Chad-Cameroon pipeline, this option is most feasible when ownership of the new fields substantially overlaps with that of the existing fields. It is more difficult when ownership is unrelated, as in the case of Kazakh gas flowing through the BTC pipeline. In countries with large or rapidly growing hydrocarbon sectors, MDBs need to work with governments to reform and strengthen environmental and social practices of the sector overall in order for the MDB-financed project not to become an environmental enclave within the sector.

Observation 3: The disparate subcomponents of hydrocarbon development projects pose special challenges for environmental assessment and mitigation.

Hydrocarbon projects involve field development and extraction, pipeline construction and operation, and facilities for product processing, export or domestic distribution and subsequent decommissioning of facilities. Construction or access roads or upgrading existing roads, increased traffic esp BTC These disparate components have implications for impact assessment, avoidance and mitigation measures.

In contrast to hydrocarbon fields, pipeline construction impacts are like other network infrastructure. In addition to the pipeline right-of-way, construction of new access roads or upgrading existing roads increases impacts via additional traffic and migration into the area. By their linear nature, pipelines often intersect multiple ecological zones of varying biodiversity importance, and multiple ethnic zones.

Even after construction begins, minor routing changes may be necessary to avoid disturbing local communities or areas of high cultural or biodiversity importance.

Unlike hydrocarbon field development, there are a number of trade-offs with selecting pipeline rights-of-way. The alternatives analysis requires a side-by-side comparison of environmental, social and technical factors, but there is no single common unit or approach that yields the optimum routing decision. Avoiding some impacts may increase other risks. For example, the Sakhalin II, phase 2 pipeline is being routed to avoid communities but at the expense of increasing the seismic risk to the pipeline by making multiple crossings of an active fault. Because pipelines run long distances sometimes in remote regions, they may be tempting targets for terrorism and/or sabotage. Similar tradeoffs are apparent in the decision by Sakhalin II developers to bury the pipeline. Doing so reduces visual disturbance, interference with transportation, and the risk of sabotage. At the same time, burying the pipeline where it crosses rivers and streams increases ecological risks during construction and can complicate detection and repair of possible leaks. Consequently, a number of experts have recommended that, at sensitive river crossings, the pipeline should be elevated and not buried.

In contrast to pipelines, hydrocarbon field impacts are like other extractive projects. Development of oil/gas fields presents a series of potentially intrusive environmental and social impacts that are different than pipeline installation. While pipelines may be routed to avoid sensitive areas, hydrocarbon field development must occur more or less above reserves regardless of what is on the surface. Available alternatives involve various types of drilling, onshore versus offshore development procedures, different sized project footprints, and options for managing continuous site disturbance with the presence of laborers and emissions.

Export processing facilities represent a point between fixed hydrocarbon fields and pipeline right-of-ways with respect to the range of alternatives that can be presented and analyzed. Certain elements of facilities are fixed, such as minimum requirements for land and port facilities, whereas the range of selecting the port can vary with different inputs, ranging from constructing breakwaters to dredging for required depth.

It is important for MDBs to have an accurate understanding of the status of host government capacity and to take actions needed to strengthen such capacity to address these three situations. Although it is preferable to have public sector loans from MDBs in place with enough lead time prior to project construction to strengthen capacity, this is often difficult given tight construction deadlines. Ministries of the environment and energy may by default use the project as a “learning by doing” approach to capacity strengthening. Also, if the project in question is the first one in the country’s hydrocarbon sector, these ministries may be reluctant to add field staff until they need to supervise the construction phase.

Observation 4: Secondary impacts from the development of hydrocarbon fields and pipeline ROW may be at least as significant as primary impacts.

Secondary impacts from hydrocarbon development include: 1) permanent colonization of untitled (and in some cases titled) land by outsiders; 2) transitory extractive use of land resources such as for logging or hunting; and 3) ethnic tensions due to an influx of outsiders (either seeking to work directly on the project or to provide services to project workers) who interact with local communities. Depending on the location of the hydrocarbon fields and the mode of development (onshore vs. offshore), roads can serve as access to the project site. Roads can also establish new entry points into the area similar to the effect of pipelines into natural habitats or territories that were previously inaccessible. New and/or increased access into these areas has potential negative implications of increased natural resource extraction (particularly timber and wildlife) and increased permanent settlements.

These two incursion events acting singularly or synergistically have the potential to negatively impact local communities and especially indigenous peoples' livelihoods, spiritual beliefs and cultural practices. Additionally, increased access can lead to disease transmission, including sexually transmitted diseases, to communities and peoples which have had limited contact with outsiders and do not have the mechanisms in place to quickly address any health issues that arise.

For example, Camisea's natural gas fields are located within a 12000-sq km block of primary tropical rainforest of which 80% overlaps the Nahua-Kugapakori Indigenous Reserve. To date, natural barriers have impeded migration of outsiders and access to natural resources within the Nahua-Kugapakori Reserve, other protected areas, and communal reserves within the Lower Urubamba river/valley. Control of access into this area is deemed critical to the well-being of the indigenous peoples, some of whom have limited or no contact with the outside world.

The responsibility for identifying and addressing secondary impacts needs to be allocated at an early stage in project development. The potential for secondary impacts should be identified during the EA process, even though actual secondary impacts may not be known until much later in the project life cycle. Depending on which entity is best positioned, the responsibility for preventing and mitigating secondary impacts ranges from project sponsors to national/local governments to local communities.

When MBDs vet sponsor-prepared EAs, they need to pay special attention to access control measures to protect against adverse impacts associated with increased access. In many instances, physical control measures may include deactivating construction roads or bridges. In the case of Camisea, a bridge in the rain forest is to be deactivated following the construction period. MBDs should determine whether gaps exist in national and local government capacity to control access via legal mechanisms and in financial and staff resources. Where gaps exist, MBDs should support the strengthening of government and affected community capacity to control

access. Project sponsors need to develop and implement procedures for their contractors and laborers that would eliminate or minimize the impacts of their presence in the area during construction, operation and decommissioning stages (for example, bans on hunting or natural resource extraction, or contact with indigenous peoples).

Observation 5: Environmental and social responsibilities and risks management are often governed by private contracts between state and project sponsor.

The financial terms for hydrocarbon extraction and pipeline construction and operation are typically embodied in legal contracts such as concession agreements and host government agreements. These contracts specify a deadline for the delivery of product, transport charges, and the responsibilities of signatory parties, including for environmental mitigation and contingencies.

The allocation of environmental and social risks and responsibilities is also likely to be contained in such agreements.. These agreements may be in place prior to the initiation of the EA process. When this is the case, key provisions which govern environmental and social risks/responsibilities that are drafted prior to the availability of relevant information from the EA process subsequently may need to be revised.

To ensure that legal agreements do not restrict the range of actions that may be needed to avoid and/or mitigate impacts, MDBs should undertake a transparent public analysis and consultation regarding the agreements to determine their implications for sustainable development and environmental and social impacts. There should be an ex ante presumption of disclosure of these documents allowing for redaction of commercially proprietary information. Additionally, the agreements should be written to allow project sponsors and host governments to incorporate findings from the EIA process. Provisions might allow changes in financial limits/liabilities, project operation for environmental/social mitigation, or project deadlines.

Observation 6: Cumulative impacts from future hydrocarbon field development adjacent to MDB-financed pipelines may be significant.

Cumulative impacts result from the incremental impact of an activity when added to other past, present, and reasonably foreseeable future actions. Oil and gas development onshore and offshore of Sakhalin Island presents a good example of potential cumulative impacts. Nine oil and gas concessions around Sakhalin Island have been granted by the Russian government, but the sponsor of only one so far (Sakhalin II) has sought MBD financing. If other concessions are developed, the cumulative impacts on offshore and onshore ecosystems could be far greater than for Sakhalin II alone. The construction of hydrocarbon extraction, processing and

transshipment facilities by the concessionaires will magnify the risks of ship strikes on cetaceans, oil spills, and sensitive habitat destruction.

As another example of a reasonably foreseeable action inducing cumulative impacts, the expansion of the Camisea project to an export phase is expected to increase production and shipment of gas liquids out of the sponsor's facility in Paracas Bay. Cumulative impacts in this case are the aggregate of those from the initial and export phases of the project.

When MDBs are considering whether to finance a project with likely cumulative impacts, one step they can take is to require a substantive cumulative impact analysis that includes recommendations for addressing cumulative impacts. The MDB may have little direct leverage beyond the project it is financing, so the development of mitigation measures would likely require involvement both by the host government and sponsors of those activities generating the cumulative impacts.

Observation 7: MDB's additonality in environmental and social safeguards may have greater importance than their financial additionality.

In some countries (like Chad), hydrocarbon development is recent, but in more countries the sector is well established, if not always functioning efficiently or transparently (like Russia). Private project sponsors often have access to substantial internal and external capital, but seek MDB involvement to mitigate political risk and to obtain local acceptance by adopting international environmental and social safeguards. As of 12/'04, the Camisea project had been constructed and in operation for several months without the project sponsors receiving any money from the IDB.

Hydrocarbon field development tends to be more attractive to private lenders than pipelines because sponsors can treat hydrocarbon reserves as collateral. All else equal, MDBs are more likely to finance pipelines in the future than hydrocarbon extraction, because it is harder for pipeline sponsors to obtain financing than sponsors of hydrocarbon field development.

Hydrocarbon project sponsors often seek MDB financing for its stamp of approval to assist their efforts in obtaining additional financing from commercial banks. For their part, MDBs may justify their involvement via environmental and social additionality. In the cases of Camisea, BTC, and Sakhalin, MDBs have clearly touted their environmental additionality, especially as Board members questioned whether sponsors of these projects needed MDB financing. IDB is continuing to supervise closely the Camisea project, as the EBRD and IFC are doing with BTC. As a member of MDB Boards, the US examines the extent of MDB environmental additionality as a factor in determining its position on MDB financing of the project. The evaluation of additionality includes the extent to which lenders exert environmental leverage over project components they are not financing, such as associated facilities.

The case for environmental additionality becomes more difficult when project sponsors first approach MDBs after key project design decisions are made or construction has begun, as in the case of Camisea, BTC, and Sakhalin II. Still, MDBs seek to influence projects prior to financing them. In the extreme, sponsors may approach an MDB for “take-out” financing after the project is operational. Here, MDBs might consider requiring an environmental audit of the existing project.

Observation 8: Environmental risks of hydrocarbon operation increase over time as financial incentives to mitigate them decline

As long-lived infrastructure, hydrocarbon pipelines are often operated for decades. The environmental risk of hydrocarbon projects changes over time. For example, pipeline construction can be very disruptive, but pipelines have relatively low impacts during normal operation and maintenance. As a pipeline ages, however, corrosion and other structural changes increase the risk of leaks and breaks. At the end of its useful life, the pipeline needs to be decommissioned, which again increases physical disruption and the potential for contamination from residual products.

MDB-financed pipelines allow the MDB to exert oversight and leverage during the period of loan repayment by attaching conditions associated with different triggers, such as loan closure, tranche disbursement, or start-up of operation. Noncompliance with environmental management plans can, in principle, allow the MDB to hold the borrower in default of the loan, although there are typically prior steps taken to remedy identified problems. Once its loan is completely repaid, the MDB largely loses its formal leverage, although host government expectations for future lending may provide some longer term informal influence.

Over a pipeline’s operating period, there may be a change in ownership, with a consequent change in legal liability for environmental safeguards associated with operation, maintenance, and decommissioning. Under Build-Own-Operate-Transfer schemes, the host government takes over responsibility from the project sponsor for the project after a pre-specified period of time. For example, the Government of Peru will become responsible for operations, maintenance and subsequent decommissioning of facilities of the Camisea project after 33 years.

The new owner, typically free of MDB oversight, may or may not have the same incentives as the original owner to follow environmental safeguards. In the case of BTC, the hand-over of facilities to Azerbaijan’s state-owned oil company, SOCAR, and Georgian International Oil Company (GIOG) will occur after 20 years when the oil field productivity and therefore revenue streams have decreased. Additionally, the MDBs recognize that SOCAR needs to strengthen its capacity for sound environmental performance record for this oil field, relative to its past experience with other oil fields under its management.

MDBs can extend their leverage after the loan is repaid by continuing to provide assistance to the host country government on environmental oversight. Also, MDBs

can ensure that environmental management plans have incorporated adequate inspections and decommissioning plans based on present techniques with an obligation for modifications according to any new technologies that arise either during the inspection period or prior to decommissioning. Establishment of designated inspection and decommissioning funds prior to project operation should be required to ensure adequate inspection/repair and decommissioning.

Chapter 6

Conclusions: The Future of Assessment of Pipelines

Robert Goodland

Introduction

The ten pipeline case studies are self-reinforcing. They show encouraging convergence about which impacts are included nowadays in standard ESAs, and how damage can be prevented or mitigated. Above all, the ESAs show the primacy of route selection as the most effective means of reducing impacts. However, four important issues have yet to become standard. Two of these issues are generic to most ESA in developing countries, namely selection of a competent ESA team, and the political and human rights perspective of the project area. More specific to hydrocarbon pipelines are greenhouse gas emissions and environmental sustainability in the case of depletable resources. The best ESAs already tackle these issues; the need now is to encourage all ESAs to make them standard practice.

The Teams Assessing Environmental Impacts

Selection of an effective, reliable ESA team is as important to the overall social and environmental success of the pipeline as is its routing. IAIA is aware of ‘greenwash’ assessment companies who please the proponent, but care less about the impacts on people and the environment. Independence of the ESA team from the proponent is so important that it is mandated by some institutions, such as the World Bank. The World Bank has become more proactive in recent years in black-listing corrupt or shoddy companies so that they are barred from WBG-financed contracts for a period of years.

There is an important role for IAIA to shame-and-blame those ESA companies that produce negligent work. How can prudent quality of ESA teams be fostered? Should IAIA maintain lists of accredited ESA teams? Or, conversely, should IAIA keep lists of ESA teams that have produced unprofessional quality? There is conflict-of-interest in that IAIA wants to raise ESA standards, but does not want to exclude less-than-best-practice members. The selection criteria for the pipeline proponents or financing agency to find an ESA team are scarcely mentioned. Few if any of the ESA teams who did the foregoing ten case study pipeline assessments are identified by name. An increasing number of ESAs are anonymous, or the proponent uses them without identifying who did the ESA work. I have read many ESA reports on the BTC pipeline, for example, but remain uncertain of their provenance. This is a cause for concern and one where IAIA needs to take leadership. The criteria for selection of all ESA teams, the selection process, the team composition and terms of work all should be transparent. Transparency is especially important in showing how long before pipeline routing selection the ESA team started work. ESA teams should be proud of their work and should be publicly commended for it. It is troubling if an ESA team doesn’t want its name on its own ESA reports; if they do not, the quality of the ESA is doubtful.

Politics, Human Rights, and Pipelines

The question is, what is best practice in the face of politics influencing the social and environmental impacts of pipelines? The best ESA teams routinely check the UN Human Rights Committee, UN ILOs data bases, and CSOs (e.g., Human Rights Watch, Amnesty International, Global Witness, Human Rights First, Corporate Watch, Transparency International) before compiling their bids to do an ESA of a big infrastructure project anywhere. This is a good start to see if torture, slavery, extreme forms of child labor or other human rights violations may be an issue. Slavery is clearest in the Yadana case study (Case 10) and in Sudan's Talisman pipeline (Figure 5). It is implicated in some FSU pipelines.

The practice of routing a pipeline through a friendly country, rather than selecting a shorter and lower impact route through a less friendly one should be addressed, but rarely can the ESA team help much. IAIA doesn't provide clear guidance about when an ESA team should not bid on a project where human rights violations and politics have exceeded a threshold. Best practice ESA teams will inspect a recent similar project in the vicinity of the proposed project to see if impacts were reasonably handled, such as the livelihoods of forcibly displaced people. For example, one of the powerful questions in the controversial Lao: Nam Theun 2 hydro is: If the Nordics and AsDB cannot make the recent (1998), nearby, much smaller (210MW) and lower impact Theun-Hinboun project acceptable, why should the World Bank expect it could do much better in the Electricité de France's far bigger impact 1070MW Nam Theun dam in 2005?

Figure 30: Politics and Pipelines: India's Dabhol Disaster

Dabhol is one of the most politicized gas projects in the world. The centerpiece is a \$3bn. 2184MW gas-fired electrical generating power plant about 160km south of Mumbai (Bombay) on the coast of the Arabian Sea, on which construction began in 1995. A 2Mt LNG regasification plant has been built. LNG was to have been imported to this facility, backed up by a pipeline. The Turkmenistan-Afghanistan-Pakistan gas pipeline, related to the US/Afghan missile attacks of 1998, led to UN sanctions against Afghanistan. Human Rights Watch and Amnesty International document human rights abuses from 1997 on against poor neighbors around Dabhol, possibly by Enron-supported police. The World Bank calculated that the whole scheme was uneconomic in 1993, but Enron, GE and Bechtel forged ahead regardless with loans from OPEC and the US Exim Bank. The US National Security Council created a special Dabhol working group, led by VP Cheney, with Defense Secretary Rumsfeld, and Secretary of the Army Thomas White who was a multimillionaire shareholder in Enron. Construction was halted in 2001, when Enron was \$64million in debt on this project. Enron then filed for Chapter 11 bankruptcy, while GE/Bechtel sued India for \$6bn. In 2002, the US Government Accounting Office sued VP Cheney about secret dealings with Enron, and the White House energy policy.

Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions are not emphasized in most of the ten case studies. This section is included for three reasons. First, ESA is the main means of internalizing hitherto 'external' costs. Now that the Kyoto Protocol of the UN

Climate Convention has come into force, all ESAs of fossil fuel projects should internalize the costs of greenhouse gas emissions (GHG). As early as 1998, the Royal Dutch Shell Group announced that they would not renew their membership in the Global Climate Coalition, a DC-based group of electric utilities, automobile manufacturers, and oil corporations opposed to the Kyoto Protocol. Mark Moody-Stuart, Shell's CEO, supports ratification of the Kyoto treaty, which calls for cutting fossil fuel emissions. Second, cumulative impact assessment is normally mandated.

Third, it seems inconsistent to evaluate relatively minor GHG emissions from diesel trucks, pumps and pipeline power plants, while excluding the far greater GHG implications from massive amount of fossil fuels pumped through the pipeline.

This section summarizes the case that GHG costs should be estimated by the pipeline project. Full integration of GHG emission costs into the Cost/Benefit analysis would constitute best practice. User costs have been estimated in some projects for some years, although not always systematically.

The first question is, at what point in the chain from oil well, pipeline, international frontier, export frontier, import frontier, refinery to final use should GHG costs be internalized? (e.g., at gasoline purchase just before burning, or by a tax based on mileage assessed annually from the odometer?) From the environmental point of view, GHG internalization should affect both production (extraction, processing), as well as consumption. Therefore, environmentally, GHG costs should be estimated at the wellhead -- thus possibly affecting extraction costs -- and passing such costs along at each stage, ultimately to the final consumer, which will affect consumption costs. This would be compatible with resource efficiency, and is fiscally most efficient in terms of administrative cost. It would be difficult and expensive to calculate the different amounts of GHG from the many uses (e.g., diesel, various grades of gasoline, chemical feedstock) and end-users (e.g., automobiles).⁹⁰

However, the UN's Framework Convention on Climate Change (FCCC) accounting structure differs. Because FCCC seeks to help individual nations with emissions trading and global accounting, its accounting is geared up to count emissions at the point at which they become emissions i.e., at the point where the fuel is combusted, such as in vehicles. This makes sense from the political economy perspective, in that it recognizes that energy production is driven by energy demand.

As the estimated cost of emission of one ton of GHG varies widely, the second question arises as to which estimate to use in this case. The most robust estimates for the time being are those arrived at by the World Bank's "Shadow Pricing of Carbon Emissions Backcasting Study" (see: Hagler Bailey 1998, World Bank 1998), within the \$5 to \$40 range. The central figure of US\$20/tonne of carbon released seems to be the most reasonable at present, and is consistent with other international estimates (Goodland and El Serafy 1998). Convergence seems to be increasing around the \$20/tonne of C figure.

Assigning a shadow value in the context of the Environmental Assessment is appropriate for illustrative purposes. The physical impacts of GHG emissions (tonnes of carbon) of the project and alternatives should be reported as part of project selection and justification. Estimating the net impact of the pipeline in GHG emissions partly increases new oil consumption and partly substitution. The pipeline will encourage switching from coal to oil. As the global supply of oil is near perfectly elastic over small (marginal) changes, the GHG impact will be less than that implied by the total quantity of oil transported through the pipeline.

As GHG internalization is still de-emphasized by most ESAs today, presumably pipeline proponents prefer not to get into carbon sequestration, such as by conserving some forest. That decision needs to be justified in the ESA. The opportunities for such sequestration are enormous. Has this economic implications? For example, the British Petroleum Corporation and others invested \$9.5 million (9 March 98) in Bolivia's Noel Kempff Mercado National Park, now expanded to 2.1 million ha. as part of a "Carbon Offset Credit" under the new emissions trading scheme initiated at Kyoto (December 1997). BP announced a carbon reduction program before Kyoto. The CEOs of BP (John Browne, Wall Street Journal 14 Oct 1997) and Shell International Corp. have come out in public since Kyoto in favor of internalizing GHG risks -- as the Bolivia example shows. One way to go might be to make any offset tract to double as a carbon sequestration forest. Such offsets may qualify for Joint Implementation Credits under the World Bank's Carbon Fund.

Sustainability and Revenue Management

The two topics of revenue management and environmental sustainability are closely linked, yet separate. The case that pipeline receipts will be used prudently has to be made convincingly and disseminated widely – and by the ESA if not done elsewhere.

The environmental sustainability argument hinges on how to make non-renewable stock resources sustainable. The concept of environmental sustainability is to ensure that a nation rich in non-renewable resources does not plummet from being an affluent nation to a destitute one as soon as the non-renewable resources are exhausted. The only way to transform non-renewable stock resources into some form of sustainability is to use the Serafian quasi-sustainability rule (El Serafy 1989). Fossil fuel receipts need to be divided into two streams. Hydrocarbon owners may enjoy part of the proceeds from liquidation as income in the Hicksian sense, which they may devote to consumption. The remainder, a user cost, should be reinvested to earn income that would continue after the wells have been exhausted. If the receipts are used for general current expenditures, including public consumption, and result in disinvestment, then expenditure will exceed Hicksian income to the detriment of sustainability. If the user cost part of receipts is invested, say, in regular interest-bearing assets in order to build up an alternate source of future income, then the category called 'weak sustainability' will be attained. This is greatly preferable to no Hicksian sustainability.

This method essentially estimates income from sales of an exhaustible resource. It has also been used as a normative rule for a stronger sustainability, whereby the user cost should be reinvested, not in any asset that would produce future income, but specifically to produce renewable substitutes for the asset being depleted. In this case, if the hydrocarbon receipts are invested in the same sector whence they came, namely the power sector, 'strong sustainability' will be achieved. The user cost from depletable resources has to be invested specifically in replacements for what is being depleted in order to reach 'strong sustainability,' and must not be invested in any other venture -- no matter how profitable.

Huetting et al. (1995) take this a step further, especially for non-renewable energy, by basing an acceptable future rate of extraction of the non-renewable resource on the historic rate at which improved efficiency, substitution and re-use became available. Thus, the extraction rate should be based on historic record of accomplishment, rather than on technological optimism.

Safety Risks

In 40 years of LNG, there has been no loss of life at sea from 40,000 shipments. Gas tankers are very safe and there has been no spillage. DOE's Office of Pipeline Safety issues prudent regulations to reduce the risks from LNG and industry has all the incentives to keep gas safe.⁹¹ (Gsenet.org/host/lng-logan/historical-major-accidents-at-lng-facilities.htm)

Downstream Impacts

Downstream impacts are those which occur between the end of the pipeline (e.g., coast, port, terminal), includes tanker shipment (e.g., tanker age and safety standards, tanker certification, the flags of convenience issue, double-hulling, ballast flushing), siting the receiving terminal in the importing region, hydrocarbon treatment (e.g., regasification of LNG, oil refining), and distribution to consumers. If the product is received by an existing terminal, there is incremental impact (e.g., tanker congestion, energy used to treat the regasify LNG). If the terminal is new, and dedicated to receive the product of the pipeline, then the impacts of siting the new terminal usually are major. The fierce 2004/2005 legal struggle between consumers (rate payers), the State of California, and the Federal Energy Regulatory Commission over the siting of an LNG regasification plant is an example of one of the most severe impacts related to pipelines. The best ESA teams will seek clarification about where their assessment ends, and that the downstream impacts are being addressed

Endnotes

¹ GHG emissions (in grams of CO₂ equivalent/kw-hr) are: coal 1000, oil 700, gas 500. The many severe impacts of coal include acid rain (from oxides of sulfur and nitrogen), smog with volatile organics and particulates with their pervasive damage to health, acid drainage, involuntary resettlement of humans, mercury pollution, and waste disposal, as well as much greater contribution to greenhouse gases than oil and gas. Clean coal technology means different things to different people; there is no widely agreed definition. In India it means reducing the 50% pebbles from the mined coal. To others it means washing the coal. To yet others it means combined cycle gasification of the coal, or burning coal in oxygen. While it is true that clean coal technologies could reduce pollution from coal use, they are so expensive that they are unlikely to become widespread as long as natural gas prices remain low. When the cost of greenhouse gas emissions and other pollutants of coal burning are internalized, or taxed as in Norway, and when subsidies for coal and oil are removed, natural gas will out compete even the cleanest coal.

² This detailed table is derived primarily from the Oil & Gas Journal, Alexander's Oil and Gas Connection, US DOE's International Energy Outlook, and press reports. Many pipelines are built in stages so the data are not entirely comparable. Some capacities, for example, give the expected ultimate capacity when new compressors have been inserted and branch lines added. Some completion dates mark completion of the first section only, not the ultimate pipeline. "Planned" pipelines often change in schedules and other details before construction or before completion.

³ For example: Barker et al. 1994; Canada 1985; Drugan 1989; Exploration and Production Forum 1991; Gao 1994; Gaynor et al. 1986; Huber 1995; Irion 1995; IUCN 1991; Krone 1985; Ledec 1990a,b; Lindstedt-Siva 1995; Maki 1992; Oles 1996; Oosterom 1993; Rosenfeld et al. 1997; Shell 1996; Syrratt 1995; Tones 1979; UNEP/E&P Forum 1997; US DOE 1980; Van Dyke et al. 1994; Wilshire 1992; Zimmerman et al. 1991.

⁴ Ten Kate, K., Bishop, J. & Bayon, R. 2004. Biodiversity offsets: Views, experience and the business case. Gland, Switzerland, World Conservation Union IUCN [and] London, Insight Investment Management, 95 p. Also at: biodiversityeconomics.org/pdf.

⁵ Just after the 7/11/2001 Twin Towers disaster in New York city, a drunken hunter fired his rifle at the 20-year-old 1120 km-long TransAlaska pipeline on 4 October 2001. The single .338 caliber bullet hole spilled 285,000 gallons of crude across one hectare of tundra forest. The pipeline, which transports one million gallons of oil per day, had to be shut down for more than three days, according to Gips (2003). On the other hand, the TransAlaska pipeline withstood a 7.9 scale earthquake just north-east of Denali in November 2002 with no leak. Ops.Dot.Gov is the best compilation of pipeline safety and accidents information.

⁶ E.g., AmeradaHess, British Gas, BHP/Billiton, BP, ChevronTexaco, ConocoPhillips, Encana, Eni, ExxonMobil, Hunt, KerrMcGee, Kuwait Oil, Marathon, PetroCanada, Saudi Aramco, Shell, Statoil, Talisman, Total, Unocal.

⁷ Financial Times 2004.

⁸ The WAGP is a complex project of which this chapter is a brief summary. More information can be found in these references listed at the end of the book: Beck, 2004, Business Africa, 2001; Economic Commission for Africa, 2004; Environment and Social Development Department, 2002; International Finance Corporation 2002; International Finance Corporation, 2002; Office of the Compliance Advisory/Ombudsman, 2002; Ola, Doifie with Isaac Osuoka, 2000.)

⁹ ICF Consulting. *West African Gas Pipeline Environmental Impact Assessment: Regional Final Draft Rev. 1*. Bellaire, Texas: WEPCo, June 2004. wagpcogap.chevrontexaco.com/en_regionalpdfs.htm

¹⁰ Energy Information Agency. “West African Gas Pipeline (WAGP) Project.” Washington, D.C.: U.S. Department of Energy, March 2003
<http://www.eia.doe.gov/emeu/cabs/wagp.html>

¹¹ Ezigbo, Onyebuchi. “Vandalisation: NEPA Shuts Down Egbin, Agip IPP Station,” *ThisDay*, 6 April 2005.

¹² Oduniyi, Mike, Okon Bassey, and Cletus Akwaya. “Militants Threaten Escravos Crude Pipeline Again,” *ThisDay*, 7 February 2005.

¹³ Kublik, Frithjof. “Business Development: Master Plan Helps International Oil and Gas Company Develop Long Term, Integrated Gas Business View,” Shell Global Solutions, *Impact*, Issue 2 (2004), p. 14.
www.shellglobalsolutions.com/impact/pdfs/2_2004/planning.pdf

¹⁴ *Business Day*. “Oil and Gas Is Enclave Economy—Kupolokun,” *Business Day*, 4 April 2005.

¹⁵ World Bank and Multilateral Investment Guarantee Agency. *Project Appraisal Document on a Proposed IDA Partial Risk Guarantee in the Amount of US\$50 Million for Ghana and a Proposed MIGA Guarantee in the Amount of US\$75 Million for Sponsors Equity to the West African Gas Pipeline Company Limited for the West African Gas Pipeline Project*. Report No, 39335-AFR. Washington, D.C.: The World Bank and MIGA, 2 November 2004.

¹⁶ ICF Consulting. *West African Gas Pipeline Environmental Impact Assessment: Regional Final Draft Rev. 1*. Bellaire, Texas: WEPCo, June 2004. Vol.1, p.61.
wagpcogap.chevrontexaco.com/en_regionalpdfs.htm

¹⁷ Energy Information Agency. “West African Gas Pipeline (WAGP) Project.” Washington, D.C.: U.S. Department of Energy, March 2003.<<http://www.eia.doe.gov/emeu/cabs/wagp.html>>

¹⁸ The OCP Consortium includes EnCana (Canada, 31.4%), Repsol-YPF (Spain, 25.6%), Pecom Energia (Argentina, 15%), Occidental Petroleum (U.S., 12.2%), ENI-AGIP (Italy, 7.5%), Techint (Argentina, 4.1%), and Perenco (UK, 4.0%).

¹⁹ Original cost estimated at \$1.1 billion, according to the final project audit, total expenses were \$1.425 billion, reported in Hoy Oct 10, 2004

²⁰ “Biologists Oppose Road Planned by Oil Company in Ecuador Park,” Andrew Revkin, New York Times, Feb 17, 2005.

²¹ Including the Achuar, Shuar, Huaorani, Quichua, Shiwari, Zaparo and possibly others. This is important because there may be some as yet uncontacted nomadic tribes in the Amazon such as the Tagaeri (related to the Huaorani’s Taga ethnicity) who although refusing any contact with strangers won the honorific in the 1998 Bartolome de las Casas prize for living in harmonious symbiosis with the forest. IPS (23 May 2001) notes that OCP would violate the indigenous peoples land held by the Zaparo ethnic minority now designated by UNESCO as “Heritage of Humanity”. On 7th August 2002, the Parliamentary Commission on Health and Environment, VicePresident & Congressman Reynaldo Paes said that any OCP impacts harming such societies and environment would constitute a ‘crime against humanity’.

²² The damage of oil to the vulnerable ethnic minorities of the Amazon region of Ecuador are well-known. For example: “Protesters Take Over Oil Wells,” Reuters, Financial Times, February 23, 2001; “Nationwide Protests End with Triumph by Indians,” Kinto Lucas, Inter Press Service, February 7, 2001; “After Deadly Protests, Ecuador Rolls Back Fuel Prices,” Samantha Newport, Washington Post, February 8, 2001; “Army Crackdown Leaves Four Indian Protesters Dead,” Kinto Lucas, Inter Press Service, February 5, 2001; “Army Attacks Village in the East,” Jose Izquierdo, Servicio Informativo del Periodico En Marcha PCMLE, February 5, 2001; Weekly News Update On The Americas - La Hora (Quito) January 30, 2001; El Telegrafo (Guayaquil), January 30, 2001; Agencia Informativa Pulsar, January 30, 31 & February 1, 2, & 3, 2001.

²³ After nearly three decades of damage to human health and fish, and pollution of their water supplies, the Cofan Ethnic Minority occupied Texaco’s main oil well, Dureno-1, and requested it be turned off. As the occupation was peaceful and in view of the severe harm to the Cofan community, even the Army gave up on 12 October 1998 and the well has remained closed ever since. Cofan’s commemorative plaque “Notssia Tsampu Jin’ttima Isu” notes that the 10,300 ft deep well produced 2.5 million bbl of oil, 1 million bbl of formation brines, 700,000 cu ft of gas burned, 6,000 bbl of oil spilled, 10 ha deforested. and pollution of both Rio Pisurie & Rio Aguarico.

²⁵ A Strategic Environmental Assessment (SEA) is a study requested by multilateral organizations financing programs or groups of projects, often multipurpose works or several large projects with important structural components and their associated projects. The importance that the WB assigns to the SEA lies in its longer-term advantages. This approach surpasses the limitations of the EIAs which are more project specific. The SEA analyses aspects such as implied policies, induced development, cumulative impacts, regional impacts, interactions between projects, implications for the sector as a whole, management

capacity, and institutional framework in order to provide a broader context to the environmental assessment process as applied to single projects.

²⁶ Glenn Harvey Shepard Jr., “Pharmacognosy and the Senses in Two Amazonian Societies” (Ph.D. diss., University of California, Berkeley), 39.

²⁷ See also Kacper Swierk, “Informe del estudio de campo entre los Matsigenka del Paquiria en 2002” source? (2002).

²⁸ Mision de Inspeccion Interinstitucional realizada del 01 al 04 de setiembre de 2003, “Informe de Inspeccion No 009 – EM – GTCI Camisea/INRENA/OSINERG/DIGESA” (Monitoring report, Ministerio de Energia y Minas, 2003), 3, 5.

²⁹ Much more detail on violations of loan conditions for financial closure is available upon request.

³⁰ “The Global 200 is a science-based global ranking of the Earth’s most biologically outstanding terrestrial, freshwater, and marine habitats. Conservation International, et al., “Observations and Recommendations for the Camisea Project” (2002), 1.

³¹ “The “hotspot” concept is used by CI as its principal conservation strategy, and targets regions where the threat is greatest to the greatest number of species.

³² “Information Exchange with Stakeholders: Appendix A” camisea.com.pe/dialogo08.asp (cited 6 April 2003).

³³ Conservation International, et al., 2.

³⁴ “Information Exchange with Stakeholders: Appendix A”: camisea.com.pe/dialogo08.asp (cited 6 April 2003).

³⁵ Conservation International, et al., 3.

³⁶ As identified by the Biodiversity Support Program, a conservation consortium formed by The Nature Conservancy, World Wildlife Fund, and the World Resources Institute. Conservation International, et al., 2.

³⁷ Russian Rage over Sakhalin Project, Simon Perani, Emerging Markets, April 19, 2004.

³⁸ Transcript of meeting between President Jean Lemierre and Non-Governmental Organizations during EBRD Annual Meeting are available at www.ebrd.com.

³⁹ Ethical Funds Dump Shell Shares; Nick Mathiason & Oliver Morgan, The Observer, June 27, 2004.

⁴⁰ An additional off-shore gas platform is proposed, although not in the immediate vicinity of Western Gray Whale feeding habitat.

⁴¹ Impacts of Sakhalin II, Phase 2 on Western North Pacific Gray Whales and Related Biodiversity; Report of the Independent Scientific Review Panel, International Union for the Conservation of Nature

⁴² At this time Royal Dutch/Shell refuses to disclose the ISRP to the public

⁴³ September 10, 2004, correspondence between Wild Salmon Center and Rick Williamsohn, Exim Bank; April 8, 2005 correspondence between Wild Salmon Center and SEIC.

⁴⁴ This above-ground system proved effective on the Trans-Alaskan Pipeline in an earthquake of 7.9 on the Richter scale in November, 2002

⁴⁵ Letter to Rachele Sheard, Sakhalin Energy, from Richard Fineberg, December 29, 2003.

⁴⁶ Sakhalin Energy Accused of Violating Environmental Safety Standards, RIA NOVOSTI, April 8, 2005

⁴⁷ The Construction of the Liquid Natural Gas Plant and its Negative Impact on the Local Infrastructure as well as the Inhabitants of the Town of Korsakov, Lazebnik, NGO “Knowledge is Strength,” December, 2004, Korsakov, Sakhalin Island.

⁴⁸ Ibid #9

⁴⁹ Sakhalin’s Oil, Doing it Right, Applying Global Standards to Public Participation, Environmental Monitoring, Oil Spill Prevention & Response, and Liability Standards in the Sakhalin Oblast of the Russian Federation, Lawn, Steiner & Wills, Pacific Environment, 1999

⁵⁰ *Stymied in Alaska, Oil Producers Flock To a Newer Frontier*, Jim Carlton, The Wall Street Journal, September 4, 2002.

⁵¹ The Sakhalin II PSA—a Production ‘Non-Sharing’ Agreement; Analysis of Revenue Distribution, Dr. Ian Rutledge, November, 2004

⁵² Sakhalin II Production Sharing Agreement: Appendix E, Addition 7, General Questions, Point 4:

⁵³ Sakhalin II Production Sharing Agreement: Legislation; Specific Rights of the Company; Result of the Approval Process

⁵⁴ Burma has been ruled by a military government since 1958. In 1988, a new military regime took power after violent crackdowns on nationwide peaceful protests, killing thousands of demonstrators and suspected opposition members. The regime, then known as the State Law and Order Restoration Council (SLORC) renamed the nation Myanmar. Burma’s pro-democracy movement, including Nobel Peace Prize Laureate Aung San Suu Kyi and her National League for Democracy (NLD) claim that the regime lacks the legitimacy to change the name of the country, and thus still refer to the nation as Burma. SLORC reshuffled and renamed itself the State Peace and Development Council (SPDC) in 1997.

⁵⁵ SLORC established a state owned company Myanmar Oil and Gas Enterprise (MOGE) to produce and sell the nations oil and gas resources.

⁵⁶ The successive military governments of Burma have a long history of human rights abuses, particularly forced labor. See, e.g. Forced Labor in Myanmar (Burma: Report of the Commission of Inquiry appointed under article 26 of the Constitution of the International Labor Organization to examine the observance by Myanmar of the Forced Labor Convention, 1930 (no 29).

⁵⁷ See generally EarthRights International, Total Denial Continues: Earth Rights Abuses Along the Yadana and Yetagun Pipelines in Burma. 2nd ed. Dec. 2003 at 13-22.

⁵⁸ James Fahn and Pennapa Honhthong, “No action by Yadana committee: Lack of transparency attacked,” *The Nation*, February 26, 1998 at A1, A3.

⁵⁹ Total Denial Continues at 13

⁶⁰ Unocal, *Unocal in Myanmar (Burma): The Yadana Project* (March 1997) at 2.

⁶¹ US Embassy, Rangoon, Burma. Foreign Economic Trends (1996) at 48.

⁶² Tom Kramer, “Oil Companies Investing In Burma Under Fire in Europe.” *The Irrawaddy* (June 1999).

⁶³ See *Doe v. Unocal* at 14196: A May 1995, a cable from the U.S. Embassy in Rangoon, Burma, reported that the Unocal On-Site Representative Joel Robinson “stated forthrightly that the companies have hired the Burmese military to provide security for the project.” Similarly, a March 1996 cable from the U.S. Embassy in Rangoon indicates that “the consortium building the pipeline pays the Burmese military a hard currency fee for providing security.” *Doe v. Unocal* at 14196 fn5

⁶⁴ *Doe I v. Unocal*, 2002 U.S. App. LEXIS 19263 (9th Cir. 2002) at 14195; vacated, rehearing granted en banc, *Doe v. Unocal*, 2003 U.S. APP. LEXIS 2716 (9th Cir. 2003). (*hereinafter Doe v. Unocal*)

⁶⁵ Ted Bardake, Burma’s Pipeline Rouses Opposition,” *Financial Times*, January 24, 1996.

⁶⁶ As the federal court noted in *Doe v. Unocal*, “although there were anti-government rebels and opposition forces operating elsewhere in the country, there was little to no rebel activity in the Yadana Project area. In fact, the center of the civil war in Burma was 150-200 miles from the pipeline project. See footnote 4, *Doe v. Unocal* 14195.

⁶⁷ Total Denial Continues at 16.

⁶⁸ Total Denial Continues at 29. See also *Doe v. Unocal* at 14195. Unocal memorandum documenting Unocal’s meetings with Total on March 1 and 2, 1995 reflects Unocal’s understanding that “[f]our battalions of 600 men each will protect the pipeline corridor” and “[f]ifty soldiers will be assigned to guard each survey team.”

⁶⁹ See generally Total Denial Continues at 23-37.

⁷⁰ LeProvost, Dames & Moore, Yetagun Development Project (Phase I): Environmental and Cultural Impact Assessment for Onshore Zone 1 (August 1996, draft), at Socio-Cultural Report (Confidential Addendum for the Attention of Texaco Management) at 3.

⁷¹ Doe v. Unocal, 963 F. Supp. 880 (C.D. Cal 1997); summary judgment granted, Doe v. Unocal, 110 F. Supp. 2d 1294 (C.D. Cal 2000); revised in part, remanded, Doe v. Unocal 2002 U.S. App. LEXIS 19263 (9th Cir. 2002); vacated, rehearing granted en banc, Doe v. Unocal, 2003 U.S. App LEXIS 2716 (9th Cir. 2003).

⁷² Doe v. Unocal Corp., 110 F. Supp. 2d 1294, 1298 (D.D. Cal. 2000) (citing deposition testimony filed under seal).

⁷³ Doe v. Unocal Corp., 110 F. Supp. 2d at 1306.

⁷⁴ Total Briefing Materials (January 18, 1996) (on file with author), also cited in Doe v. Unocal, at 14196

⁷⁵ See generally *Doe v. Unocal* at 14198-14204 (highlighting Unocal's knowledge that the Myanmar Military was allegedly committing human rights violations in connection with the Yadana Project)

⁷⁶ *Doe v. Unocal* at 14202-14203. See also *Doe v. Unocal* 14203 fn10 stating that "Similarly, on May 20, 1996, a State Department cable stated: "Forced labor is currently being channeled, according to [non-governmental organization] reports, to service roads for the pipeline to Thailand. . . . There are plans for a helicopter pad and airstrip in the area . . . in part for use by oil company executives."

⁷⁷ Bureau of Democracy, Human Rights, & Labor, U.S. Dep't of State, Burma Report on Human Rights Practices for 1996 (1997).

⁷⁸ Total Denial Continues, at 131.

⁷⁹ EarthRights International interview #82 (on file with author)

⁸⁰ EarthRights International interview #85 (on file with author)

⁸¹ EarthRights International interview #83 (on file with author)

⁸² See Unocal, The Story You Haven't Heard About. . . Improving Lives in Myanmar, at <http://www.unocal.com>

⁸³ Total Denial Continues at 16

⁸⁴ Id

⁸⁵ Id at 120.

⁸⁶ Steven Staples, *The Relationship between Globalization and Militarism*, Soc. Just. Magazine, Winter 2000, at 18, 21.

⁸⁷ Rainforest Action Network, In Defense of Sacred Lands: The U'Wa People's Struggle Against Big Oil, at <http://www.ran.org>

⁸⁸ see generally www.earthrights.org/litigation

⁸⁹ Statement of Ka Hsaw Wa, EarthRights International Executive Director, winner of 1999 Goldman Environmental Prize, and the Reebok Human Rights Award 2002.

⁹⁰ The Greater Los Angeles Airshed Authorities, for example, attempted to reduce air pollution by raising taxes and tightening controls on the myriad of end-users of GHG, such as gas stations, dry cleaners, bar-BQs, landfills, and lawnmowers. This failed to reduce some air pollutants below 'dangerous' thresholds. The authorities decided to put the emphasis instead on controlling imports of GHG substances into the airshed. This has started to work.

⁹¹ Gsenet.org/host/lng-logan/historical-major-accidents-at-lng-facilities.htm lists LNG accidents. The 1944 LNG explosion flattened one square mile of Cleveland Ohio, killing 128 people. The explosion in the Halliburton LNG complex at Algeria's Mediterranean port of Skikda killed 27 people in January 2004. After the 9/11/2001 terrorist attack in Manhattan, FERC commissioned ABS consulting.com to assess LNG risks especially for Boston's downtown harbor, the only heavily populated site where 1.4bn ft³ of LNG is transported daily.

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