

Piping the Forest

The Bolivia-Brasil Gas Pipeline

case study
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EXECUTIVE SUMMARY

The construction of the Bolivia-Brazil pipeline is a good example of the vast infrastructure investments in countries that still have untouched natural areas of global importance. Latin America witnesses numerous construction projects of roads, oil and gas pipelines and dams. All of these investments receive substantial loans from developed countries, both state agencies and private banks, and enjoy the full support of the hosting government.

The aim of the Bolivia-Brazil pipeline is to enable the marketing of Bolivian gas reserves to Brazil. The 3056-kilometres-long pipeline is financed by the states of Bolivia and Brazil several oil companies of the developed world including Enron, Shell, British Gas, BHP, Tenneco Gas; and banks such as the European Investment Bank (EIB), Inter-American Development Bank, the World Bank, and Overseas Private Investment Corporation (OPIC), a U.S. state agency.

These projects are not without detrimental effects. The long-term and short-term impacts on the environment and the inhabitants, including indigenous communities, are significant.

The pipeline crosses several unique ecosystems protected under national law. In addition, it affects the communities living along the route of the pipeline. The main environmental harm is the destruction of tropical forest ecosystems, the loss of species and specimens due to the construction, and the degradation of natural resources such as soil, air and water. Another important factor is the increased access to previously untouched areas caused by opening a right-of-way and by the creation of illegal tracks and paths. The negative social effects experienced by the community include increased crime, violence and prostitution, the loss of land of the indigenous people, and the destruction of basic infrastructure.

The project violates national laws at several instances, as well the internal policies of certain funders including the World Bank and OPIC.

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PROJECT OVERVIEW

The Amazon Basin contains the world's largest tropical forest and almost half of the planet's terrestrial biodiversity. In order to exploit the natural resources of the region, the governments of South America are building "development corridors" to link these remote areas to the national and international markets. Large-scale development projects, i.e. roads, oil and gas pipelines, and dams, are developed at an ever-increasing pace.

The Bolivia/Brazil gas pipeline (GASBOL) is 3,056 kilometres long, originating at Yacimientos Petrolíferos Fiscales Bolivianos (YPFB) Rio Grande Natural Gas Plant, located 40 km south-east of Santa Cruz de la Sierra (Bolivia). The pipeline crosses the states of Mato Grosso do Sul, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul in Brazil, ending at the Metropolitan Area of Porto Alegre, at the Alberto Pasqualini Refinery - REFAP - PETROBRAS, located in Canoas (RS). Another part of the venture is lateral line from Bolivia (San Jose) north to Cuiabá, Mato Grosso in Brazil. This part of the pipeline project is usually referred to as the Cuiabá project. It includes a 390-kilometres pipeline and a power plant fuelled by natural gas.

Currently, Bolivia has 7.2 trillion cubic feet of natural gas reserves, a number expected to rise sharply once unexplored areas are tapped. The Bolivian government owns 60% of the pipeline within its borders and 20% within Brazil. The consortium of financiers, PETROBRAS (Brazilian Petroleum), the BTB consortium (British Gas, Tenneco Gas, and Australia's BHP Petroleum), and YPFB in conjunction with U.S. partners Enron and Shell, are financing a project worth roughly US \$2 billion. Of these, Enron will be primarily in charge of construction.

Apart from the studies conducted by the developer and its financing counterparts (e.g. World Bank), independent environmental research has been conducted on this project, primarily by local (Bolivian and Brazilian) and international (AmazonWatch, Friends of the Earth, WWF) NGOs. In Brazil an ombudsman has been appointed to facilitate communication with all involved parties of the society.

This report tries to give an overview of this megaproject and its environmental and social effects.

BACKGROUND

The Bolivian president, Gonzalez Sanchez de Lozada, decided to undertake a series of economic reforms by privatising parts of all national companies. The series of de-nationalisations began with the airlines and hydroelectric power and ended, most recently, with the natural gas and oil companies. The privatisation strategy of Bolivia was to keep a minimum of 50% of the shares in state ownership and sell up to 50% of each company to the highest bidder. The 50% kept by the state would be used to create Bolivia's first universal pension plan in history.

The national oil company, Yacimientos Petroliferos Fiscales Bolivianos' (YPFB) has been on the list of privatisation as well. In 1994, U.S. based Enron Corporation won the bid to develop Bolivia's gas resources by constructing, financing, and eventually investing and operating a pipeline. When YPFB leaders realised that the government was offering Enron Corporation up to 55% of the project, they organised strikes and accused the state of having personal connections with Enron officials. In response to the protests, Enron invited Shell into the venture, lowering its claim to 42% of the final proposal. This concession quelled most internal dissent by the YPFB, the Federation of Private Business (CEPB) and opposition parties and allowed Sanchez de Lozada to continue the venture unimpeded.

The strategic plan of ENRON is to create one continental gas grid, with Bolivia, as the natural hub supplying neighbouring countries. To complement this now regional endeavour, Bolivia has recently changed its status in the Southern Common Market (MERCOSUR) from that of an associate state to a full membership contract. In 1997, a new free-trade zone will slowly begin to be built between Bolivia and the MERCOSUR countries, to be completed in eighteen years. This new economic partnership could only help the pipeline project.

History of the project

Presidents of Bolivia and Brazil signed the "Treaty of Energy Integration" in 1988, after which Brazil entered into a commitment to purchase electrical power produced with Bolivian natural gas in a thermal plant to be built at the border of the two countries. The project then included an approximate demand of 2.8 million m³ per day. The evolution of this Treaty resulted in negotiations for direct purchases of natural gas, also destined for Brazil's main industrial centres, and in 1992, a Pre-Contract between YPFB and PETROBRAS, the state-owned oil and gas companies, was signed in the Bolivian city of Santa Cruz de la Sierra.

In 1993, YPFB and PETROBRAS signed the final Agreement stipulating quantities of natural gas to be exported within a 20-year period. According to the Agreement, the daily initial volume of 8 million m³ would be expanded within seven years to 16 million m³. This quantity would be maintained during the 13 remaining years of the Agreement.

In 1994, YPFB and PETROBRAS signed the 1st Amendment to this Agreement which, among other clauses, specified the property of gas pipeline stock and indicated partners of YPFB and PETROBRAS in the project, i.e. the ENRON corporation, on the Bolivian side, and the BTB group (including BHP, TENNECO Gas and BRITISH GAS) on the Brazilian side.

The majority control of the venture was maintained in equal portions by YPFB and PETROBRAS, jointly, each one with partners ENRON and BTB.

On Aug. 23, 1995, YPFB and PETROBRAS signed a 2nd Amendment, introducing the following important changes to the original Agreement:

- the creation of the transportation capability option was confirmed for the first 6 million m³/day of additional gas pipeline transportation capability, exceeding the contractual quantity of 16 million m³/day;
- the initial price of gas was increased from 0.90 US\$ per million BTU to a price varying between 0.5 and 1.06 US\$ per million BTU, for a contractual volume of 8 to 16 million m³/day;
- for additional quantities in regard to the contractual volume, up to a maximum of 30 million m³ a base price of 1.20 US\$ per million BTU was stipulated;
- it was agreed that the gas pipeline project would be based on natural gas supplies, not only for the industrial markets, but also for markets for the generation of thermoelectrical energy; and
- it was decided that the diameter of the gas pipeline should be 32 inches, allowing it to transport up to 30 million m³/day, in order to minimise the transportation costs.

The main objective of the construction and operation of GASBOL is the supply of natural gas, produced in the reserves of Santa Cruz, Bolivia, to the markets in Brazil, thereby opening up a new and important market for existing Bolivian natural gas reserves and providing an additional source of energy for Brazil.

The developers claimed the immediate need for the pipeline arguing that:

- The current Brazilian market, with its own reserves, is little more than 8 million m³ of natural gas per day. The known Bolivian reserves are sufficient to supply the Bolivian market and also the Brazilian market for at least 20 years.
- The route of the gas pipeline was defined to service the largest Brazilian consumer markets, which are facing a scarcity of natural gas and increasing pollution.
- The supply to different counties of the States of Mato Grosso do Sul, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul, with the possibility of interconnections to other important states such as Rio de Janeiro and Minas Gerais, is bound to have repercussions on local and regional economies, thus playing an important role in the energy policy and Brazilian overall economy.
- Utilisation of natural gas to generate electrical energy will contribute to the reduction of future deficit problems, as forecast by the Brazilian Electrical Sector, for the South/Southeast/Central-Eastern Section, in view of the growth -- even on a moderate scale -- of consumer markets' demands.
- Utilisation of natural gas, considered the cleanest fossil fuel, is bound to contribute towards a remarkable reduction in the pollution rates of urban centres, especially in more industrialised areas (São Paulo), avoiding irreversible environmental damage.

If we take a closer look at the current economic situation of Brazil, which is closely interconnected to the state of affairs of the energy market, we have to conclude that several of the developers' claims mentioned above are false. Gas has been considered for many years as the prime remedy for the energy shortages faced by the national economy. The inauguration of the Bolivia-Brazil pipeline, though, happened during a time of a major contraction of industrial activity. The energy market has changed considerably and now the supply outweighs the demand.

At the same time, Brazil has engaged itself in hydropower developments with new plants erected at Porto Primavera, Salto Caxias and the two 700 MW turbines of Itá and Itaipá. Putting the environmental assessment of these hydropower developments aside, we can nevertheless conclude that the energy matrix planning of Brazil was far away from not being regarded as strategic. More importantly, the demand for energy was strongly overestimated. This scenario is well known in other parts of the world as well where the economy is undergoing major changes and big companies of the energy sector push for biased demand estimation.

The developers claim that the pipeline will supply the needs of big cities; however, whereas Sao Paulo, the believed key market, currently receives 4 million m³ gas/day but uses only 3.5 million. The price of Bolivian gas in Brazil increased 30% in the last few years due to the devaluation of the Brazilian currency, the Real. In the short and medium run, the country does not need the Bolivian gas and according to the agreement that the price of the Bolivian gas is connected to the USD.

OPIC and ENRON continuously claim that the project will provide clean energy, will lead to the reduction of 475 000 tons of carbon and will reduce the need of local population for firewood, thus helping to cut down deforestation. These claims are far too optimistic. The carbon emissions from this project, including those from deforestation, amount to 500 000 tons of carbon per year. Developing gas infrastructure does not necessarily mean that the population will switch from oil or wood to gas. This is especially the case when gas price (and the income of the population is low relative to the price of the gas) and the cost of installing the infrastructure in the houses is high. Similar situations exist in areas outside Latin America as well.

The route of the project

The biggest gas deposits of Bolivia are in the region of Rio Grande where the pipeline originates. In the Bolivian section, the gas pipeline has roughly 556 km running from west to east, crossing an area of predominantly dry flat forest of the Bolivian Chaco. The route of the gas pipeline runs generally parallel to an existing rural roadway in the area, to the south of the city of Puerto Suárez on the Bolivia-Brazil border. Part of the route of GASBOL crosses the north-eastern border of the National Park of Gran Chaco, created by law in 1995 to protect ecosystems of the area. Although two-thirds of the gas pipeline crosses uninhabited areas, in some sections there are small villages, i.e. Pailón, San José de Chiquitos, Roboré, El Carmen and Puerto Suárez. In Bolivia, the three main waterways crossed by the gas pipeline are the Rio Grande, San Miguel and Otuquis rivers.

Apart from the basic route of the pipeline, ENRON decided to build a lateral line to Cuiabá, Brazil. This 390-km.-long pipeline, which is scheduled to be completed in March 2000, is financed by Gas Oriente Boliviano (GOB), a consortium made up of ENRON International, Shell International and the Bolivian company Transredes. The US government-backed Overseas Private Investment Corporation (OPIC) has approved \$200 million in financing the project. The \$570 million project also includes the construction of a 480-megawatt power plant in the city of Cuiabá. The facility will be the first gas-fired power plant built in Brazil.

The Bolivian section of the pipeline passes through the National Park of Gran Chaco and the primary forests of Chiquitano.

Crossing the Bolivian/Brazilian border, GASBOL passes by Corumbá, Mato Grosso do Sul State. Then it crosses the Mato Grosso swamp lands until it reaches Campo Grande, where natural pasture is predominant. Then it continues in a south-eastern direction, crossing the Tietê river (Ibitinga Dam) towards the Paulínia Refinery - REPLAN. In this region, GASBOL crosses the Environmental Protection Areas of Ibitinga and Corumbataí and the National Forest of Ipanema. From REPLAN to Campinas, it crosses an area with a marked presence of urbanisation, then following to Capão Bonito. Then it crosses the Paranapiacaba mountain range, crossing small remaining sections of the Atlantic Forest and the Itapirapuã river at the border of the states of São Paulo and Paraná.

Subsequently, the gas pipeline reaches a refinery plant (Presidente Getúlio Vargas Refinery - REPAR) in the area of Greater Curitiba, in Araucária. From this location, the route extends southward, utilising an existing right-of-way of the oil pipeline Paraná/Santa Catarina (OPASC). The pipeline finally reaches Canoas, the REFAP Refinery, next to Porto Alegre.

Another planned extension is from Campinas north to Rio de Janeiro and Belo Horizonte in Minas Gerais.

On the Brazilian side the pipeline affects directly the National Park of Pantanal (Parque Nacional de Pantanal Matogrossense) and the Mata Atlantica Rainforest in the south-eastern part of the country.

Financial structure

Bolivia-Brazil Gas Pipeline Project

The Bolivia-Brazil Gas Pipeline Project equals US\$ 2,228.000 m. The borrower is the Transportadora Brasileira Gasoduto Bolivia-Brasil S.A. (TBG), the project company created to develop, construct, own and operate the Brazilian section of the Bolivia-Brazil trans-national gas pipeline.

The project is financed from loans and equity. The loan equity ratio is 63:37. The following table summarises the sources of finance:

Organisation	amount (in million USD)
Inter-American Development Bank (IDB)	240
World Bank (WB)	130 180 (in Partial Credit Guarantee Bonds)
Andean Development Corporation (CAF)	80
European Investment Bank (EIB)	60
Export Import Bank of Japan (JEXIM)	104
Banco Nacional de Desenvolvimento Economico e Social (BNDES)	333
Petrobras (advance payment)	280
Sponsor equity	821
Total	2 228

The equity participants are Petroleo Brasileiro SA (PETROBRAS), BG plc, El Paso Energy, Broken Hill Proprietary (BHP), Enron and Shell.

The present loan of EIB is provided in the context of the European Union's co-operation policy with third world countries that have concluded co-operation agreements. In Asia and Latin America (ALA), the EIB may lent up to ECU 900 million during 1997-99

“to support capital investment projects implemented by joint-ventures between EU and ALA companies or, investment that results in environmental improvements or fosters regional integration.”

(EIB press release)

The Cuiabá project

Shell has associated with Enron to develop a 480MW natural gas-fired power plant in Cuiaba, State of Mato Grosso, western Brazil. The project will be the first independent power project to be fuelled by natural gas in the region. The plant's entire electrical capacity and associated energy will be sold to Eletronorte under a long-term power purchase agreement. Gas is to be supplied by Argentina's YPF and is to reach the plant through the Bolivia-Brazil pipeline. The partnership also includes the construction of a pipeline that will supply the plant with natural gas imported from Bolivia. Confab Industrial of Brazil is to supply the pipe. Siemens is to build the power plant in stages over three years.

Debt financing consists of a \$200m direct loan from the Overseas Private Investment Corporation (OPIC) and a \$165m loan arranged by Germany's Kreditanstalt fur Wiederaufbau (KfW). OPIC is a federal agency set up to encourage U.S. companies to do business in developing nations. OPIC, being a state agency, uses the money of American taxpayers to back this environmentally and socially undesirable development.

Companies involved:

YPFB - Yacimientos Petroliferos Fiscales Bolivianos, founded in 1936, is the national Bolivian oil company, involved in the exploitation, utilisation, refining and marketing of hydrocarbons. Its assets are close to US\$ 1 billion and their production amounts to 30 thousand barrels of oil products and 15 million m³ of natural gas per day. The company operates approximately 6,500 km of pipelines, including 12 oil pipelines and 9 gas pipelines.

PETROBRAS - Petróleo Brasileiro S.A., founded in 1953, is the Brazilian oil and gas corporation, and 51% of its stock control belongs to the Brazilian federal government. PETROBRAS is mainly engaged in the exploitation, production, refining, distribution, import, marketing and transportation of oil and derivatives. It is Brazil's largest corporation and has consolidated assets exceeding US\$ 20 billion.

ENRON - Enron Corporation, one of the world's largest corporations in the area of natural gas, has assets of approximately US\$ 13 billion. ENRON is the largest buyer and trader of natural gas in the USA and is also involved in the production and marketing of liquid natural

gas, exploitation and production of oil and gas, as well as in the operation of thermoelectrical plants.

In December 1993, BHP, TENNECO Gas and BRITISH GAS announced the organisation of a consortium, the BTB group, to participate of the development, financing and construction of the BOLIVIA-BRAZIL gas pipeline. Corporations integrating the BTB group have approximately 50 thousands km of gas pipelines in operation world-wide, and over 250 thousand km of local gas distribution pipelines.

TENNECO ENERGY is one the largest gas companies in the USA, with assets over US\$ 4 billion. This corporation is supplying approximately 1/6 of the natural gas demand in the Continental United States.

BRITISH GAS is the world's largest natural gas corporation, with assets of US\$ 40 billion. Their holdings operate gas distribution networks, covering over 18 million consumers in 40 countries.

BHP is the largest Australian corporation, and in 1994 occupied position # 126 on the "*Fortune 500*", a list of the 500 largest industrial corporations in the world. BHP operates on an international scale in the area of mineral, steel and oil products. Its total assets are approximately US\$ 20 billion, and it operates in over 20 countries.

THE IMPACTS OF THE BOLIVIA-BRAZIL PIPELINE

“The Bolivia-Brazil gas pipeline, pursuant to the chosen directive, presents an environmentally feasible alternative and encompasses different socioeconomic benefits, and even environmental benefits, which by far exceed the environmental impacts which may occur during its construction and operation, as long as remedial action proposed in the environmental studies is adopted.”

(EIA, Consolidated Report)

The “development corridors” are large infrastructure developments that have considerable impact on the natural and social landscape of the region. Most of the corridors invade sensitive and protected areas such as national parks and indigenous communities. Mega-projects have a multitude of impacts, direct and indirect, on the ecological diversity and integrity, and the on the life of its traditional communities.

The direct impacts are habitat destruction and pollution and the violent disruption of indigenous communities—customary by-products of major development projects. The indirect impact is exposing unique habitats to exploitation by extracting companies (oil, gas, agribusiness, mining, and logging) that can only engage in such investment with the help of governments.

The sponsors of this project have made numerous promises that this project will benefit local communities and will exemplify strict and unprecedented environmental safeguards to minimise harmful impacts. However the reality is far different.

Environmental problems

Loss and fragmentation of habitats

Bolivia

The lateral pipe leading to Cuiabá crosses the Chiquitano forest, which is a unique tropical dry forest, semi-deciduous woodland distinguished from rainforests on the continent by the amount of rainfall it receives. To lay the underground pipeline, the companies have dug a 90-foot-wide trench through the Chiquitano dry forest, listed among the Earth's 200 most sensitive eco-regions. An independent environmental analysis conducted by scientists confirms the presence of unique primary forest. This finding contradicts the assessment of OPIC who legalised this lending (which is against the official policy of the agency) by saying that the region is already affected by human influence, hence it does not qualify for primary forest.

Additionally, the pipeline affects the National Park of Gran Chaco reserve that was created in 1995 to protect the fragile ecosystem.

Brazil

The pipeline is digging through the Pantanal wetlands, one of the world's richest wildlife habitats, which are under protection by the Brazilian law. Paragraph 4, Article 225, Chapter VI of the Federal Constitution established that

“Floresta Amazônica Brasileira, Mata Atlântica, Serra do Mar, Pantanal Matogrossense and Zona Costeira are national sites, and the use thereof shall be made according to law and complying with conditions that assure the preservation of Environment, inclusive as to the use of natural resources.”

Since part of gas pipeline runs through an area integrating Pantanal Matogrossense, it should be noted that by Decree no. 86,392, of September 24, 1981, the Parque Nacional do Pantanal Matogrossense was created and, provisions of Decree no. 84,017, of September 21, 1979, approved the Regulamento dos Parques Nacionais Brasileiros.

Loss of specimens and species

The section of pipeline cutting through the Chiquitano forest threatens 34 species with extinction. These numbers are the findings of the OPIC itself. The independent study conducted by a team of scientists from several conservation organisations (World Wildlife Fund, the Missouri Botanical Garden, the Wildlife Conservation Society, Noel Kempff Museum and Bolivian environmental group Friends of Nature) confirmed the presence of healthy populations of several species, including march deer, hyacinth macaw, maned wolf, jaguar, ocelot, peccaries and tapirs, that are highly endangered in other regions of the continent,

In the Otuquis region of Bolivia, the construction caused major deforestation because the Consortium used wood from the locality. This was not at all part of the technical implementation plan and approximately 150 000 trunks of local species, including Mapajo, Ajo, Cuta, Maraui and Jichituriqui, have been cut.

Increased access the right-of-way

The 556-kilometres-long Bolivian section of the pipeline has a 30 ms right-of-way, whereas the 2500-kilometres-long section in Brazil is planned with a 20-meter-wide right-of-way. The right-of-way poses special problems because it enables easy access to previously undisturbed areas. In addition to the legal right-of-way, loggers have illegally opened new roads and paths. Every day the local population experiences the increased number of illegal hunters, loggers etc. as the ineffective barriers that have been constructed do not prevent people and livestock from easily entering. In addition, as experienced in the San Matias area, there are no signs posted warning that access is restricted. The solution of the company (GTB – the consortia of Enron-Shell) is to contract the army to patrol it. The local communities want local control over the right-of-way.

Degradation of natural resources

Natural resources are continuously degrading due to overuse and misuse. The Consortia do not have the incentive to preserve the soil and the drinking water base because it will leave the area after construction is finished. The Consortia should provide the workers with all the necessary resources from its own sources but, in reality, it uses the water supply of the nearby settlements causing stressing scarcity.

In a number of areas of the San Matias area, the soil excavated during the construction has not been restored. The soil structure has changed significantly resulting in compaction and severe erosion. For example, the hilly area between kp 145 and kp 165 in the Chiquitano forest suffers from erosion from the exposed soil on the right-of-way and thick layers of sedimentation in all the permanent and ephemeral streams. Erosion control for the Consortia meant the placing a few rows of sand-filled bags on the sometime 45% inclines. It does nothing to prevent massive erosion. Vehicles significantly degrade the fertile layer of the soil.

Increased traffic all along the pipeline causes massive air pollution. At the same time the air quality is deteriorated by deforestation caused by the construction of the pipeline and the working camps. Further logging is envisioned due to the unrestricted access to areas that were opened up by the right-of-way. Deforestation reduces the benefits of the forests such as carbon sinks, as well. Carbon sinks are determinant factors in “controlling” climate change.

Social problems

Land ownership changes

People, mainly small landowners and indigenous habitants, risk losing their legally owned land. The land titling prescribed in the Indigenous Peoples Development Plant (IDP) is delayed by the Consortia who refused to assume the costs of technical and legal services connected to the program. The IDP was created to provide \$2 million to fund environmental and social impact mitigation measures. The preparation and implementation of Indigenous Peoples Development Plan is a loan condition of OPIC and the World Bank as well. The World Bank assigned this project a category A designation, which requires the development of a comprehensive environmental impact assessment (EIA) and an IDP that is required in all cases when the EIA highlights significant impact on indigenous peoples. An additional problem with the IDP is that it does not include adequate resources for the continued operation of the initiatives created. No mechanisms are created to compensate for direct damages such as damages to local roads or water resources, just as no fund is available for independent monitoring activities.

Degradation of basic local infrastructure

The heavy machinery utilised for construction destroyed local roads connecting neighbouring communities. These roads have not been restored to their previous condition. In certain places the parking vehicles degraded not only the paved roads but the adjacent land as well. Increased traffic causes air pollution (NO_x, CO and dust) and noise levels are intensified because the route of the pipeline is, in several instances, illegally close to settlements. Local people complain that these impacts are especially serious during the beginning and end of each week when the vehicles enter and leave the construction sites. Additionally, access to

telephone lines has been seriously undermined by the construction, because the Consortium uses the public telephone system.

Disturbed communities

The entirely different lifestyle of workers has caused disruption in local towns and villages associated by the workers' camps. Local inhabitants complain about the arrogance of workers. Crime and prostitution (which results in spread of sexually transmitted diseases), previously virtually non-existent, show a sharp increase.

Proximity of pipeline

The pipeline passes only 600 meters from the settlement that is much less than the 2 kilometres prescribed by the construction norms. Additionally, the pipeline has split communities, such as San Jose de la Frontera and Can on de Fatima. Near the construction site, air and noise pollution are significantly increased.

Many of these examples are taken from only a few locations. Nevertheless, these local experiences are good indications of the impacts of a project like this, whether it is gas pipeline or other infrastructure development. In addition to the immediate impacts, long-term secondary impacts, including other proposed pipelines, continue to be of great concern.

Violation of laws and internal policies

Financing the project represents a clear departure from the meaningful implementation of the newly adopted standards and seriously undermines the commitment made by OPIC and the U.S. administration for strengthening environmental standards. President Clinton has pledged at the United Nation General Assembly in 1997 that the administration would prohibit infrastructure projects in primary tropical forests. OPIC has violated the Foreign Assistance Act as well, that prohibits financing projects in primary tropical forests. OPIC tried to bypass this problem by announcing that the territory in question already has been affected by human influence; hence, it does not qualify for "primary" or pristine forest. Independent studies of conservation organisations confirmed that the forest transected by the pipeline is a fully functional natural forest ecosystem that is overwhelmingly dominated by mature trees, i.e. a primary forest.

OPIC loan condition No. 3 states that the developer has to comply with and implement the Environmental and Management Plan, which requires, in our case, strict erosion control and revegetation.

Both OPIC and World Bank internal rules have been violated by the poor implementation of the IDP (see above).

Enron has started to clear the right-of-way prior to receiving permits, which violates Bolivian laws. Radioactive materials have been used and deposited at the outskirts of a Bolivian

settlement (Carmen Rivero Torres) without any licence. This violates Article 21, Chapter II of the Environmental Law No. 1333, which says that “all natural and legal persons involved in activities that might degrade the natural environment have to take all preventive measures, inform the competent authorities and all the possible affected parties.” It is subject to Article 113, Chapter V of the Law on Environmental Crimes as well.

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Annex – The map of major infrastructure developments in South America

Controversial Infrastructure Projects Proposed or Underway in the Amazon Basin

