



## New Pipelines Threaten Intact Amazon Rainforests in Brazil

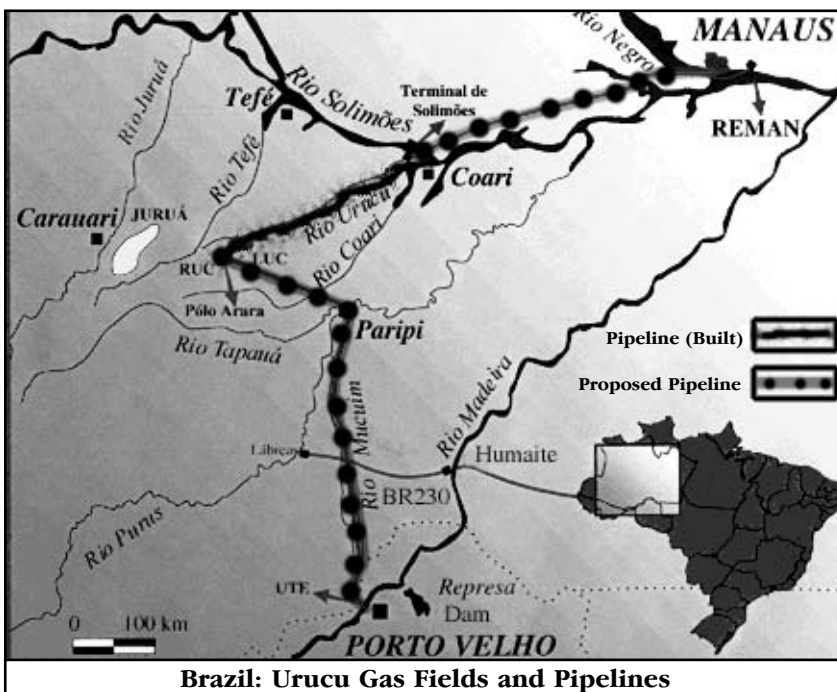
### The Dark Side of President Cardoso's "Advance Brazil Plan": Carving Energy Grids in the Heart of the Brazilian Amazon

#### Project Overview

In the heart of the Brazilian Amazon, over 400 miles (700 km) upriver from Manaus, two new pipelines are planned to expand oil and gas production from the Urucu and Jurua gas fields. One of the riskiest and least talked about schemes of *Avança Brasil*, this undertaking is one of 20 major infrastructure projects launched as part of President Cardoso's \$45 billion plan to "advance Brazil."

The pipeline route would serve as a conduit for loggers, miners, ranchers, and colonists to spread deforestation into pristine areas, some of which are inhabited by extremely vulnerable isolated indigenous groups including the **Apurina, Paumari, Deni and Juma**.

In 1998, Petrobras constructed the first leg of the pipeline network, a 165-mile (280-km) pipeline running from the Urucu field alongside the Urucu River to the town of Coari. The project had disastrous impacts on the local communities and the rainforests along its path.



Brazil: Urucu Gas Fields and Pipelines

Petrobras now plans to build two pipeline extensions which are expected to have even harsher impacts given that the route traverses relatively intact and vulnerable Amazonian lowland rainforests, flooded forests, and savannas. The first pipeline would extend 325 miles (550 km) from Urucu to Porto Velho (Rondonia) and the second would extend 245 miles (420 km) from Coari to Manaus (Amazonas State).

The pipelines are part of the larger Urucu-Jurua Gas Field complex which includes gas processing facilities, new wells, pipelines, and power transmission lines to deliver energy to the largest cities in the Brazilian Amazon. The total value of the investment is estimated at \$1.7 billion<sup>1</sup>.

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# Urucu and Jurua Gas Field Complex At A Glance

## Urucu-Porto Velho Pipeline

**Length:** 325 miles (550 km) **Diameter:** 12 inches

**Capacity:** 2-3 million cubic meters /day

**Cost:** US\$175 million

**Status:** Preparing the Environmental Impact Assessment

## Coari-Manaus Pipeline

**Length:** 245 miles (420 km) **Diameter:** 18-20 inches

**Capacity:** 4 million cubic meters / day

**Cost:** US\$275 million

**Status:** Due to intense opposition, the project may be put on hold in favor of shipping the gas in tankers.

## Termo Norte thermoelectric plant in Porto Velho, Rondonia

**Ownership:** Houston-based El Paso Energy International owns 40 percent stake in the US\$280 million project

**Capacity:** Initially 73.8 mega watts (MW), reaching 178.7 MW in July 2002 and 340 MW in July 2003

**Status:** Partially operational using diesel fuel, scheduled to start using gas fuel by 2001-2002  
Additional phases under construction

## Gas processing terminal on the Solimões River in Coari

**Financed by:** Exim Bank of Japan and Mitsui (US\$64 million)

**Contractor:** Techint Engineering

**Status:** Constructed in 1998 at a cost of US\$55,5 million.

## Increased production capacity for gas and oil in Urucu-Polo Arara

**Status:** Oil production up from 30,000 to 54,000 barrels per day in 1999

Gas production up from 2 billion to 6 billion cubic meters per day

## Gas Pipeline from Urucu to Coari

**Status:** Completed in 1998 for US\$85 Million

## Poliduct from Urucu to Coari

(To transport oil and liquid natural gas)

**Status:** Nearly operational US\$60 million

## Other Related Components:

Electrical Transmission Line from Porto Velho (Rondonia) to Rio Branco (Acre) (under study)

El Paso's Thermoelectric plant in Manaus (in the planning stage)

Pipeline Connecting Urucu and Jurua Gas Reserves (US\$93 million)

## Overview (continued)

In order to lay the gas pipelines, two roads between 50-100 feet (15-30 meters) wide would be built along the entire length of the pipeline right-of-way. These roads would essentially link the two largest cities in the Brazilian Amazon--Manaus and Porto Velho--to the heart of the wilderness.

The new pipelines would provide natural gas to power plants such as the **Porto Velho Power Station in Rondonia**, as well as to the states of Amazonas and Acre. Houston-based **El Paso Energy International** is majority owner of two power plants served by these pipelines and is at the core of this project. El Paso currently owns and operates over 76 percent of the electricity generation capacity of the state of Amazonas, and is becoming a leading power generator in Rondonia. The company is exploring the possibility of developing a 2,000-megawatt power generation complex in the electricity-poor state of Sao Paulo.<sup>2</sup>

Local groups opposing the pipeline routes have requested international support and involvement in blocking financing for the project in order to expose its impacts. Groups are also urging for greater consideration of alternative routes, shipping methods, and energy sources to meet the needs of the region. Opponents point out that the Urucu gas reserves will be exhausted in about 15 years, yet the undertaking will leave behind irreversible impacts, changing land use patterns forever. Furthermore, the Urucu energy supply will boost energy consumption in the Brazilian Amazon, creating levels of demand that will have to be met long after Urucu's reserves dry up.

Originally, Petrobras considered compressing and shipping the

### Key Players:

GasPetro, a 100 % subsidiary of Petrobras

El Paso Energy International

Japan Exim Bank

Halliburton

Schlumberger

Techint Engineering

Brazil's National Development Bank (BNDES).

liquid natural gas via river from a planned compression plant at Urucu to Manaus, Porto Velho, and other Amazon cities. However, this plan was abandoned in favor of constructing the pipelines, which is likely to lead to greater deforestation. Opponents continue to push for the river transport alternative.

The exact financial arrangement for the two new pipeline extensions has yet to be finalized. A representative from BNDES (the state-owned bank) has said that the Bank expects to share the financing and contribute up to 60 percent of the investments in

the gas field complex in loans. The Brazilian government has stated that it will provide financing for 15 percent of each pipeline project; the remainder of resources is expected to come from the private sector and international financial institutions.

In 1997, the **Japanese Export-Import Bank** lent approximately \$64 mil-

lion for the construction of the Urucu Gas Processing Plant.<sup>3</sup> Currently there is no evidence that shows involvement by other international financial institutions in the two upcoming pipeline extensions. It is likely, however that IFC, US Exim Bank, and private financiers such as Citigroup and its recently-acquired BankBoston will be approached for financing in the near term.

Some financiers have questioned whether the project makes economic sense, based on the high cost of plowing through

570 miles of very remote rainforest to take the gas to a very limited market - especially since closer reserves have been found to supply Manaus, the largest market in the region. Other financiers will also likely question such a project's inherent risks.



# Oil and Gas Reserves in the Brazilian Amazon

The Urucu region is currently the only oil and gas-producing area of the Brazilian Amazon. Reserves in the region are 160.7 million barrels of oil and more than 100 billion cubic meters of natural gas, or 24 percent of Brazil's gas reserves. By way of comparison, Peru's Camisea project represents 310 billion cubic meters, or roughly 3 times the Urucu reserves.

To date Petrobras has invested nearly \$500 million in the gas field project, mostly in investments to increase production capacity.

The Urucu reserves are the second-largest natural gas deposit in Brazil, after the Campos Basin, off the coast of the Rio de Janeiro state. The Urucu and nearby Jurua gas fields are seen as the energy source to meet the region's projected demand for the next two decades. Current production in the area totals about 1.88 million cubic meters per day of natural gas. This production is expected to increase to 6 million cu m/day.

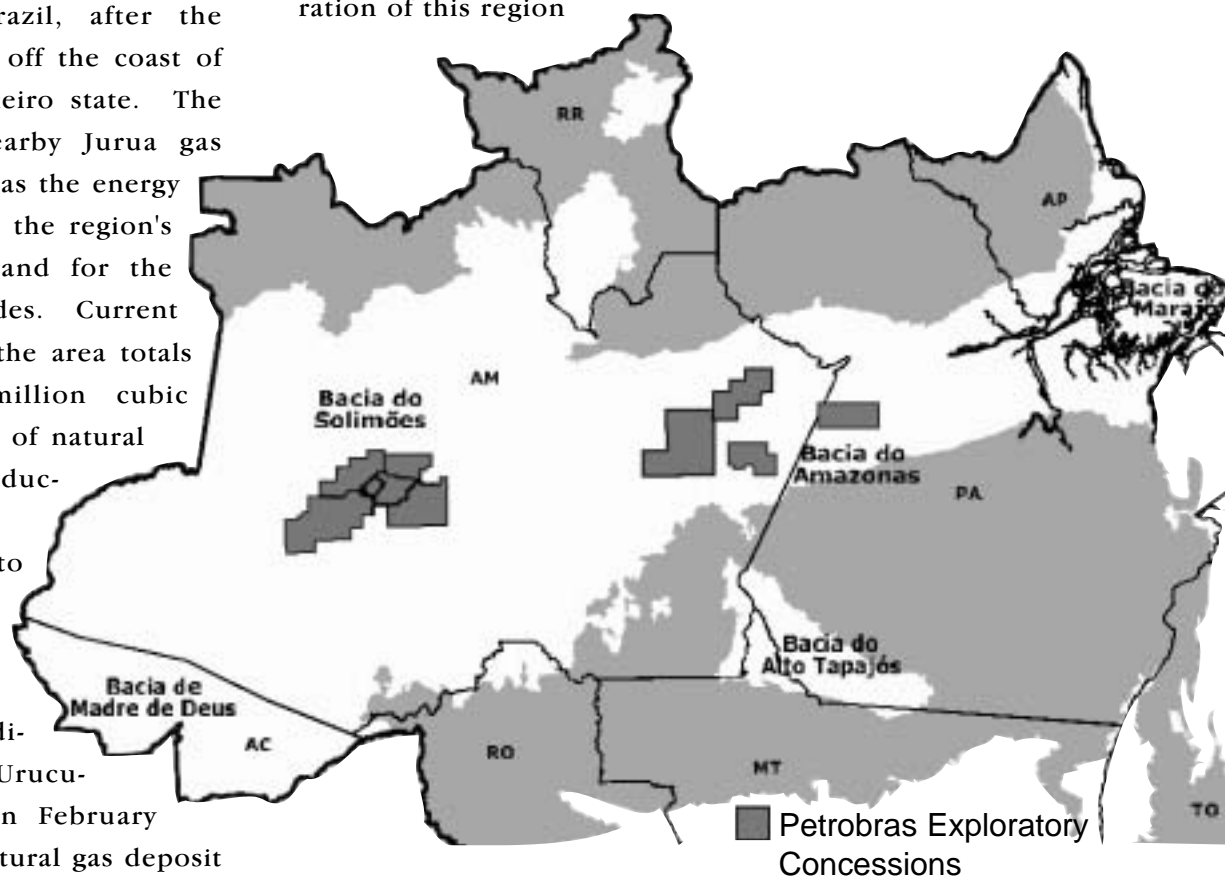
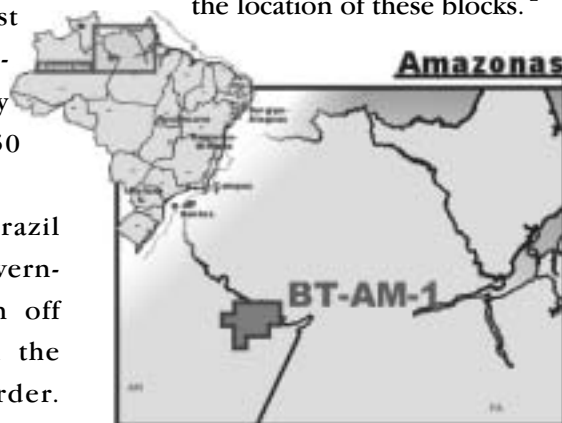
In addition to the Urucu-Jurua fields, in February 2000, a new natural gas deposit

was discovered in the municipality of Silves, 188 miles east of Manaus on the Uatumã river in the state of Amazonas, which would invariably further increase fossil fuel production in the Amazon. The Silves reserve is seen as a more cost effective alternative to supplying Manaus with energy given that it is about 350 miles closer.

In 2000, during Brazil Round 2, the Brazilian government attempted to auction off block BT-AM-1, located on the Amazonas-Para state border. However, there were no bids for the block. Previous exploration of this region

by Petrobras entailed 554 miles of seismic testing and the drilling of an exploratory well.

Petrobras has 9 existing exploratory blocks in the Solimões and Amazonas basins, the status of which are unknown. See map for the location of these blocks.<sup>4</sup>



# A Closer Look at the Impacts of the Recently Built Urucu-Coari pipeline

The first pipeline from Urucu to Coari, completed in 1998, had disastrous impacts on local riverine communities and the environment along the Urucu and Solimões Rivers, and it stands as a powerful reminder of what can be expected from construction of the next two pipeline extensions.

The pipeline blocked three streams formerly used by communities for drinking water, bathing and growing and preparing manioc---the staple food of the area and a major source of income. As a result, drinking water now must be brought in from a considerable distance. Various other creeks used by local populations along the Urucu River were also silted up or rendered inaccessible by the pipeline. Fish populations are said to have fallen dramatically in the Urucu.

Increased traffic of hovercrafts and barges transporting construction equipment on the river aggravated the already existing problem of invasions by industrial fishing boats. Communities along the river have had to contend with depleted fish stocks and scarce game.

Brazil nut and fruit trees were cut down in several places along the pipeline route. The fruits of these trees provide important market products for the local population.

*The town of Coari, where gas from the processing plant is to be stored, has seen an influx of about 7,000 people and is now known as the prostitution center of the Solimões region.*

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Although cutting down these trees is a violation of Brazil's forestry code, compensation did not reach everyone affected. The project's effect in stimulating urban-to-rural migration has had unforeseen and serious

negative consequences. In addition, animals for hunting won't cross the pipeline road which runs for 10 km along the east side of the Urucu River, eliminating yet another food source for the communities on the eastside of the river.<sup>5</sup>

The town of Coari, where gas from the processing plant is to be stored, has seen an influx of about 7,000 people and is now known as the prostitution center of the Solimões region. Child prostitution, drug trafficking, robberies, domestic violence and sexually transmitted diseases including AIDS have also increased. In addition, despite assurance from the companies, the project did not create local employment as mostly outsiders were hired and brought in.<sup>6</sup>



# Urucu and Jurua Gas Fields

## Key Concerns



### Degradation of Rivers and Streams

The Urucu gas project would locally impact numerous rivers, flooded forests, and igarapes (streams) where fish breed, and fragment forests—increasing the risk of forest fire, and reducing resistance to wind damage.

### Urban to Rural Migration as Amazon's Two Largest Cities Would Be Connected to Intact Rainforests

According to Phillip Fearnside of the National Institute of Amazon

Research (INPA), the pipeline route runs the risk of opening up the nucleus of the Amazon, until now largely untouched because of the difficulty of access. The first pipeline route from Urucu to Coari did not connect to regional population centers. However, the two pending pipelines would link two state capitals (Porto Velho and Manaus) to the heart of the rainforest and facilitate access into, and development within, largely pristine remote areas.

This project could lead to a large influx of colonists from Rondonia, currently a net exporter of urban to rural migrants. Traditionally such influx has happened in the Amazon whenever a new road has been built. Campesinos and colonists often sell their land gained from the agrarian reforms to large landowners and move to clear and settle on new land, thus expanding the deforestation frontier.

### High Priority Areas for Biodiversity Conservation

Brazilian and international scientists and organizations involved in conservation planning have identified large tracts of forests traversed by the pipeline route as “the highest priority for biodiversity conservation.”<sup>7</sup> These include flooded forests (Varzea) considered vulnerable, globally outstanding, and highest priority at the regional scale. In addition, the Purus/Madeira and Juruá Tropical Moist Forest have been identified as “relatively intact” and “regionally outstanding.”<sup>8</sup> Although the pipelines would be buried underground, a 50-100 ft-wide (15-30 m-wide) construction and service road would be

required. The corridor would increase access to intact areas and would likely lead to increased forest clearing, illegal logging, and poaching. Over the long-term, the 570-mile (970 km) pipeline right-of-way would catalyze the degradation and deforestation of areas of high conservation value.

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*The two pending pipelines would link two state capitals (Porto Velho and Manaus) to the heart of the rainforest and facilitate access into, and development within, largely pristine remote areas.*

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### Impact on Protected Areas

Highly biodiverse areas with protected status which could be affected include the following nationally recognized areas: Abufari Biological Reserve (south of Coari) and the Aiapua Lake Environmental Protection Area (on upper Purus River).<sup>9</sup>

### Isolated Indigenous Communities in the Project's Area of Influence

Gaspetro's planned pipeline route follows the northern perimeter of the Jacareúba/Kataxixi indigenous area, home to uncontacted indigenous peoples. The reserve has not been officially demarcated and in fact, the demarcation process hasn't moved forward in the last 15 years.

## Affected Ecosystems

Region	Ecosystem Type	Conservation Status and Priority
Coari area	Dense flooded forests or Varzea of Purus (subject to seasonal floods)	Vulnerable; Globally Outstanding; Highest Priority at Regional Scale
North of Purus	Lowland relatively intact: terra Juruá Moist Forest	Relatively Intact; Regionally Outstanding; Moderate Priority at Regional Scale
South of Purus River	Lowland relatively relatively intact rainforest: Purus / Madeira Moist Forest	Relatively Stable, Locally Important; Important Priority at National Scale
Humaita	Amazonian savannas	Bioregionally Outstanding; Moderate Priority at Regional Scale
North of Porto Velho	Wetlands	More information is needed

The Urucu project would likely delay the demarcation process further.<sup>10</sup>

The pipeline would also run close by a number of **Apurina, Paumari, Deni and Juma** indigenous communities and would impact the following officially-named Indigenous Areas: Caititu, Banawa (Piranhas River), Paumari (Lake Marahã), Jarawara, Jamamadi, Kanamanti, and Paumari (Ituxi River territories). The Juma, Paumari (Lake Paricá), Paumari (Lake Manissuã), Paumari (Cuniuã Paumari) are additional indigenous reserves at risk of being impacted.

Even if the pipelines were not to pass through these areas, opening up the region will undoubtedly increase social pressures on indigenous groups near the route or those living near river systems crossed by the route. Once built, new access roads for the pipeline are easily converted to local roads as local communities often pressure authorities to keep

the roads open and improve them.<sup>11</sup>

### Increase in Illegal Logging Activities

Greater access to remote rainforests increases illegal logging activities. Currently, 70 to 80 percent of timber production in the frontier region of the Amazon comes from illegal sources.<sup>12</sup> In addition, new legislation now permits the unlicensed selling of timber---up to 147 cubic feet (45 cubic meters) per person.

### Riverine and Rubber Tapper Communities Affected

Along the Urucu River, communities stand to suffer more severe consequences than those experienced from the Urucu-Coari pipeline. Direct

impacts include increased pollution, prostitution, and criminal activities, and an influx of migrant workers. A number of riverine communities, including rubber tappers, along the Mucuim and Purus rivers would be affected. Several municipalities---the largest of which include Canutama, Camarua, Tapaua, Labrea and Humaita---would suffer negative impacts similar to those faced in Coari.<sup>13</sup>





# El Paso Energy Faces Legal Action for Porto Velho Power Plant<sup>14</sup>

Excerpts from FORUM's December 7, 2000 update

The "Sindicato dos Urbanitarios de Rondonia" (The Urban Syndicate of Rondonia), a union composed of workers from the water, sanitation, electric and other service industries, approached the Forum (Forum of NGOs in Rondonia) for support regarding alleged problems with the Termo Norte Power Plant in Porto Velho.

The companies involved ---led by **El Paso Energy International**---had started operation of the recently constructed power plant in an urban area of the municipality of Porto Velho, in the middle of 6 residential neighborhoods inhabited by nearly 8000 families, without first consulting the communities. The plant currently uses diesel fuel to generate 64 MW of electricity and has

obtained only a provisional/preliminary license for installation and did not have an operating license. The operating license requires that an adequate EIA be completed for the project and approved by the State Council after hearings and public participation in the review process. Only then can the final license to begin installation and operation be given by the National Electrical Energy Agency (ANEEL).

The workers syndicate and Forum jointly decided to execute a civil action to halt the installation process of the power plant which was in the final stage of Phase I. The Forum presented the lawsuit in conjunction with the Ministerio Público Federal---the public defenders/ombudsman, the government entity that represents the interests of civil society of Rondonia in defending the environment and the quality of life.

Forum launched legal action on May 19, 2000 asking for complete suspension of the power plant due to irregularities in the licensing process and inherent environmental impacts, until the company was able to meet a series of demands. These included:



obtaining authorization by National Electric Energy Agency (ANEEL) for energy production; holding a public hearing, in agreement with CONAMA Article 1, following the presentation of a completed EIA/RIMA; immediate canceling of the preliminary license from IBAMA and requiring the issuance of a Provisional Installation License.

The plaintiffs demanded that IBAMA apply all the inherent sanctions within its environmental policy power on the monitoring of the installation projects of the Termo Norte plant.

Federal Judge Francisco Martins Ferriera ruled on June 14, 2000 that all the demands be met and ordered the immediate suspension of the activities and installation of the power plant until the company could produce the legal licenses, only possible after approval of a suitable EIA. He also threatened the

*After barely 15 days in operation, oil spilled from the power plant and contaminated the Rio do Velho River, next to the work site.*

already caused serious pollution and environmental degradation. Furthermore, the plant began operating in violation of Brazilian laws.

Termo Norte Energia LTDA was contracted by Electronorte to install the power plant but was not following legal procedures, as it had



## ***The Forum denounced the process as illegitimate, lacking transparency and antidemocratic.***

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company with a fine of US\$110,500 were it to fail to heed the ruling. The company's operations were halted for 2 months as a result.

The company held a public hearing where the Forum presented a report detailing its concerns about the installation of the power plant. The report proposed an environmental monitor-

ing plan, mitigation steps, and compensation measures that were stipulated and documented in the EIA process.

The company's EIA was approved by CONSEPA (State Council of Environmental Policies), but the sponsors of the project did not adopt any of the concerns or proposals presented by the community. The Forum

denounced the process as illegitimate, lacking transparency and antidemocratic.

CONSEPA rejected Forum's requests for another public hearing. As a result, Forum presented a new request to halt the project, this time demanding: an extension of the moratorium on the project; immediate new public hearings, as requested by 50 people; a technical investigation and review of the EIA/RIMA by experts named by the court; and the nullification of the CONSEPA meeting, where the environmental studies supposedly had been reviewed and ratified by a Commission of Analysis of SEDAM (the state ministry of environment).

In the end, the company was able to overturn the moratorium on the power plant after two months, at which point it resumed normal activities. Incidentally, after barely 15 days in operation, oil spilled from the power plant and contaminated the Rio do Velho River, next to the work site. Neither Forum nor any of the population knew anything about it until the accident came out in a local paper a week later.

Forum immediately complained to the Instituto de Criminalística do Estado de Rondônia (Institute for Crime of the State of Rondonia) asking for a definitive injunction against the installation of the power plant. As of February 2001, Forum still had not received any response from the Public Ministry and Termo Norte Energia LTDA has already presented the EIA for Phase 2 to SEDAM.

## **Current Project Status**

Brazil's energy shortage has lead to frequent blackouts in parts of the country, and regulatory agencies are accelerating approval of energy projects. Subsequently, the expansion of El Paso Energy's polluting Termo Norte Power Plant from 64 MW to 340 MW---which will burn diesel fuel until the gas pipeline to Porto Velho comes online---is on a fast track. The company also plans to build a similar plant in Manaus.

However, local groups have just informed Amazon Watch that one of the two proposed pipelines, the Coari-Manaus, may be on hold for the near future due to opposition from the Governor of Amazonas who favors shipping the gas in tankers via the Amazon River. In response to public pressure and opposition, the State Government has taken a position against the pipeline project and instead is working to license CIAGAS---Companhia de Gas do Amazonas which is partly state-owned---to begin river shipments from Urucu to Manaus immediately.

Local groups consider this a partial victory given that shipping via tankers avoids the pipeline's worst impact, namely the opening up of a pipeline road. Groups are encouraged by this development and hope that the construction of the Urucu-Porto Velho can similarly be abandoned in favor of shipping by river.

On the other hand, the Urucu-Porto Velho leg of the project is being pushed ahead by Petrobras, the company responsible for its construction. The Environmental Impact Assessment is nearly complete and the results will be published in June 2001 in the Official Gazette (Diario Oficial in June).

Concerned about the lack of previous consultation on the Terms of Reference for the EIA, CPT is demanding that Petrobras and the government officials responsible for licensing hold extensive public hearings in all major communities along the pipeline.

Acknowledging Petrobras' poor track record and the need to protect vulnerable communities, Estevao Monteiro de Paula, the President of the State Environmental Protection agency of Amazon State, IPAAM, has requested a greater role in the licensing and review process for the Urucu-Porto Velho pipeline. Nearly 500 km of it would fall within the State of Amazonas.

# Opposition by Affected Communities

A coalition of indigenous and local organizations have been actively mobilizing against the project including the **Pastoral Land Commission**---Commission Pastoral da Terra (CPT), **Coordenação das Organizações Indígenas da Amazonia (COIAB)** (Coordinator of Amazonian Indigenous Organizations), **Forum Permanente de Debates da Amazonia (FORAM)** (Permanent Forum For Amazon Debate), **Foro da ONGs de Rondonia (FORUM)** (Forum for NGOs from Rondonia), and the **Coselho Indigenista Missionario Reg. Norte (CIMI-Norte)** (Indigenous Missionary Council for the Northern Region). This is a small, well-organized and expanding community-level group. The coalition was set up following the disastrous impacts of the first pipeline and is focusing on holding Petrobras accountable for their past mistakes as well as on informing and mobilizing local and indigenous communities along the expected routes. They are concerned about the construction phase impacts as well as long term impacts related to the additional infrastructure and the industrial development the gas will enable in the region.

**The Commission Pastoral de Terra (CPT)** in Manaus has led much of the organizing efforts among local communities in both the existing and the proposed gas projects. CPT has initiated official interventions in 1999 and 2000 on the original pipeline project to force Petrobras to address the serious local impacts it caused. In late 2000, CPT's efforts prompted the office of the Public Ministry 'Ministerio Publico' to carry out an investigation and present a complaint to the Federal government environment protection agency (IBAMA) charging that Petrobras had selected, cleared and marked sections of the pipeline route without the required permits and without any public disclosure or debate about the route. IBAMA has done a cursory review of CPT's claims and concluded that there was no major work underway. However, the Amazonas State Environmental Agency is currently reviewing the case and has admitted that there are insufficient resources for carrying out adequate site visits. There is also concern that this project is mainly to supply energy to new industrial plants in the Amazon. CPT is urging for consideration of alternative energy forms.

**The NGO Forum of Rondonia (FORUM)** has mainly focused on opposing the Termo Norte power plant owned in part by El Paso Energy International in Rondonia which commenced installation without the proper permits and is generating major air pollution. They were able to suspend the plant for two months by filing a complaint. However the project has since returned to operations and Forum needs additional financial and human resources to continue to work on the lawsuit, train monitoring teams, and do technical assessments to accompany discussions about the second phase of the project.

Philip Fearnside, energy expert at the **National Institute of Amazon Research (INPA)** is concerned about the impacts of the road that crosses the Urucu-Porto Velho route between Humaita to Liberacao.

Dan Nepstad of **Woods Hole Research Institute/IPAM**, a non-governmental research institute based in Belem in Northern Brazil, is concerned about the secondary impacts of the pipeline especially given the obvious failures of the first EIA to identify the actual impacts on communities.

In Europe this project is being discussed by **Koordination Brasilien** (Organisation of German groups which are working in Brazil) and **Tropenwald Netzwerk** (network of rainforest groups in Germany), and the **European Working Group on Amazonia (EWGA)**.

**Environmental Defense** in Washington DC has published a profile of the Urucu project's impacts listing it among ten of the worst Export Credit Agency-financed projects. The environmental organization has advocated importing power from Venezuela's Guri power line, which is already being extended to Boa Vista to stretch to Manaus for supplying electricity to Amazonas markets. However, that project has also been embroiled in controversy and is halted on the Venezuelan side pending resolution with environmental and indigenous opposition.



## Related Documents

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## Organizations to Contact For More Information

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## Web Sites for Project Sponsors

Petrobras, [www.petrobras.com.br](http://www.petrobras.com.br) (English)  
Federal Government, [www.brazil.gov.br](http://www.brazil.gov.br) (see Avanca Brasil)  
ANP, the National Petroleum Association, [www.anp.gov.br](http://www.anp.gov.br) (English)  
ONIP, National Organization of the Petroleum Industry, [www.onip.org.br](http://www.onip.org.br) (Portuguese)  
ABDIB, Brazilian Association of Infrastructure and Primary Industry (Associacao Brasileira da Infra-estrutura e Industrias de Base), [www.abdib.com.br](http://www.abdib.com.br) (English)  
IBP, Brazilian Petroleum Institute, [www.ibp.org.br](http://www.ibp.org.br) (English) with links to other Brazilian organizations  
Department of Fossil Fuels, [www.dnc.gov.br](http://www.dnc.gov.br)  
Ministry of Energy and Mines, [www.mme.gov.br](http://www.mme.gov.br)  
US overview of Brazil: US Energy Information Administration, Department of Energy, [www.eia.doe.gov](http://www.eia.doe.gov) (see country studies, Brazil)



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