The World Bank and the G-7:

Changing the Earth's Climate for Business

An analysis of World Bank fossil fuel project lending since the 1992 Earth Summit

A collaborative study authored by the Sustainable Energy and Economy Network (Institute for Policy Studies, U.S.) and the International Trade Information Service (U.S.), in association with Halifax Initiative (Canada), and Reform the World Bank Campaign (Italy).

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**Key Findings:**

1. **Since the Earth Summit, the World Bank has funded projects that will add carbon emissions to the Earth’s atmosphere equivalent to more than ALL current annual GLOBAL fossil fuel emissions.**

   Since the Climate Convention, designed to limit greenhouse gas emissions, was signed by most of the world’s leaders at the 1992 Earth Summit in Rio de Janeiro, the World Bank Group\(^1\) has helped finance fossil fuel projects which will, over their lifetimes, release the equivalent of more than the entire planet's current annual carbon emissions from fossil fuel burning. Our report details $9.4 billion in Bank commitments from FY1993 to the present which, we estimate, will contribute to the emission of at least 9.5 billion tons of carbon (or 35 gigatons of carbon dioxide) over their lifetimes. In addition, we examine pending commitments of $4.1 billion for projects that will release an additional estimated 1.3 gigatons of carbon (4.7 gigatons of CO\(_2\)). These estimates are conservative, and do not attempt to include all Bank-financed projects (such as transportation loans or Russian coal mining); were we to do so, this figure could increase by 10 times or more. Total estimated global emissions of carbon from fossil fuel consumption-- the single greatest contributor to climate change -- were approximately 6.24 gigatons\(^2\) in 1995 (28 billion tons of CO\(_2\)).

2. **Although earmarked for development assistance and poverty relief, 9 out of every 10 World Bank fossil fuel investments actually end up enriching multinational corporations.**

   The fossil fuel projects financed by the World Bank boost sales and profits by G-7-based\(^3\) corporations: This report examines 51 Bank-financed fossil-fuel power plants, 20 oil and/or gas field projects, 10 oil or gas pipelines, four coal mining programs (that involve more than 26 mines), and 2 oil refineries--for a total of 87 fossil fuel projects. G-7 corporations, among them some of the world’s largest, like Exxon, Shell, Amoco and Westinghouse, are investors, suppliers, contractors, or customers in at least 71 of these projects. Of the remaining 16 projects, at least half are actively seeking foreign investors.

3. **The poorest one-third of the planet get less than one-tenth of the World Bank's energy investments while absorbing most of the environmental and social costs of fossil fuels.**

   The World Bank-financed fossil fuel-intensive energy development is powering industrial

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\(^1\)The World Bank Group includes several institutions which provide loans, credit, equity, guarantees and risk insurance for various projects. These institutions include the International Bank for Reconstruction and Development (IBRD), commonly called the World Bank, the International Development Association (IDA), the International Finance Corporation (IFC), and the Multilateral Investment Guarantee Agency (MIGA).


\(^3\)The G-7 is a group of seven of the world’s most powerful industrial economies. These are Canada, France, Germany, Italy, Japan, the U.K. and the U.S. Russia has become associated with the G-7 this year.
expansion in developing countries, but bypassing the energy needs of the rural poor: About 78 percent of the World Bank’s energy portfolio is devoted to oil, coal, and gas, most of which goes to power industry; while less than 9 percent of overall Bank lending is devoted to helping the 2 billion people in rural areas of the global South with no access to electricity or cooking fuels other than wood, crop waste or animal dung. Although the World Bank’s mandate is to reduce poverty and promote sustainable development, many of the Bank-financed fossil fuel projects significantly degrade the environment and leave the rural poor worse off. Indigenous peoples and others living subsistence lifestyles are particularly hard-hit by this fossil fuel-intensive development model.

4. The World Bank invests 100 times more money in promoting climate change than in averting it.

The Bank spends over 100 times as much on fossil fuel investments than it does on the entire GEF budget for projects that "avert" greenhouse gas emissions. The budget for the World Bank-housed Global Environmental Facility --the key global institution charged with financing projects that reduce greenhouse gas emissions -- is dwarfed by the Bank's own fossil fuel investments.

5. The World Bank and the G-7 are undermining the spirit—if not the letter—of the Climate Convention for profit.

The Climate Convention allows developing countries unrestricted use of fossil fuels in order that they might address the overriding priorities of economic and social development and poverty eradication. However, this loophole is being exploited by multinational corporations, Northern governments and banks who are continuing their “business as usual”--emitting greenhouse gases and polluting local environments, while failing to address the energy and economic needs of the poorest.

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The Sustainable Energy and Economy Network, a project of the Institute for Policy Studies (Washington) and the Transnational Institute (Amsterdam), works in partnership with non-governmental organizations in the U.S., Europe, and Asia on environment and development issues. SEEN has produced two prior reports on the World Bank: "The World Bank’s Juggernaut: The Coal-Fired Industrial Colonization of the Indian State of Orissa” and “Consultative Group to Assist the Poorest: Opportunity or Liability for the World’s Poorest Women?” Network coordinator Daphne Wysham is co-editor of a book of essays on the World Bank, Beyond Bretton Woods: Alternatives to the Global Economic Order (Pluto, 1995). In addition to research and advocacy work, SEEN is working with village women in rural India to develop the “Women’s Power Project,” a model of sustainable development that incorporates women’s empowerment, renewable energy, forest regeneration, and microenterprise. For more information, please contact: Daphne Wysham, SEEN/IPS, 733-15th St., NW, Suite 1020, Washington, DC 20005. Phone: 202-234-9382. Fax: 202-387-7915. E-mail: <dwysham@igc.apc.org>.

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The Halifax Initiative is a coalition of Canadian environment, development, social justice, and faith groups deeply concerned about the policies and practices of the international financial institutions and committed to their fundamental reform. The Coalition, formed in 1995, has been active on issues including multilateral debt relief, structural adjustment, environmental sustainability, and institutional accountability. Through education, advocacy, and research, the Coalition has fostered an active and engaged public constituency and helped create space for public debate on the role of financial institutions in a globalizing world. The Coalition produces an annual report card measuring the effectiveness of reforms undertaken by the Bretton Woods institutions, and has produced research papers on structural adjustment, multilateral debt relief and the Tobin tax. For more information, please contact Robin Round, Coalition Coordinator, Halifax Initiative, #142-1 Nicholas St. Ottawa, Ontario, Canada, K1N 7B7 Phone: 613-241-4611. Fax: 613-241-2292. E-mail: <rjr@web.net>. Home page: http://www.sierraclub.ca/national/halifax.

The Italian Reform the World Bank Campaign, launched in 1996 by Centro Internazionale Crocevia, is a coalition of 13 Italian development and environment NGOs, and is coordinated by Francesco Martone. The Campaign's work is aimed at enhancing the possibilities of civil society and Parliament to monitor and influence lending activities and policies of the World Bank. Its work mostly focuses on projects where there is significant involvement of Italian transnational corporations, or where policies and projects of the World Bank contradict or undermine international commitments taken by the Italian government, such as under the Climate Convention. The campaign has held a hearing at the Italian Parliament on the need to reform the World Bank and IMF and participated in the Lyon G-7 summit and the 1996 World Bank Annual meeting. The Italian version of the report also includes a section with data and findings of research on Italian bilateral aid funding to thermal power plant. For more information, contact: Francesco Martone, Campagna per la Riforma della Banca Mondiale, Via F.Ferraironi, 88/G - 00172, Roma - Italy. Phone: 39.6.24404212. Fax: 39.6.2424177. E-mail: fmartone@gn.apc.org
EXECUTIVE SUMMARY

"Given current population and urban growth rates over the next generation, industrial output and energy use in the developing countries will increase five-fold--with the risk of irreversible environmental damage...We must heed the warnings of the Rio Summit and act to protect the world for our children."

--World Bank President James Wolfensohn, October 10, 1995, in speech to IMF/World Bank Annual General Meeting.

Since 1992 -- the year most of the world leaders signed the Climate Convention to curb climate change in Rio de Janeiro-- the World Bank and its subsidiary organizations have administered an aggressive $9.4 billion spending program to expand international investment in and ownership of coal mines, oil and gas fields, and fossil fuel-fired power plants in developing countries. Another $4.1 billion in World Bank fossil fuel loans are pending. Each World Bank dollar paves the way for five to six dollars in additional private investment.

The World Bank’s energy strategy is virtually tailor-made to undermine the Climate Convention by catalyzing the rapid expansion of large-scale fossil fuel projects in the global South. These World Bank-financed fossil fuel projects will have a significant impact on the world's climate: The total projects approved by the World Bank since the Climate Convention will contribute an additional burden of carbon emissions to the Earth's atmosphere equivalent to more than all current annual global carbon emissions from burning of fossil fuels.

About nine out of every ten projects financed by the World Bank benefits at least one corporation headquartered in the wealthy Group of 7 (or “G-7”) nations. Many of the industries consuming or producing the fossil fuels have migrated from more industrialized countries where resources are growing scarce and heavy industry and power demand are plateauing.

The World Bank plays a pivotal role in ensuring this G-7 corporate involvement in fossil fuel consumption by routinely ordering the privatization of industrial sectors in a developing country; once this is achieved, it then funds the first power plant or oil field that is open to foreign investment. With privatization in place, state-run utilities can no longer control the procurement process.

The G-7's collective financial muscle is phenomenal; their collective gross domestic products (GDPS) are greater than 68 percent of the total world economy. In 1995, their seven GDPS totalled $17.2 trillion, while the global economy totalled $25 trillion. These seven nations are also among the major contributors to the World Bank; as such, they hold close to 50 percent of the Bank's executive directors' voting power, thereby wielding significant clout in approving or vetoing World Bank projects.

All seven of the G-7 are among the 164 nations who have ratified the Climate Convention; they are all among the "Annex 1" group of industrialized countries who have the highest per capita greenhouse gas emissions; all have agreed, at the behest of the Intergovernmental Panel on Climate Change (IPCC), to reduce their greenhouse gas emissions. None have made significant progress in this regard.

The G-7 and the World Bank are thereby undermining the spirit, if not the letter, of the Climate Convention in three ways:

1) by promoting, in the form of low-interest loans, guarantees, and other incentives for investment, a model of development in non-Annex 1 countries that is harmful to the world's climate, and is predicted to cause particular harm to the poorest people in developing countries;

2) by profiting from this same unsustainable model, they are thereby exploiting a loophole in the Climate Convention intended for non-Annex 1 countries to develop their own economies and eradicate poverty; and

3) by devoting insignificant resources to addressing the rural energy crisis of the 2 billion poorest of the poor-- those dependent on wood fuel, crop waste, and dung--they are thereby ensuring that deforestation as a consequence of fuelwood scarcity, soil erosion, and CO2 emissions from this sector of the population continues to grow.
Foreword

Fossil fuels--coal, oil and gas--now serve as the primary engine of industrialization. The burning of fossil fuels is also the number one cause of climate change, and thus the single greatest threat to the future stability of the planet's intricate web of ecosystems--its web of life. In this context, it is fair to suggest that those who determine energy policy also determine the future of the planet.

Today, while the planet grows warmer, energy policy-makers are dragging their heels. Globally, it is the U.S. that is the number one greenhouse gas emitter, and the number one heel-dragger, increasing its already significant share of greenhouse gas emissions (about 22 percent of the global total) by 12 percent since 1992, while shying away from any firm commitments to reductions. Between 1992 and 1995, Canada, the number two per capita emitter, has also increased its greenhouse gas emissions by 9.4 percent. Indeed, only six of the 25 most industrialized nations will reduce their CO2 emissions to 1990 levels by the year 2000, and three of those are Eastern European countries, whose economies have collapsed.

With little leadership to follow from wealthy countries, energy policy-makers in developing countries are choosing the cheapest energy path--fossil fuel development--having all but given up on the promises of transfers of technology and other resources made by wealthy countries five years ago at Rio.

The World Bank has positioned itself to be the logical conduit for the transfer of resources and technology to avert climate change from the wealthy North to the poorer South. However, our report shows that the World Bank--together with its investors from the Group of 7 (G-7) nations--is financing rapid climate change at a pace far greater than any effort it is taking to avert climate change, and failing in its mandate to target the poorest with this investment. Furthermore, our research shows it is the G-7 countries that are among the major beneficiaries of World Bank financing.

According to our detailed calculations, even if the World Bank stopped financing fossil fuels tomorrow, the carbon emissions related to projects they have approved only in the last five years will add at least an additional 9.5 billion tons of carbon (or 35 gigatons of carbon dioxide) to the Earth’s atmosphere--more fossil fuel emissions than the entire planet now emits per year.6

The consequences of such profligate fossil fuel use for the planet are devastating. Among the many scenarios climate forecasters refer to is the “high economic growth scenario,” which allows for unbridled greenhouse gas emissions globally. Our research shows that even this pessimistic scenario does not anticipate the additional emissions we will see if the World Bank continues its pace of fossil fuel-driven industrialization in the South. That pace, on average, adds about 2 gigatons of carbon to the Earth’s atmosphere per year: By 2015, at its current rate of financing, the Bank would have underwritten the emission of 42 gigatons of carbon emissions from developing countries. Yet the Middle East, Latin America, developing Asia, Africa, Eastern Europe and the former Soviet Union is expected to emit only 7 gigatons

6See page 27 for methodology and a summary table of fossil fuel emissions.
of carbon in the “high economic growth scenario” by the year 2015.\footnote{International Energy Outlook, 1997, p. 138.}

The various climate change scenarios--pessimistic or optimistic--predict a spectrum of changes that are devastating enough, without such additional fossil fuel emissions: An increase in average global temperature of 1 to 3.5 degrees Celsius (2 to 7 degrees Fahrenheit), which, under any scenario, means the average rate of warming would probably be greater than any seen in the last 10,000 years. It would be accompanied by a rise in sea levels of about 20 inches, wiping out small-island states, and inundating large stretches of what are now coastal regions. Coral reefs and boreal forests are predicted to suffer significant losses in coming decades, with rapid extinctions of the plant and animal species they harbor. The growing intensity and regularity of storms, floods, droughts, and erratic weather will grow, with serious economic consequences. Diseases like malaria and dengue fever are expected to blossom in northern latitudes where they’ve never been seen before.

The region of the world that has thus far played the smallest role in creating the current climate imbalance--the global South--is predicted to pay the highest price, with drought, crop failure, desertification, disease, malnutrition, and starvation on a mass scale. The poorest people in the South, living on the most marginal land, will be the most vulnerable. Yet, ironically, it is in these same Southern countries where fossil fuel emissions are accelerating, at a pace far surpassing any predicted by forecasters--with massive profits accruing to Northern government investors and fossil fuel industries. And the World Bank is the linchpin holding it all together.

When the leaders of the G-7 industrial nations, plus Russian President Boris Yeltsin and World Bank President James Wolfensohn, meet June 20-22, 1997, in Denver, Colorado, to discuss pressing international economic issues, one of the top items on their agenda will be global climate change, and measures to prevent the continued rapid accumulation of greenhouse gases in the Earth's atmosphere. Climate change will also be a central topic during the United Nations Earth Summit II in New York City the following week, where G-7 country leaders will be joined by heads of state from around the world.

Climate talks at both meetings are precursors to a summit in December, the Conference of the Parties, in Kyoto, Japan, where -- under a complex negotiating process laid out at the first Earth Summit in Rio de Janeiro in 1992 -- leaders are scheduled to further strengthen the Climate Convention with binding commitments to greenhouse gas emission reductions. Treaty protocols require that only industrialized nations, or "Annex 1" nations, make commitments to greenhouse gas reductions at Kyoto; developing countries--or "non-Annex 1" countries--don't come under formal legal strictures until a later, as yet undefined date.

Participating nations made this agreement because per capita greenhouse gas emissions in wealthy countries far outstrip those in the developing world. Developing countries were given longer lead times in phasing out greenhouse gases in order that they might address the more pressing issues for them of economic development and poverty alleviation. Article 4, section 7, of the Climate Convention states:
...The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties....

Negotiators also recognized that it is industrial countries that have both the expertise and the resources to begin cutting greenhouse gases first, and that their innovations will serve as both a show of good faith and a technological blueprint for developing countries to follow.

This report shows that a major proportion of developing country greenhouse gas emissions are financed or catalyzed by investments from the World Bank -- an institution that claims to promote "sustainable development" -- and that corporations based in industrial countries are among the primary beneficiaries of many of these ventures.

Thus, rather than a show of good faith, and rather than assisting developing countries in addressing the “overriding priority of social development and poverty eradication,” the World Bank is assisting large oil, gas, and coal companies--many of them migrating from Annex 1 countries-- in circumventing the strictures of the Climate Convention. Because most of the Bank-financed projects are large-scale, centralized projects serving heavy industry or energy export markets, they provide minimal benefits to the citizens in the developing countries. In fact, ordinary citizens often experience increased energy prices, disruptions of traditional economic activity, and increased local pollution because of the World Bank projects. Ironically, power failures only promise to grow more constant for many urban dwellers in countries like India. Impoverishment in rural areas is exacerbated--not eradicated--by many of these Bank-financed fossil fuel projects. Climate change only promises to make matters worse for the poorest.

Thus, we challenge the World Bank and the G-7 to address the growing inequities in access to power (in the form of energy, natural resources, wealth, and information) they help to perpetuate in the name of "poverty alleviation" as a first step in restoring balance to the Earth's climate.
The World Bank and the G-7: 
Changing the Earth’s Climate for Business

The consequences of the World Bank’s fossil fuel expansion in the global South are proving devastating for the Earth’s climate as greenhouse gases generated in mining and burning of fossil fuels are released into the Earth’s atmosphere. The total of World Bank-financed fossil fuel-related emissions for Bank projects since the 1992 Earth Summit will result in 9.5 gigatons of carbon being emitted over the lifetime of the targeted oil, gas and coal fields, pipelines, and power plants; an additional 1.3 gigatons of carbon will be emitted from projects in the pipeline. This is more than the entire current annual global carbon emissions for planet, which is estimated at 7.6 gigatons of carbon.\(^8\)

Since July 1992, the World Bank Group has committed over $9.4 billion in loans, credits, guarantees, equity and other forms of financing to fossil fuel projects, and is on the verge of adding about $4.1 billion more. These projects target at least 51 coal, oil or gas-fired power plants (with a combined capacity of over 29,600 megawatts), 20 oil or gas developments, two proposed oil pipelines, 8 other gas or oil pipelines, and 26 coal mines.

The combined economic and environmental impact of these projects is staggering. With World Bank assistance, these oil, coal, and gas projects are shifting the natural resources and capital away from the alleged "beneficiaries" of the projects to hundreds of corporations, with many of the largest capital outlays going to corporations based in the G-7. These same G-7-based corporations own, invest in, provide equipment for, and/or use fossil fuels from these same projects. In nearly 90% of the fossil fuel projects financed by the Bank, at least one G-7 corporation has or is likely to have a direct capital role.

All of these projects must be approved by the World Bank's board of executive directors. The World Bank's executive directors representing G-7 countries hold almost half--47 percent--of the Bank's voting power. The addition of Russia to the exclusive group of economic powers, the new "G-8," will tip the balance of power upward to 49.5 percent. The G-7--and now, even more, the G-8--thus has significant leverage and influence over the World Bank's investment portfolio.

Rather than using that leverage to benefit the poorest of the poor, the alleged World Bank "project beneficiaries," the World Bank and the G-7 have chosen to invest in projects which benefit the richest of the rich. Among the many G-7-based beneficiaries are corporations whose annual sales are larger than most developing countries.

Take the case of Enron. This little-known U.S.-based corporation had annual sales of $13.2 billion in 1996. Enron's annual sales exceed the 1996 GDPs for four countries in which it has benefitted from World Bank fossil fuel investments: Bolivia, the Dominican Republic, Guatemala, and Mozambique. Enron owns part or all of two gas fields, two gas pipelines,

and two gas or diesel power plants that are connected to World Bank projects.

Few of the poorest of the poor share in the vast wealth generated by these projects. In fact, too often the poorest of the poor are absorbing a good share of the externalized costs of these projects—in the form of poisoned water, polluted air, loss of traditional livelihoods (such as fishing), resettlement, and social upheaval.

Furthermore, where electrical power is generated, most of it bypasses the poor on its way to large industries, many of them G-7-based transnational corporations. In fact, World Bank staff admit privately that, despite record quantities of capital outlays for energy expenditures in non-Annex 1 countries, for the indefinite future, the vast majority of the rural poor will not gain access to electrical power.

"There is no magic pool of money to deal with the 80 percent of people without power in rural [India]," the World Bank’s Kari Nyman stated at a meeting with Washington NGOs on April 30, 1997, also attended by the World Bank’s Jean Francois Bauer and Tjaarda Storm Van Leeuwen. These same World Bank staffers expressed unanimous agreement that universal access to electrical power for India’s poorest was impossible for a long time to come, despite record expenditures on coal-fired power expansion, “unless someone from the outside was willing to provide financial support.”

Today, less than 5 percent of the World Bank's energy budget is devoted to rural electrification; less than 3 percent of the Bank's energy lending budget is devoted to renewable energy; and about 2 percent is spent on fuelwood lending. Together, less than 9 percent of overall Bank energy lending has gone to service the 2 billion of the world's poorest people living largely in rural areas and dependent on fuelwood, crop waste, and animal dung for their basic cooking and heating needs.

The majority of World Bank loans, as this report shows, goes instead to large fossil fuel-powered plants and oil and gas projects. Large dams and roads are also favored in the Bank's energy investment portfolio; however, large dams are increasingly proving less attractive to the Bank, for two reasons: 1) peoples’ movements in the global South have begun to gain momentum and broad support in their opposition to the scale of resettlement usually involved in large dams; and 2) the long delay between construction and completion of dams, as compared to coal-fired power plants, makes them a less attractive financial investment.

**A Conservative Estimate**

It must be emphasized that our figure of 9.5 gigatons of carbon, while staggering, is nevertheless only a fraction of the total greenhouse gas emissions directly attributable--and less directly attributable--to the World Bank over the past five years. For example:

*This figure does not include the carbon emissions that would be emitted from Russian coal mining. Nevertheless, the Bank is now playing a leading role in slashing work forces at Russia's coal mines--the first step in privatization, greater profitability for investors and,*

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inevitably, increased coal mining activity. Because the Bank has not, as of yet, invested in any additional coal-fired power or coal-fired power equipment in these mines, we have not included this in our calculations. Were we to do so, calculating emissions generated over the life of these mines, our total emissions estimates related to World Bank financing would skyrocket to 85 billion tons of carbon, or more than 10 times the current annual global carbon emissions from fossil fuels.

* This figure does not include greenhouse gases generated as a consequence of transportation loans made by the World Bank, because of the difficulty in quantifying the additional greenhouse gas emissions produced due to road-building. However, it must be pointed out that the World Bank's role in financing road-building--rather than the financing of public transportation and rails--is considerable, and that this financing will inevitably lead to more automobile use, more fossil fuel combustion and, thus, a warmer world.

*This figure does not include Bank loans to energy-intensive industries like steel, aluminum and cement plants, whose greenhouse gas emissions are also significant.

* This figure does not include methane-- another even more potent greenhouse gas than carbon--which is released in coal, oil, and gas extraction, transportation and burning.

* Finally, this figure does not include the greenhouse gases generated as a consequence of the Bank's virtual neglect of its purported mandate--that is, improving the standard of living of the poorest of the poor and, in this case, improving their access to energy resources. This under-attention will translate into additional biomass burning, and a reduction in the amount of carbon that could have been sequestered, but will not be, in forests and other forms of biomass by the 2 billion increasingly desperate rural poor in the global South.

**Catalyzing Climate Change**

The Bank's catalytic role in the fossil fuel industry is perhaps even more significant than its direct involvement in individual projects. The Bank supplies only about 3 percent of the total financing requirements of the energy sector in developing countries; private sector flows are four times greater than official development flows. Nevertheless, by its own admission, the Bank plays a key role in setting the standard by which other energy projects are judged, and thus in exerting an influence disproportionate to the size of its investment portfolio alone. The World Bank funnels $3 to $4 billion into energy projects in the global South per year, and leverages an additional $20 billion in private finance.10

In virtually every country in which the Bank has financed a new power plant or oil field, it has done so only after demanding and receiving regulatory reforms--such as the removal of subsidies, privatization of the power sector, and lowering of tariffs on imports-- which open the country's fossil fuel sector to foreign investment. The financing of a fossil fuel project by the Bank or by other private investors is the symbolic “marriage” between World Bank economists and the country's politicians.

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Thereafter, the country is open for exploitation by some of the world's most powerful corporations, like Shell and Exxon. These corporations then develop and, often, own, many more fossil fuel projects than are directly financed by the Bank.

When ownership of Bank-financed projects does not fall into G-7 corporations' control, the host governments of these companies can be counted on to express their displeasure. Late last year, Zimbabwe's President Robert Mugabe decided to award a privatized Bank-financed coal-fired power plant to a Malaysian company. Companies from France, the U.K. and the U.S. were among those rejected by Mugabe. The reaction from Western governments was furious. Zimbabwean ambassadors in Western capitals were summoned to explain the decision. "I told them to go to hell," said the President, "because Hwange thermal plant is ours and we do what we want with it."\(^{11}\)

**Privatization: Fiscal Space or Fiscal Nightmare?**

Opening the world economy to transnational corporate investment has been the *modus operandi* of the Bank from its inception. The Bank has always urged that such "privatization"--backed by massive multilateral and bilateral aid-- is the pathway to poverty alleviation. The argument made by Bank economists, simply put, goes as follows: Public sector control of energy resources results in economic inefficiencies, fiscal losses, and subsidies that distort the true cost of power production; thus, privatization of a public utility will result in the more efficient use of energy, thereby generating more power for the same amount of money while freeing up capital resources. This "fiscal space" created by privatization, the Bank argues, frees up government funds for social sector spending.

This "fiscal space" is proving to be a fiscal nightmare for many countries. Indeed, some countries are already straining under the financial weight of commitments made to construct power plants their countries can ill afford.

For example, in Pakistan, as this report elaborates on p. 102, the Hub River power station, Hubco, has created a boondoggle for Prime Minister Nawaz Sharif, newly elected to succeed former Prime Minister Benazir Bhutto. Although Bhutto sang the praises of the project, claiming that the World Bank and G-7-financed power plant was a sign of Pakistan's "energy revolution," in 1996, analysts at an investment firm estimated that the plants will increase the cost of fuel imports into Pakistan from $1.5 billion to $4 billion. In addition, Pakistan's government is having to pay an overwhelming $1.3 billion a year toward Hubco alone, and might have to raise power rates by 33 percent to pay for the plant.

**The Equity Argument: Crocodile Tears**

Another rationale routinely used by the World Bank for expansion of fossil fuel use in the South argues that, because per capita emissions in countries like China and India are a fraction of those in the G-7, these countries have every right to exploit their fossil fuel reserves, and the Bank is not contravening the Climate Convention in helping them do so:

\(^{11}\) For more details, see page 113 of this report.
...The demands for commercial energy in developing countries are likely to grow substantially in the next few decades under any development scenario, including an energy efficient scenario. This is because a) developing country per capita consumption levels are very low—less than one-tenth, and in the case of electricity, less than one twentieth—of those of rich countries; b) two billion people are dependent on fuelwood and dung for cooking, and two billion are without electricity (90 percent of the population in Africa); and c) not meeting their demands efficiently would facilitate large-scale impoverishment; increasing dependence on fuelwood and dung on a more massive scale as populations rise would be environmentally unsustainable.12

While these statements are true, the implication is that the World Bank's energy strategy of privatization and removal of subsidies in the power sector will ameliorate, and not aggravate, the situation for the 2 billion rural poor. However, the World Bank's own energy strategists do not view rural energy, urban energy, and industrial energy strategies as part of a seamless whole. They admit that the 2 billion rural poorest dependent on fuelwood and dung will remain unserviced for the indefinite future under any scenario.

Orissa: World Bank "Model of Privatization"

Not only does the World Bank strategy fail to improve the lives of the rural poor in developing countries, however; in many cases, these struggling communities will find themselves worse off thanks to the Bank's energy program.

For example, in Orissa, the first state in India to privatize its power sector, the removal of subsidies for household consumption in 1997 has resulted in a five-fold increase in electricity prices for the less than 20 percent of households that have access to power; meanwhile, the price of power for industry has dropped by 23 percent. The resulting low power tariffs for industry are among the lowest in the world, and proving an irresistible magnet for energy-intensive industries like aluminum smelting and steel manufacture.

The immediate consequence of this rapid industrialization for the people in villages nearby is devastating. Most villagers in rural Orissa still exchange rice rather than coins; the only wealth they've known is a plot of land blessed by a good monsoon rain and a plentiful harvest. But now, as open-caste (or strip) mining of coal expands, their black maws gaping at the sky, thousands of villagers are ousted, resettled on land that is a fraction of the plot they once owned—if they're lucky. The unlucky ones join the ranks of the "self-employed," an experiment in poverty alleviation (which all indications suggest will be a dismal failure) being tried by the World Bank.

Dead rivers now carry toxic effluent and coal ash through villages where people still rely on the blackened water for drinking, bathing and irrigation. Agricultural productivity has dropped for farmers dependent on the river water; fishing communities have been wiped out. Water tables have dried up due to mining activity in some areas, and groundwater has been contaminated in others by industrial pollutants. Chronic diseases like cancer, bronchitis, and

other lung and skin diseases are soaring. But because such costs are not measured in the gross domestic product, all reports trumpet Orissa as a "model of development and privatization," and a bellwether of things to come for the rest of India.

By the year 2005, 1 percent of global greenhouse gas emissions will come from this small corner of the planet--one-third the share India now generates as a country of 937 million people.

The World Bank is not alone in promoting the development of Orissa's mineral resources; it is joined by virtually every G-7 country. Bilateral U.S., Italian, French, British, Japanese, German and Canadian government financing is coupled with World Bank loans and financing from other multilateral development banks like the Asian Development Bank. Together, these banks and countries have funneled $2.85 billion into the Orissa economy since 1993.13

This story of Orissa, unfortunately, is being repeated around the globe: As industrial growth plateaus in the North and accelerates in the global South, global investors are increasingly seeking out regions where energy resources--the cornerstone of industrial development--are cheap and plentiful. Under the banner of "poverty alleviation" and economic growth, the World Bank Group is assisting them in this process, thereby playing a central role in making a mockery of the Climate Convention while destroying sustainable, traditional economies in the developing world.

**The World Bank's Self-Defense**

Inside the Bank, there are some who deny that the situation is as bad as it is. World Bank Public Relations Officer Nick Van Praag told an Italian newspaper in April 1997: "The World Bank is not contributing to climate change." Others within the Bank are more candid, claiming that this financing of fossil fuel-driven industrialization is the lesser of two evils: "If the Bank didn't finance these coal-fired power projects, someone else would, but with lower environmental standards than ours," World Bank Senior Operations Officer Hiraoki Suzuki told NGOs in Washington, in April 1997.

The Bank's own documents on climate change policy reveal an internal lack of coherence with regard to interpretation of Climate Convention policy:

...Since its foundation, the World Bank has always ensured that its activities were consistent with international conventions...Defining what policies and investments are "consistent" with the Convention is of course very difficult, especially regarding the developing countries...Guidance from the [signatory] Parties as to when and how such growth must be moderated in order to be consistent with the Convention will only evolve over time.14

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The World Bank and Climate Change Policy

The World Bank’s role in aggravating the problem of climate change, with the aid of G-7 monies, contains many ironies. Primary among them is that its energy strategy contravenes another of its official missions: climate change prevention. At the Rio Earth Summit, the Bank, together with the United Nations Environment Programme and the UN Development Programme, was entrusted with the task of mobilizing the financial resources needed to implement the Climate Convention. The Global Environmental Facility (GEF), housed within the World Bank, was created as a temporary mechanism for compensating developing countries for undertaking activity to preserve biodiversity and restore balance to the earth's climate, activity they otherwise would view as prohibitively expensive. Thus, as Andrew Steer, director of the World Bank’s environment department, has written in a recent letter to a concerned non-governmental organization (NGO), the Bank has become “the world’s largest single financier of carbon emissions reduction projects.”

Yet Steer could just have easily left “reduction” out of this phrase and been more truthful: the left hand of the Bank finances climate-friendly activity to the tune of $110 million a year, while the right hand of the Bank finances climate changing activity to the tune of $2 to $3 billion a year—or more than 100 times what the GEF has spent since the Earth Summit in "averting" climate change.

Another ironic twist in the World Bank’s promotion of fossil fuels has unfolded over the past five years in the corridors of Washington policy-makers. Beginning in 1992, after a lengthy consultation process with NGOs and endorsement by the Bank’s board, the Bank produced two policy documents on energy issues. These documents, "The World Bank's Role in the Electric Power Sector" and "Energy Efficiency and Conservation in the Developing World," laid out the Bank's following policies:

1) A commitment to transparency in decision-making;
2) An agreement that least cost energy planning, long pushed by environmentalists, should be advanced;
3) An agreement that energy subsidies for fossil fuels and other traditionally environmentally unsustainable energy resources should be removed;
4) An agreement with environmentalists that demand-side management and energy efficiency were approaches to be preferred over energy expansion;
5) "Pollution reducing technology" needed to be more aggressively pursued in its energy lending; and
6) Concurrence with environmentalists that all of the above policies should be integrated into dialogues with its clients and given high visibility in loan agreements.

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15 Letter from Andrew Steer replying to letter on climate change from Erik Jansson, Department of the Planet Earth, dated April 15, 1996.

16 The GEF budget for climate change averting activity is, according to the World Bank, approximately $450 million; however, much of this money is allocated to natural gas projects and feasibility studies. Only about $110 million can truthfully be said to go to projects which avert climate change.
These principles were praised by environmentalists, but have proven hollow over time: They have not been backed by the financial commitments necessary to make them a priority within the Bank. A study produced in 1994 by the Environmental Defense Fund and the Natural Resources Defense Council, "Power Failure," concluded that only 2 out of 46 electricity loans were consistent with its own policies as laid out above. A World Wildlife Fund study, commissioned in 1996, reconfirmed this conclusion. The WWF study examined 56 energy loans and found only 3 that complied with the policies that were endorsed by the Bank's board in October 1992.

Then, in the sleepy days of August 1996, the Bank's own legal department pulled a "stealth attack" on these principles. Perhaps in response to internal criticism, or perhaps out of concern over successful challenges posed by the Bank's newly constituted Inspection Panel, the legal department began reformulating its mandatory "operational policies" on energy, downgrading them to non-binding "good practices." (GP 4.45 Electric Power Sector"; GP 4.46 Energy Efficiency") NGO response was swift and unified in its criticism. Nevertheless, the Bank's legal department argued that the Bank's board had not been in full session when the policies were approved; they claimed the policies were approved "during a board seminar" and thus, were not bona fide policies that could be used in a claim to the Inspection Panel.

**Not Enough Banking on Renewables**

The Bank has undertaken several positive measures on the renewable energy front: In 1994, the Bank launched the Solar Initiative, which aimed to raise awareness among Bank staff and clients about how to commercialize renewable energy technologies. However, to date, the budget for renewables has been insignificant. Furthermore, the ideology promoted in this and other Bank initiatives on renewable energy is to demand that renewables be promoted in a subsidy-free manner -- a tactic that fails to address the lack of a level playing field of renewables vis-a-vis non-renewable energy resources.

The Bank's solar initiative is making some small progress--with a new and notable program which will lend $44 million in credit to Indonesian banks this year and provide solar systems for about one million Indonesians¹⁷. However, as the Bank admits, their customers will mostly be "small businesses"--or the middle and upper class rural dwellers with access to capital to "create the market" for renewables. Thus, the thorny issue of financing for the target market of 2 billion rural poor, who have no access to credit or other forms of financing, is once again avoided.

Yet, innovative approaches to financing for the poorest abound: Around the world, a groundswell of support is growing around microcredit--targeted at the poorest, particularly women. Indeed, the Bank has recognized the success of this movement by creating its own

¹⁷This effort, while laudable, will only reach 1 million out of 115 million rural Indonesians without access to electricity.

microlending arm, the Consultative Group to Assist the Poorest. However, even here, the Bank applies the same “trickle-down” economic approach which is its hallmark, failing to fully internalize the lessons and challenges posed by such revolutionary bankers as the Grameen Bank of Bangladesh and the Self-Employed Women’s Association of India.19

In most developing countries, cooking is a major—if not the major—use of fuel. Women are traditionally the ones to gather and manage this fuel in virtually every developing country;20 women also comprise the vast majority of the world’s poorest citizens. Yet the Bank’s own rural energy planners fail to even allude to the gender dimensions of the rural energy crisis, thereby ensuring that the solution does not adequately address the problem.21

Shadow Carbon Tax

The World Bank has recently begun an exercise to evaluate whether, in fact, a "shadow price" for carbon would influence its investments in the energy sector. A shadow price for carbon would, without imposing an actual tax, allow economists to evaluate the costs and benefits of avoiding carbon-intensive energy projects. Not surprisingly, this exercise has found that a conservative shadow price of $20 per ton of carbon avoided would, in fact, result in significant changes in energy choices. Renewables would suddenly become more attractive investments, coal a pariah.

World Bank Environmental Assessment Advisor Robert Goodland, perhaps recognizing the pivotal role the Bank plays in the current climate crisis, passionately urges his institution to embark on a two-phase process of internalizing the true price of carbon in its project calculations:

This paper advocates that all activities emitting or saving carbon emissions should internalize the carbon cost inflicted or avoided by new projects involving CO2...in a two-stage approach...First to incorporate carbon costs in project analysis only theoretically in order to differentiate objectively among alternative designs involving carbon emissions of varying degrees....Second, we advocate a rigorous process of passing through estimated carbon costs to the ultimate users of the services of carbon emitting projects and processes...Since the time available is limited, the paper points out the urgency of these proposals that are crucial for sustainability.22


20 See Energia News for more information. Or contact: Energia News, c/o TOOL Consult, Sarphatistraat 650, 1018 AV Amsterdam, The Netherlands. e-mail: toolconsult@tool.nl.

21 See, for example, Rural Energy and Development: Improving Energy Supplies for Two Billion People, World Bank, 1996.

Perhaps acknowledging the inadequacy of its climate change strategy last iterated in 1995, "The World Bank and the UN Framework Convention on Climate Change," the Bank is about to release a revision of that policy. Unavailable at the time of release of this report, it will likely extend policies now embraced by the Bank, namely: "joint implementation" or emissions trading, removal of all subsidies for fossil fuels and other energy resources, and privatization of power production, transmission and distribution.

The Clinton Administration is particularly vocal in its support of joint implementation (or "JI")--as a "flexible" strategy for emissions reduction. Critics contend that JI would simply allow the fossil fuel industry to do more of what it is doing already--namely, migrating to non-Annex 1 countries to do their dirty work there. They also contend that JI does not place sufficient pressure on the highest greenhouse gas producing countries--which are also the richest countries--to cut their emissions, because for a relatively small sum, they can maintain an unsustainable pattern of growth.

Currently, fossil fuels get a "free ride" around the world--of externalized costs and internalized subsidies, making their consumption the path of least resistance. Some estimates show fossil fuels currently enjoying annual subsidies of about $200 billion. The universal removal of subsidies for fossil fuels could be a step in the right direction provided that it is accompanied with a tax scheme that would create a market for clean renewable energy sources. However, the priority given to market expansion and free competition for all energy resources would likely mean a removal of subsidies for renewables, making them uncompetitive with others in terms of costs.

Subsidies come in many forms, and are difficult to calculate with scientific accuracy. For example, risk-bearing is a major subsidy provided by the World Bank for infrastructure projects, either formally, through MIGA, or less formally, through IBRD guarantees. It allows an investor to reduce the amount of risk insurance he would otherwise pay, passing that on to the Bank.

Tax burdens--and tax-free investment opportunities--are an additional subsidy. The World Bank pays no property taxes on their Washington, DC, office space. Government-provided goods and services--which otherwise would have to be purchased on the free market--are another subsidy, and one the Bank tends to focus on most in energy privatization.

Privatization, while theoretically imposed to remove the inefficiencies of government control, is, as this report shows, also about some of the largest corporations on the planet gaining access to energy markets, which are some of the most lucrative markets on the planet. Privatization allows for a nation's vital energy resources to be used for private gain--not public welfare. And, in case study after case study, we find that it is the environment and the poor who suffer the direct consequences of this private gain.

**The G-7 and Climate Policy**

The ironies of the World Bank's role in aggravating climate change continue to abound when placed within the context of their controlling members, the G-7. At the G-7 Summit in Halifax, Canada, in May 1995, the member countries made the following statements:
We place top priority on both domestic and international action to safeguard the environment...We underline the importance of meeting the commitments we made at the 1992 Rio Earth Summit and subsequently, and the need to review and strengthen them, where appropriate. Climate change remains of global importance.

Why, then, would the G-7 undermine the Climate Convention? The G-7, with the newest addition to their ranks, Russia, now comprise just shy of 50 percent of the votes at the World Bank. They could vote to slow the pace of carbon-intensive projects, or, at the very least carry out the World Bank's mandate of poverty alleviation for the world's poorest. Instead, they have chosen instead to accelerate carbon-intensive projects and vote for projects which line their own pockets.

Procurement contracts for development are big business, not charity. As then undersecretary for international affairs in Treasury, Larry Summers, told the U.S. Congress: For every dollar the U.S. government puts in the World Bank's coffers each year it gets $1.30 in procurement contracts for U.S. transnational corporations.23 This formula is relatively predictable: The larger a nation's contribution to the World Bank's coffers, the greater the voting power on the Bank's board of directors, and the larger the number of procurement contracts awarded to contractors from each respective country.

For example, prior review procurement contracts awarded in 1994 and 1995 went to contractors from the following G-7 countries, in order of dollar amounts awarded for contracts: the United States ($779 million), France ($500 million), the United Kingdom ($428.5 million), Germany ($296 million), Japan ($209 million), Canada ($128 million), and Italy ($124.5 million). It should be noted that these figures are an underestimation of the total amount awarded to G-7-based contractors for two reasons: 1) prior review contracts comprise, by the Bank's own admission, only 60-80 percent of all contracts; and 2) hidden within other G-77 procurement contracts are countless subsidiary corporations of G-7-based transnationals. Within the entire portfolio of procurement contracts, the oil, gas, and power sectors are significant.

Conclusion and Recommendations

The signs of climate change are everywhere. A prehistoric man emerges from the Italian alps during a heat wave, his intact body frozen for centuries. The Antarctic ice shelf calves an iceberg the size of Rhode Island. Record heavy storms, heat waves that kill hundreds, and unprecedented forest fires rage across the planet. Weather-related disaster insurance costs for 1996 cost the reinsurance industry a record $60 billion. And, finally, the cautious IPCC concludes a “human footprint” can be discerned in the chaos of weather systems. As we head toward the brink of climate catastrophe, oil, gas, coal and auto companies urge us to “take a balanced approach,” and to “go slow.” Now, we find that, rather than going slow, the World

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23 Congressional testimony by Lawrence Summers, undersecretary for international affairs, Treasury Department, March 27, 1995.
Bank is moving us faster than we ever anticipated toward the brink—in the name of “poverty alleviation” and “sustainable development.” Clearly, the world needs to take a second look at what we have done, while it may still be undone.

1. First, we must revisit the Climate Convention. It must be recast to ensure that its original provisions—namely, for non-Annex 1 countries to address their overriding concern of poverty alleviation—are not exploited by Northern industries, and facilitated by the World Bank.

2. The Bank should recast itself as the provider of energy services that are truly sustainable and renewable.

3. The Bank should speedily adopt the recommendations proposed by World Bank Environmental Department advisor Robert Goodland, namely to internalize the costs of carbon emissions in a two phase process—beginning with a shadow price for carbon and proceeding with a full internalization of the cost of carbon as soon as possible. In addition, the Bank should immediately implement the following changes:

   a. The Bank should undertake a full and transparent review of existing energy and transportation portfolios, related Bank policies and Bank policy advice noting institutional barriers to implementation of climate change priorities as a prelude to the re-orientation of Bank activities to fully support the objectives of the Convention;

   b. The Bank should create a dedicated World Bank Energy Efficiency and Conservation Unit at the IBRD and IFC with the resources, skills, and authority to promote and implement demand-side energy efficiency and conservation investments by Bank borrowers across many sectors.

   c. The Bank must develop procurement norms/standards for energy using equipment that take energy life-cycle costs into account.

   d. The Bank should undertake sustainable energy development assessments in ALL Country Assistance Strategies and establish specific goals for improving the productivity of energy use and developing renewables where appropriate.

   e. The Bank should offer guarantees to mobilize private capital for investments in energy efficiency and renewables.

   f. The Bank should make public all documents and procurement contracts related to projects undertaken in non-Annex 1 countries since the signing of the 1992 Climate Convention.

   g. The Bank should keep a disaggregated inventory, akin to the greenhouse gas inventory proposed by the IPCC for their own national greenhouse gas emissions, for these same projects in non-Annex 1 countries.

   h. The Bank should devote at least 50 percent of the World Bank’s energy budget—or monies collected from a carbon tax—toward addressing the energy and fuel needs of the 2 billion poorest.
Backgrounder on Fossil Fuels

Coal

Of all of the fossil fuels, coal is the cheapest, and so, despite the warnings of Rio, it remains the fuel of choice for many countries in the South. The IPCC predicts that coal use will increase by more than 700 percent by 2100. We know that every ton of coal burned releases more than two and a half tons of carbon dioxide into the air, on average, more carbon per unit of energy than oil or gas; we know that most coal technology now in use wastes two-thirds of the energy content of the coal. We know that coal-burning produces sulphur dioxide and nitrogen oxides, causing acid rain, with devastating consequences for forests, aquatic life, and agricultural productivity. And we know that coal mining destroys communities that must be displaced and disrupts countless communities who suffer downstream impacts from the mining and burning of coal. Nevertheless, because these inefficiencies and costs are not calculated in the price of coal, the use of coal continues to increase.

Between 1973 and 1993, coal use increased by 36 percent, growing fastest in South America (360 percent) and Asia (162 percent) and slowest in Europe (6 percent). The world now burns more than 3.5 billion tons of coal a year. Countries like China, India, and Brazil, which have their own substantial coal reserves, are expected to burn coal most rapidly.

China alone releases 650 million metric tons of carbon from coal-burning per year (about 27 percent of the world total from coal burning)—and is projected to double its coal consumption by 2010. At a shadow price of about $20 per ton of carbon, China is now externalizing at least $13 billion in carbon emissions per year from coal burning alone. Global energy use projections suggest that, in large part because of their high coal consumption, China and India will account for more than 20 percent of all carbon dioxide emissions from the global South by 2010.

Oil

The world now consumes 65 million barrels of oil a day. Oil burned by cars alone produces nearly a fifth of global carbon dioxide; other noxious byproducts include carbon monoxide and nitrogen oxides. Our addiction to oil is directly proportional to our universal addiction to the automobile: Every second, an additional car takes to the road.

Other oil products, such as diesel, heating oil, jet fuel, bunker fuel for ships, and heavy fuel oil for power stations compound the greenhouse effect and add to the burden of air-borne pollutants. Between 1973 and 1993, oil use grew by 11 percent globally; between 1995 and 2015, the world is expected to increase its consumption of oil by another 59-68 percent, with


25 Carbon is theoretically given a shadow price of anywhere from $5 to $150 per ton. However, some World Bank economists claim that the shadow price—or the true cost to the environment from carbon emissions, which is now externalized—would fall somewhere between $5 and $40, and is conservatively estimated to cost around $20 per ton.
the U.S. leading the pack.

**Natural gas**

Natural gas output grew the fastest of all fossil fuels between 1973 and 1993, its output increasing by 72 percent globally. Natural gas is considered cleaner than other fossil fuels because it produces the least amount of carbon dioxide per unit of energy when burned. However, unburned, in its natural form of almost pure methane, it is many times more potent as a global warming agent than carbon dioxide. Natural gas often leaks, unburned, from coal beds, gas installations, gas pipelines, and in oil prospecting. Gas leakages such as these can more than nullify the benefits of relatively fewer greenhouse gas emissions when natural gas is burned.

Natural gas output is expected to increase by 50-58 percent between 1995 and 2015, with the former Soviet Union and the U.S. leading the way, respectively, in greenhouse gas emissions from natural gas production and consumption.
Summary Tables of World Bank Financing of and Emissions from Fossil Fuel Projects

A. Methodology

Power plant emissions

For each power plant project financed by the World Bank, it is assumed that it will run for 20 years at full capacity from the time of financing.

Environmental Costs of Electricity, a book by the Pace University Center for Environmental and Legal Studies (Oceana Publications, 1990), summarizes rates of carbon dioxide and other emissions from various power plants. Table 2 in Chapter IV of the book, "New Coal Plant Emissions," summarizes studies by PLC Inc. and the Oak Ridge National Laboratories for the U.S. Department of Energy.

Coal

According to these studies, a new coal fired power plant will release between 1.96 (PLC) and 2.09 (DOE) pounds of carbon dioxide per kilowatt hour of operation. For our report, we assume that any given coal-fired power plant will emit 2 pounds of CO2 per kilowatt hour.

A power plant with a one megawatt (1,000 kilowatts) name plate capacity will produce the equivalent of 8,760,000 kilowatt hours annually at full operation -- that is, 8,760 hours multiplied by 1,000. At this rate, such a plant would emit an estimated 17,520,000 pounds, which is the equivalent of 8,760 short tons or 7,947 metric tons of CO2.

Natural Gas

Pace's table 3, "Emissions for Natural Gas-Fired Generation," puts the rate of emissions for these type of plants at 1.14 pounds (PLC) and 0.99 pounds (DOE) of carbon dioxide per kilowatt hour. For this study, we assume that 1 pound of CO2 will be released per kilowatt hour; that is, a plant with 1 megawatt capacity will release 8.76 million pounds per year -- 4,380 short tons / 3,973 metric tons.

Oil

Pace's table 4, "Emissions for Oil-Fired Generation," puts the rate of emissions for oil-fired plants at 1.65 (DOE) to 1.75 (PLC) pounds of carbon dioxide per kilowatt hour. For this study, we assume that 1.7 pounds of CO2 will be released per kilowatt hour, or the equivalent of 7,446 short tons / 6,754 metric tons of CO2 per year per megawatt.

This table also summarizes the PLC-determined rate of emissions from diesel-fired plants: 2.19 pounds of CO2 per kilowatt hour, the equivalent of 9,592 short tons / 8,702 metric tons of CO2.

Multiplying these rates' emissions by the assumed 20 years of operation at full capacity, the following conversion rates are used to determine estimated total emissions of World Bank-financed power plants:

Estimated CO2 emissions per megawatt capacity of World Bank-financed power plants over 20 years of full capacity operations

<table>
<thead>
<tr>
<th></th>
<th>Coal</th>
<th>Natural Gas</th>
<th>Oil</th>
<th>Diesel</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO2 (in metric tons)</td>
<td>159,968</td>
<td>135,188</td>
<td>79,484</td>
<td>174,061</td>
</tr>
</tbody>
</table>

Fossil Fuel Extraction and Distribution

The study takes the admittedly simplified approach that all fossil fuels extracted and/or distributed will be burned in power plants. We also assume...
that all proved reserves in fossil fuel fields that are touched by Bank programs ultimately will be burned.

Other than power plants, potential demand points for fossil fuels include industrial processes, vehicles, household stoves and heaters. Rates of emission are generally comparable across demand or transformation points, although vehicles tend to emit a bit less carbon dioxide than power plants.

Counterbalancing this approach, however, are numerous omissions from our report. This study does not take into account numerous other likely releases of greenhouse gases due to the extraction and distribution of fossil fuels, such as natural gas flaring from oil field production, methane releases from coal mining operations, and pipeline leaks. We do not attempt to estimate releases of methane, perfluoromethanes, hydrofluorocarbons, nitrous oxide, or other very potent greenhouse gases. Nor do we catalog World Bank involvement in numerous other industries -- particularly transportation and cement, aluminum and steel factories -- which are major greenhouse gas emitters. Also, fields touched by Bank financing have considerable "probable" reserves which may be extracted in the future but are not taken into account here.

Therefore, overall, this report might greatly underestimate the greenhouse gas emissions that the Bank's projects since mid-1992 ultimately will help to create.

When the Bank finances a pipeline, we have attempted to identify the source fields for the pipelines, and the total proved reserves of these source fields, which form the basis for our estimates. If we do not know the reserves, but do know the anticipated flow rate through a given pipeline project, we assume that this rate will continue for 20 years.

In 1993, the Stockholm Institute - Boston Center produced "Towards a Fossil Free Energy Future: A Technical Analysis for Greenpeace International." In this report, the Stockholm Institute summarizes greenhouse gas emissions from various sources (Table 4.5: Compilation of GHG emission factors used in this study: transformation sources, page 36). It lists emission factors of 2.71 kilograms of carbon dioxide per kilogram of coal input, 1.85 kg per cubic meter of natural gas, and between 3.06 and 3.14 kilograms per kilogram of oil. We split the difference and assume 3.1 kilograms of carbon dioxide emissions per kilogram of oil input.

Thus, we use emission rates of 3.1 tons of carbon dioxide per ton of oil, 2.71 tons per ton of coal, and 1.85 kilograms per cubic meter of gas.

For oil, a conversion rate of 7.3 barrels per metric ton is used. For natural gas, the conversion rate is 35.314 cubic feet per cubic meter. One metric ton of gas equals about 138 cubic feet or 3.908 cubic meters.

We have tried to prevent double-counting of emissions that may occur when a Bank-financed power plant burns fossil fuels that have been extracted or distributed with Bank involvement. For example, estimated emissions from Bank-financed coal-fired power plants in India that will or might burn coal from mines also financed by the Bank are not included in the grand total of estimated Bank-financed emissions. Similar double-counting prevention procedures are used in pipeline and refinery projects.
### B. Summary tables of greenhouse gas emissions by World Bank-financed fossil fuel projects, FY1993 to present

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing ($ million)</th>
<th>Fuel</th>
<th>MW</th>
<th>CO₂ emissions (metric tons)</th>
<th>CO₂ emissions (est./20 yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Zhejiang</td>
<td>$400</td>
<td>coal</td>
<td>1,800</td>
<td>286,092,000</td>
<td>198,432,000</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Hub River</td>
<td>$250</td>
<td>oil</td>
<td>1,469</td>
<td>190,728,000</td>
<td>190,728,000</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Paiton</td>
<td>$50</td>
<td>coal</td>
<td>1,230</td>
<td>195,496,000</td>
<td>195,496,000</td>
</tr>
<tr>
<td>China</td>
<td>Henan</td>
<td>$440</td>
<td>coal</td>
<td>1,200</td>
<td>190,728,000</td>
<td>190,728,000</td>
</tr>
<tr>
<td>China</td>
<td>Jiangsu</td>
<td>$350</td>
<td>coal</td>
<td>1,200</td>
<td>190,728,000</td>
<td>190,728,000</td>
</tr>
<tr>
<td>Philippines</td>
<td>Sual</td>
<td>$247.5</td>
<td>coal</td>
<td>1,200</td>
<td>190,728,000</td>
<td>190,728,000</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Uch</td>
<td>$131</td>
<td>gas</td>
<td>586</td>
<td>46,552,000</td>
<td>46,552,000</td>
</tr>
<tr>
<td>India</td>
<td>Balagargh</td>
<td>$37</td>
<td>coal</td>
<td>500</td>
<td>79,470,000</td>
<td>79,470,000</td>
</tr>
<tr>
<td>India</td>
<td>GVK</td>
<td>$118.3</td>
<td>gas</td>
<td>470</td>
<td>37,337,000</td>
<td>37,337,000</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Phu My</td>
<td>$180</td>
<td>gas</td>
<td>450</td>
<td>35,748,000</td>
<td>35,748,000</td>
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<tr>
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<td>Ib Valley</td>
<td>$150</td>
<td>coal</td>
<td>420</td>
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<tr>
<td>Pakistan</td>
<td>Pak Gen</td>
<td>$79.5</td>
<td>oil</td>
<td>337</td>
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<tr>
<td>Pakistan</td>
<td>Lal Pir</td>
<td>$94.5</td>
<td>coal</td>
<td>337</td>
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<td>53,563,000</td>
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<tr>
<td>Czech Rep.</td>
<td>ECK</td>
<td>$125</td>
<td>coal</td>
<td>332</td>
<td>52,768,000</td>
<td>52,768,000</td>
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<tr>
<td>Ghana</td>
<td>Takoradi</td>
<td>$175.6</td>
<td>gas</td>
<td>300</td>
<td>23,832,000</td>
<td>23,832,000</td>
</tr>
<tr>
<td>Iran</td>
<td>Qom</td>
<td>$165</td>
<td>gas</td>
<td>300</td>
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<td>23,832,000</td>
</tr>
<tr>
<td>India</td>
<td>Tamil Nadu</td>
<td>$198</td>
<td>coal</td>
<td>250</td>
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<td>39,735,000</td>
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<tr>
<td>Dom. Rep</td>
<td>Smith-Enron</td>
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<td>oil</td>
<td>185</td>
<td>24,989,000</td>
<td>24,989,000</td>
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<tr>
<td>Tanzania</td>
<td>SongoSongo</td>
<td>$200</td>
<td>gas</td>
<td>150</td>
<td>11,916,000</td>
<td>11,916,000</td>
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<tr>
<td>China</td>
<td>Hainan</td>
<td>$16.7</td>
<td>diesel</td>
<td>150</td>
<td>26,109,000</td>
<td>26,109,000</td>
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<tr>
<td>Hungary</td>
<td>Kelenfold</td>
<td>$100</td>
<td>gas</td>
<td>137</td>
<td>10,883,000</td>
<td>10,883,000</td>
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<tr>
<td>Pakistan</td>
<td>Gul Ahmed</td>
<td>$65.1</td>
<td>diesel</td>
<td>125</td>
<td>21,758,000</td>
<td>21,758,000</td>
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<tr>
<td>Pakistan</td>
<td>Saba</td>
<td>$5</td>
<td>oil</td>
<td>125</td>
<td>16,885,000</td>
<td>16,885,000</td>
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<tr>
<td>Pakistan</td>
<td>Kohinoor</td>
<td>$67.9</td>
<td>diesel</td>
<td>120</td>
<td>20,887,000</td>
<td>20,887,000</td>
</tr>
<tr>
<td>Cote D'Ivoire</td>
<td>Vridi</td>
<td>$97.5</td>
<td>gas</td>
<td>100</td>
<td>7,944,000</td>
<td>7,944,000</td>
</tr>
<tr>
<td>Oman</td>
<td>Manah</td>
<td>$76</td>
<td>gas</td>
<td>100</td>
<td>7,944,000</td>
<td>7,944,000</td>
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<tr>
<td>Guatemala</td>
<td>P. Quetzal</td>
<td>$0.7</td>
<td>diesel</td>
<td>100</td>
<td>17,061,000</td>
<td>17,061,000</td>
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<tr>
<td>Kyrgyz Rep.</td>
<td>Bishkek</td>
<td>$20</td>
<td>coal</td>
<td>90</td>
<td>14,305,000</td>
<td>14,305,000</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Ba Ria</td>
<td>$165</td>
<td>gas</td>
<td>80</td>
<td>6,355,000</td>
<td>6,355,000</td>
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<tr>
<td>Jamaica</td>
<td>Old Harbour</td>
<td>$68.4</td>
<td>diesel</td>
<td>74</td>
<td>12,881,000</td>
<td>12,881,000</td>
</tr>
<tr>
<td>Honduras</td>
<td>Elcosa</td>
<td>$103.2</td>
<td>diesel</td>
<td>60</td>
<td>10,444,000</td>
<td>10,444,000</td>
</tr>
<tr>
<td>Jamaica</td>
<td>JPP</td>
<td>$43.2</td>
<td>diesel</td>
<td>60</td>
<td>10,444,000</td>
<td>10,444,000</td>
</tr>
<tr>
<td>India</td>
<td>Rain Calc.</td>
<td>$24.7</td>
<td>coal</td>
<td>49</td>
<td>7,788,000</td>
<td>7,788,000</td>
</tr>
<tr>
<td>China</td>
<td>Jialiangs</td>
<td>$13.5</td>
<td>diesel</td>
<td>40</td>
<td>6,962,000</td>
<td>6,962,000</td>
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<tr>
<td>India</td>
<td>DLF</td>
<td>$36.5</td>
<td>n/a</td>
<td>15</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

(Plants undergoing renovation)

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing ($ million)</th>
<th>Fuel</th>
<th>MW</th>
<th>CO₂ emissions (metric tons)</th>
<th>CO₂ emissions (est./20 yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Romania</td>
<td>Renel</td>
<td>$110</td>
<td>coal</td>
<td>1,445</td>
<td>229,668,000</td>
<td>229,668,000</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>Hwange</td>
<td>$90</td>
<td>coal</td>
<td>920</td>
<td>146,225,000</td>
<td>146,225,000</td>
</tr>
<tr>
<td>Armenia</td>
<td>Hrazdan</td>
<td>$13.7</td>
<td>gas</td>
<td>300</td>
<td>23,832,000</td>
<td>23,832,000</td>
</tr>
<tr>
<td>Philippines</td>
<td>Bataan</td>
<td>$110</td>
<td>oil</td>
<td>225</td>
<td>30,393,000</td>
<td>30,393,000</td>
</tr>
</tbody>
</table>

(Pending projects:)

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing ($ million)</th>
<th>Fuel</th>
<th>MW</th>
<th>CO₂ emissions (metric tons)</th>
<th>CO₂ emissions (est./20 yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Tuoketuo</td>
<td>$400</td>
<td>coal</td>
<td>3,600</td>
<td>572,184,000</td>
<td>572,184,000</td>
</tr>
<tr>
<td>China</td>
<td>Shanghai</td>
<td>$400</td>
<td>coal</td>
<td>1,800</td>
<td>286,092,000</td>
<td>286,092,000</td>
</tr>
<tr>
<td>Russia</td>
<td>Krasnador</td>
<td>$510</td>
<td>gas</td>
<td>900</td>
<td>71,496,000</td>
<td>71,496,000</td>
</tr>
</tbody>
</table>
Morocco        Jorf Lasfar     not available   coal    660     104,900,000
India           Kayamkulam      not available   gas     400     31,776,000
Hungary         Quick Start     $106            diesel  240     41,775,000
Croatia         Zagreb          $80             gas     88      6,990,000
(For renovation)

Poland          Rybnik          $140            coal    1,600   254,304,000
Poland          Dolna Odra      $110            coal    1,600   254,304,000
Ukraine         Krivoy Rog      $166            coal    900     143,046,000
Kenya           First Energy    $100            diesel  150     26,109,000
Croatia         Zagreb          included above  gas     64      5,084,000

Total Bank-financed power plant carbon dioxide gas emissions, estimated, over 20 years
(million metric tons)

<table>
<thead>
<tr>
<th>FY-1993 to present</th>
<th>Pending Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>Rehab.</td>
</tr>
<tr>
<td>Coal</td>
<td>1,368.2</td>
</tr>
<tr>
<td>Gas</td>
<td>212.3</td>
</tr>
<tr>
<td>Oil</td>
<td>285.8</td>
</tr>
<tr>
<td>Diesel</td>
<td>126.6</td>
</tr>
<tr>
<td>Total</td>
<td>1,992.9</td>
</tr>
</tbody>
</table>

Total Bank-financed power plant installed capacity
(in megawatts)

<table>
<thead>
<tr>
<th>FY-1993 to present</th>
<th>Pending Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>Rehab.</td>
</tr>
<tr>
<td>Coal</td>
<td>8,608</td>
</tr>
<tr>
<td>Gas</td>
<td>2,973</td>
</tr>
<tr>
<td>Oil</td>
<td>2,116</td>
</tr>
<tr>
<td>Diesel</td>
<td>729</td>
</tr>
<tr>
<td>Total</td>
<td>14,426</td>
</tr>
</tbody>
</table>

Additional Power Plant Financing

In addition to the above projects, the Bank has extended financing toward broader privatization and power capacity expansion schemes in numerous countries, which will certainly contribute to climate change. These projects since mid-1992 include already-financed projects in India ($750 million), Indonesia ($260 million) and Jamaica ($77 million). Pending privatization/expansion projects target Ethiopia ($200 million) and India ($300 million).

World Bank-financed fossil fuel fields and mines

OIL FIELDS  ($million) (metric tons) Estimated lifetime
<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing</th>
<th>Proved reserves</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>(tons)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Production projects financed since mid-1992)

Azerbaijan all fields (a) $20.9 2.74 billion 8,494,000,000
Kazakhstan all fields (c) $247.9 1.784 billion 5,550,400,000
Russia 6 associations $1,010 972 million 3,013,200,000
Congo N'Kossa $126 440 million 1,364,000,000
Madagascar all fields (e) $51.9 112.3 million 348,130,000
Venezuela Colon/Quiam $31.1 80 million 248,000,000
Romania all fields (e) $175.6 >41 million 127,100,000
Cote D'Ivoire Block CI-11 $127.3 24 million 74,400,000
Bolivia Adina/Chaco $10.6 14.79 million (b) 45,849,000
Egypt Qarun $92.5 10.96 million 33,976,000
Argentina Neuquen $26.4 9.59 million 29,729,000
Argentina Bridas $70 9.40 million 29,140,000
<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing</th>
<th>Reserves/flow</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guatemala</td>
<td>Basic</td>
<td>$20</td>
<td>8.90 million</td>
<td>27,590,000</td>
</tr>
<tr>
<td>Argentina</td>
<td>Diadema</td>
<td>$60</td>
<td>7.67 million</td>
<td>23,777,000</td>
</tr>
<tr>
<td>Cameroon</td>
<td>R.de Ley/Lok</td>
<td>$105</td>
<td>0.50 million</td>
<td>1,550,000</td>
</tr>
<tr>
<td>Argentina</td>
<td>CGC</td>
<td>$75</td>
<td>not available</td>
<td>n/a</td>
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</table>

(Pending Projects)

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing</th>
<th>Reserves/flow</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chad</td>
<td>Doba</td>
<td>&gt;$120</td>
<td>&gt;123.29 million</td>
<td>382,199,000</td>
</tr>
<tr>
<td>Chad</td>
<td>Sedigi</td>
<td>unknown</td>
<td>20.55 million</td>
<td>63,705,000</td>
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**OIL PIPELINES**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing</th>
<th>Reserves/flow</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zambia</td>
<td>Tazama</td>
<td>$30</td>
<td>not available</td>
<td>--</td>
</tr>
<tr>
<td>Turkey</td>
<td>Ceyhan</td>
<td>$5</td>
<td>see Azerbaijan</td>
<td>--</td>
</tr>
<tr>
<td>Georgia</td>
<td>Supsa</td>
<td>$1.4</td>
<td>see Azerbaijan</td>
<td>--</td>
</tr>
<tr>
<td>Chad</td>
<td>Doba</td>
<td>listed in oil</td>
<td>see oil</td>
<td>--</td>
</tr>
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**OIL REFINERIES**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing</th>
<th>20 year processing</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>Star Petrol.</td>
<td>$100</td>
<td>130 million</td>
<td>403,000,000</td>
</tr>
<tr>
<td>Argentina</td>
<td>San Lorenzo</td>
<td>$50</td>
<td>42 million</td>
<td>(o) 130,200,000</td>
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</tbody>
</table>

**GAS**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing</th>
<th>Proved Reserves</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kazakhstan</td>
<td>all fields (d)</td>
<td>see oil</td>
<td>1.784 trillion</td>
<td>--</td>
</tr>
<tr>
<td>China</td>
<td>Sichuan (e)</td>
<td>$235</td>
<td>392 billion</td>
<td>--</td>
</tr>
<tr>
<td>Papua N.G.</td>
<td>all fields (e)</td>
<td>$11</td>
<td>379.5 billion</td>
<td>--</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Calub</td>
<td>$74.8</td>
<td>74 billion</td>
<td>--</td>
</tr>
<tr>
<td>Mozambique</td>
<td>Pande</td>
<td>$30</td>
<td>70.8 billion</td>
<td>--</td>
</tr>
<tr>
<td>Madagascar</td>
<td>all fields (e)</td>
<td>see oil</td>
<td>56.6 billion</td>
<td>--</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Sui</td>
<td>$33.3</td>
<td>33.5 billion (g)</td>
<td>--</td>
</tr>
<tr>
<td>Argentina</td>
<td>Bridas</td>
<td>see oil</td>
<td>28.3 billion</td>
<td>--</td>
</tr>
<tr>
<td>Tanzania</td>
<td>SongoSongo</td>
<td>see power</td>
<td>28.3 billion</td>
<td>--</td>
</tr>
<tr>
<td>Argentina</td>
<td>CGC-G.Andes</td>
<td>listed in oil</td>
<td>82.12 billion</td>
<td>--</td>
</tr>
</tbody>
</table>

**Gas Pipelines**

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing</th>
<th>Reserves/flow</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>all fields (m)</td>
<td>$120.8</td>
<td>594.67 billion</td>
<td>--</td>
</tr>
<tr>
<td>Bolivia</td>
<td>all fields (m)</td>
<td>listed in oil</td>
<td>127.43 billion</td>
<td>--</td>
</tr>
<tr>
<td>Argentina</td>
<td>CGC-G.Andes</td>
<td>listed in oil</td>
<td>82.12 billion</td>
<td>--</td>
</tr>
</tbody>
</table>
Colombia  Promigas  $65  not available  not available  (Gas terminal)
Poland  Gaspol  $25  10 billion (h)  18,500,000
(Pending pipeline projects)
Indonesia  all fields (m)  $160  1.347 trillion  2,491,950,000
Bolivia  Bol-Brazil  $110  incl. above  --

<table>
<thead>
<tr>
<th>Country</th>
<th>Project</th>
<th>Financing</th>
<th>Proved Reserves</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>all fields</td>
<td>$525</td>
<td>&gt;100 billion</td>
<td>(J)</td>
</tr>
<tr>
<td>India</td>
<td>Coal India</td>
<td>$63</td>
<td>&gt;1.4 billion</td>
<td>3,794,000,000</td>
</tr>
<tr>
<td>Mongolia</td>
<td>S.Ovoo/Bagnr</td>
<td>$55</td>
<td>640 million</td>
<td>1,984,000,000</td>
</tr>
<tr>
<td>Ukraine</td>
<td>reform</td>
<td>$15.8</td>
<td>not included (l)</td>
<td></td>
</tr>
<tr>
<td>Mozambique</td>
<td>terminal</td>
<td>$1.3</td>
<td>est. 60 million (f)</td>
<td>162,600,000</td>
</tr>
<tr>
<td>India</td>
<td>Coal India</td>
<td>$535</td>
<td>included above</td>
<td>--</td>
</tr>
</tbody>
</table>

Notes:
(a) Azerbaijan's national oil reserves are listed here, due to the World Bank's involvement in a pipeline (see Georgia and Turkey pipelines) to handle oil from fields throughout the country. The Gunesli field project is included in this lump sum.
(b) Proved reserves in some or all fields in this project not known; balance is based upon assumed 20 year production at known production rates.
(c) Kazakhstan's national oil reserves, due to the World Bank's involvement in privatizing the country's entire petroleum industry. The Akshabulak and Uzen oil field developments are included in this lump sum.
(d) See note (c); the same applies for gas reserves.
(e) National privatization and production scheme, all reserves are included.
(f) Based on estimated 20 years of handling 3 million tons of South African coal per year.
(g) Based on estimated five additional years of production at current rate, due to impending exhaustion of reserves.
(h) Based on 20 years of handling a half billion cubic meters of gas per year. (j) Emissions would exceed 271 billion metric tons of carbon dioxide if all of Russia's coal reserves, which the Bank hopes to privatize, are burned in power plants. However, because the Bank has not yet proposed expansion of the mines, but rather, has financed only social programs, the lifetime emissions are not listed here. In India's case, the Bank has an active proposal to expand mining at 24 mines, whose proved reserves are included in emissions estimates.
(k) Emissions are included under the Songo Songo power plant listing; the gas field holds 28.3 billion cubic meters of reserves.
(l) Reserves for mines financed by this loan are not included because they are virtually exhausted; however, the Bank does plan to invest in 20 productive mines in the future.
(m) The Bank's pipeline project in this country will enhance the flow from all reserves in this country, so the national proved reserves are included in these calculations.
(n) Based on projected rate of gas flow over 20 year period.
(o) calculated from gross processing of 42 million tons of oil, based on yearly rates, minus the Bridas, Diadema, and Neuquen reserves, which are included under oil production and are assumed to flow to this refinery, for a net flow of 15.34 million tons.

Additional Fossil Fuel Financing

In addition to the above projects, the Bank has provided:
* $30 million for a hydrogen plant for the CHP oil refinery in Venezuela.
* $11.7 million for a liquified petroleum gas carrier in India.
* $8 million toward a oil and gas venture fund in India
* $100,000 toward an oil pontoon in Nigeria.

It is also considering an estimated additional $618 million toward oil development in Chad.
Lifetime estimated carbon dioxide emissions from World Bank-financed fossil fuel production and distribution projects:

(Million metric tons of carbon dioxide)

<table>
<thead>
<tr>
<th></th>
<th>FY1993 to present</th>
<th>Pending projects (a)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>5,940.6</td>
<td>0</td>
<td>5,940.6</td>
</tr>
<tr>
<td>Gas</td>
<td>6,818.6</td>
<td>2,492.0</td>
<td>9,310.6</td>
</tr>
<tr>
<td>Oil</td>
<td>19,944.2</td>
<td>445.9</td>
<td>20,390.1</td>
</tr>
<tr>
<td>Total</td>
<td>32,703.4</td>
<td>2,937.9</td>
<td>35,641.3</td>
</tr>
</tbody>
</table>

(a) Several pending financing arrangements are included in previously funded (FY1993 to present) projects' emissions estimates.

World Bank financing of fossil fuel production and distribution:

($US million)

<table>
<thead>
<tr>
<th></th>
<th>FY1993 to present</th>
<th>Pending projects</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>660.1</td>
<td>535.0</td>
<td>1,195.1</td>
</tr>
<tr>
<td>Oil and Gas</td>
<td>3,081.3</td>
<td>1,008.0</td>
<td>4,089.3</td>
</tr>
<tr>
<td>Total</td>
<td>3,741.4</td>
<td>1,543.0</td>
<td>5,284.4</td>
</tr>
</tbody>
</table>
C. Grand Total Tables

Total Estimated Carbon Dioxide Emissions from World Bank-financed Fossil Fuel Projects, FY1993 to present

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>FY1993 to present</th>
<th>Pending</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Power Plants)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal-fired</td>
<td>1,744.1</td>
<td>1,614.9</td>
<td>3,359.0</td>
</tr>
<tr>
<td>Gas-fired</td>
<td>236.1</td>
<td>115.4</td>
<td>351.5</td>
</tr>
<tr>
<td>Oil-fired</td>
<td>316.2</td>
<td>0</td>
<td>316.2</td>
</tr>
<tr>
<td>Diesel-fired</td>
<td>126.6</td>
<td>67.9</td>
<td>194.5</td>
</tr>
<tr>
<td>(Extraction/Distribution)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>5,940.6</td>
<td>0</td>
<td>5,940.6</td>
</tr>
<tr>
<td>Gas</td>
<td>6,818.6</td>
<td>2,492.0</td>
<td>9,310.6</td>
</tr>
<tr>
<td>Oil</td>
<td>19,944.2</td>
<td>445.9</td>
<td>20,390.1</td>
</tr>
<tr>
<td>Total power plants</td>
<td>2,423.0</td>
<td>1,798.2</td>
<td>4,221.2</td>
</tr>
<tr>
<td>Total extraction/distribution</td>
<td>32,703.4</td>
<td></td>
<td>2,937.9</td>
</tr>
<tr>
<td><strong>Total all projects</strong></td>
<td><strong>35,126.4</strong></td>
<td><strong>4,736.1</strong></td>
<td><strong>39,862.5</strong></td>
</tr>
</tbody>
</table>

*Note:* The above table estimates total emissions from World Bank-financing for fossil fuel extraction, distribution, and power plants since mid-1992. In order to avoid double counting emissions from power projects that probably are fueled by Bank-financed fields, mines or pipelines, the following power plants are not included in the grand total tables: India coal-fired power plants (Balagargh, Ib Valley, Tamil Nadu and Rain Calcining), Uch gas power plant in Pakistan, and Songo Songo gas power plant in Tanzania. The estimated 306,545,000 metric tons of carbon dioxide emissions (of which 71,083,000 is gas-based and 235,462,000 is coal-based) to be produced by these plants over the next 20 years are a subset of the Coal India, Sui gas field, and Songo Songo gas field estimated emissions. Potential double-countings between field production and pipeline projects are avoided in previous tables.
### Total World Bank Financing of Fossil Fuel Extraction, Distribution and Power Projects, FY1993 to present

<table>
<thead>
<tr>
<th>Type of Project</th>
<th>FY1993 to present</th>
<th>Pending</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Plants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal-fired</td>
<td>2,291.7</td>
<td>1,216.0</td>
<td>3,507.7</td>
</tr>
<tr>
<td>Gas-fired</td>
<td>1,422.1</td>
<td>590.0</td>
<td>2,012.1</td>
</tr>
<tr>
<td>Oil-fired</td>
<td>446.0</td>
<td>0</td>
<td>446.0</td>
</tr>
<tr>
<td>Diesel-fired</td>
<td>378.7</td>
<td>206.0</td>
<td>584.7</td>
</tr>
<tr>
<td>Other (a)</td>
<td>1,087.0</td>
<td>500.0</td>
<td>1,587.0</td>
</tr>
<tr>
<td>Extraction/Distribution</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>660.1</td>
<td>535.0</td>
<td>1,195.1</td>
</tr>
<tr>
<td>Oil and gas</td>
<td>3,081.3</td>
<td>1,008.0</td>
<td>4,089.3</td>
</tr>
</tbody>
</table>

**TOTAL ALL PROJECTS: 9,366.9 | 4,055.0 | $13.4 billion**

(a) This category includes financing for broad privatization and power capacity expansion schemes which will involve fossil fuel-burning power plants not included in other tables (see "additional fossil fuel financing" paragraph).

The per dollar rate of estimated lifetime emissions from projects financed by the World Bank is at least 3 tons of carbon dioxide for every dollar of Bank finance.

### World Bank fossil fuel-related spending, by institution, by year

<table>
<thead>
<tr>
<th>Year</th>
<th>TOTAL</th>
<th>IBRD</th>
<th>IFC</th>
<th>IDA</th>
<th>MIGA</th>
<th>GEF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>1,650.</td>
<td>1,450.</td>
<td>not avail.</td>
<td>200</td>
<td>not avail.</td>
<td>not avail.</td>
</tr>
<tr>
<td>1994</td>
<td>2,826.</td>
<td>1,832.8</td>
<td>777</td>
<td>206.2</td>
<td>not avail.</td>
<td>10</td>
</tr>
<tr>
<td>1995</td>
<td>2,510.5</td>
<td>955.</td>
<td>886.6</td>
<td>575.7</td>
<td>93.2</td>
<td>0</td>
</tr>
<tr>
<td>1996</td>
<td>2,487.7</td>
<td>1,461.8</td>
<td>653.6</td>
<td>245.6</td>
<td>126.7</td>
<td>0</td>
</tr>
<tr>
<td>1997*</td>
<td>479.8</td>
<td>124.</td>
<td>225.7</td>
<td>64.4</td>
<td>32.9</td>
<td>32.8</td>
</tr>
<tr>
<td>Total</td>
<td>9,954.</td>
<td>5,823.6</td>
<td>2,542.9</td>
<td>1,291.9</td>
<td>252.8</td>
<td>42.8</td>
</tr>
<tr>
<td>Pendg*</td>
<td>4,434.</td>
<td>3,469</td>
<td>334</td>
<td>631</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Tot+Pndg 14,388 | 9,292.6 | 2,876.9 | 1,922.9 | 252.8 | 42.8**

(*)through April 1997; pending commitments data are thus incomplete. This table only summarizes all projects catalogued in this inventory.
Inventory of fossil fuel extraction projects financed by World Bank Group, mid-1992 to present

Key to World Bank institution abbreviations: International Bank for Reconstruction and Development (IBRD), commonly called the World Bank; the International Development Association (IDA); the International Finance Corporation (IFC); the Multilateral Investment Guarantee Agency (MIGA); and the Global Environmental Facility (GEF).

ARGENTINA

Country overview: The Argentine Petroleum Industry Association predicts that investment in the country's oil industry will total $15 billion from 1994 to 2000. Annual investment from 1996-2000 will be more than double investment from 1986-1990 ($2.3 billion vs. $1.1 billion). Argentina is part of a hydrocarbon boom in South America. In January 1997, Ricardo Aguirre, marketing manager for Petrolera Argentina San Jorge, said that energy demand in the continent will rise 62% by 2010. (Oil Daily, Feb. 12, 1997; Platt's Oilgram News, July 6, 1994)

Type of Industry: petroleum production
Subsidized Project: Compania General de Combustibles S.A. expansion
Location: Argentina gas fields to Chile power plants
Owner of Project: Grupo Soldati (Argentine owner of Compania General de Combustibles, which operates refinery)
G-7 TNC Involvement: NOVA (Canada, majority owner of GasAndes pipeline; 15% interest in Renca, a new gas-fired power plant to burn gas delivered by GasAndes pipeline from Argentina).
World Bank Agency: IFC
Amount of Financing (estimated total cost): $25 million loan, $40 million syndications, $15 million equity of $251.6 million
Year of Approval: FY1994
Reserves/Production: GasAndes pipeline proponents plan to deliver 135 million cubic feet of gas per day in 1997, with volume rising to 212 million cf in 2000 and 600 million cf in 2007, for an estimated 2.9 trillion total from 1997 to 2017.
World Bank Description: CGC "will develop hydrocarbon reserves, expand and modernize its marketing operations and petroleum product handling facilities, and increase its working capital." (IFC Annual Report, FY1994)
Notes: The financing is designed to expand CGC's oil production, refining and marketing and gas distribution. In 1995, CGC entered the GasAndes consortium, which is developing a new $350 million, 420 kilometer gas pipeline from Argentine fields to Chile. The pipeline project, scheduled to open in mid-1997, is headed by NOVA Gas International (56.5% interest). CGC is the sole Argentine investor in the consortium. The gas from the pipeline will power four new 350-megawatt gas-fired power plants in Santiago. (Oil & Gas Journal, Nov. 18, 1996; Latin Finance, June 1994)

Type of Industry: oil development
Subsidized Project: Neuquen oil field
Location: Argentina
Owner of Project: Petrolera Argentina San Jorge S.A.
G-7 TNC Involvement: Companies active in Neuquen basin investments and production include Mobil (U.S.) and Total (France). Foster Wheeler (U.S.) is in a joint venture to build a coker and 59 megawatt, $232 cogeneration plant at a refinery near Concepcion, Chile, which imports oil from the Neuquen basin.
World Bank Agency: IFC
Amount of Financing (estimated total cost): $26.4 million equity of $186 million
Year of Approval: FY1996
Reserves/Production: The IFC's joint venture with PASJ is to produce 70 million barrels of oil. Overall, the Neuquen basin producers extracted 21 million cubic meters of oil in 1996. 97,000 barrels per day flow from the basin across the Andes to a refinery and terminals near Concepcion, Chile. Argentine company YPF ships most of this oil; P.A.S.J and Mexpetrol also ship to Chile through the pipeline.
World Bank Description: "Form domestic and international joint ventures to appraise and begin oil development in the Neuquen Basin." (IFC Annual Report, FY1996)

Type of Industry: oil field production
Subsidized Project: Diadema field secondary drilling
Location: Chubut province, Argentina
Owner of Project: Companias Asociadas Petroleras SA (Capsa)
G-7 TNC Involvement: El Paso Energy (bought 29% stake in Capsa in March 1997, may buy additional 16%; Exxon (refinery to process oil from project); possibly Occidental (partner in one field)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $15 million loan, $5 million equity and $40 million syndications
Year of Approval: FY1996
World Bank Description: "Double the production capacity of the Diadema oil field to 10,000 barrels a day." (IFC Annual Report FY1996)
Notes: The World Bank said that the loan and investment will finance a large-scale secondary oil recovery program in the Diadama field. Occidental is a 50% investor in Capsa's Colhue Huapi Block oil field. Capsa's two major fields are Diadema and Chubut, both within the San Jorge basin. (Platt's Oilgram News, March 25, 1997; AFX News, April 6, 1995; Reuters, Feb. 3, 1997)
Type of Industry: oil field recovery; exploration
Subsidized Project: Bridas oil fields
Location: Argentina
Owner of Project: Bridas S.A.P.I.C. (Arg.)
G-7 TNC Involvement: Total (France) and Deminex (Germany) are partners with Bridas in exploration blocks.
World Bank Agency: IFC
Amount of Financing (estimated total cost): $20 million loan, $10 million equity, $40 million syndications of $221.3 million.
Year of Approval: FY1995
Reserves/Production: At the end of 1992, Bridas had proven oil and gas reserves of 68.6 million barrels and 1.0 trillion cubic feet.
World Bank Description: "Help an oil and gas company finance a capital expenditure program and refinance maturing short-term debt." (IFC Annual Report FY1995)
Notes: According to the Oil & Gas Journal, the financing will help Bridas "boost recovery in its oil fields and begin an exploration program." Bridas is Argentina's largest private gas company and its third largest private oil producer. It is involved with exploring extensive gas fields off the coast of the Tierra del Fuego with Total (37.5% investor), and Deminex (also 37.5%). The IFC also provided equity to Bridas in 1992 and 1987. (Platt's Oilgram News, Sept. 15, 1992; Oil & Gas Journal, Nov. 6, 1995; Journal of Commerce, March 2, 1987; Europe Energy, April 22, 1994; International Gas Report, February 16, 1996)

Type of Industry: oil refinery
Subsidized Project: Refineria San Lorenzo
Location: San Lorenzo, Santa Fe province, Argentina
Owner of Project: Grupo Soldati (owner of Compania General de Combustibles, which operates refinery)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $20 million loan, $30 million syndications of $91.6 million
Year of Approval: FY1996
Reserves/Production: 42,000 barrels/day is the IFC goal. At this rate, the refinery will process 306.6 million barrels over 20 years. In 1994, the refinery processed 1.6 million cubic meters of crude. (Latin Finance, March 1996)
World Bank Description: "Renovate and increase the capacity of an oil refinery to 42,000 barrels a day and develop a network of 70 gas stations in the north." (IFC Annual Report, FY1996)

AZERBAIJAN
(see also Georgia, Turkey)
**Type of Industry:** oil production

**Subsidized Project:** Guneshli oil field restructuring

**Location:** Guneshli oil field, Azerbaijan

**Owner of Project:** Azerbaijan International Operating Co. (venture with 12 investing companies)

**G-7 TNC Involvement:** investors include British Petroleum (U.K., 17.1%), Amoco Corp. (U.S., 17%), Unocal (U.S., 10%), Exxon (U.S., 8%; purchased 5% from Socar in 1995, 3% from Pennzoil in 1996.), Pennzoil (U.S., 4.8%), Itochu (Japan, 3.9%), and Ramco (U.K., 2.1%); Suppliers of equipment and other services to the oil field include Chevron (U.S.), Saipen (Italy) and Itochu.

**World Bank Agency:** IDA, IBRD

**Amount of Financing (estimated total cost):** IDA $20.89 million of $22.9 million.

**Year of Approval:** 1995

**Reserves/Production:** In this report, reserves in this project are accounted for in the Azerbaijan lump sum of reserves (including the Guneshli field) -- an estimated 20 billion barrels. A planned pipeline whose route is being explored using World Bank finances may tap into all Azeri oil fields.

**World Bank Description:** "Technical assistance will be provided for the restructuring of the offshore Guneshli oil field and for strengthening petroleum subsector institutions." (World Bank Annual Report FY1995)

### Project Profile

Early in this century, Azerbaijan produced more than half of the oil in the world from the shore of the Caspian Sea. After the onshore deposits ran empty, the oil search moved out to sea, and now, the region is "the hottest of the hot spots" in oil exploration, Daniel Yergin, an oil historian, told the Dallas Morning News this year.

The World Bank is involved in promoting the sale, development and export of Azerbaijan's oil fields, most of which lie within a badly polluted part of the Caspian Sea. In addition to the 1995 loan for the restructuring of the Guneshli oil field, the Bank is financing studies for building a massive pipeline from Baku, Azerbaijan, to Turkey via Georgia, and it may finance the actual pipeline construction.

From the production points to the pipeline routes, the quest for Azeri oil is marked by fierce turf battles between corporations and governments. The prize is up to 20 billion barrels of oil reserves in and around the Caspian Sea. In addition, Russia, Kazakhstan, Iran and Turkmenistan also hold considerable reserves in the Caspian (see Kazakhstan section).

G-7 corporations have fond regard for the Azeri government. "You've got a government, from the president down, that understands what it takes to do business with the West," said Robert Ebel, an analyst at the Center for Strategic and International Studies (Washington D.C.) in March 1997.

"Nearly everyone in the oil business around the world knows their way to Baku (capital of
Azerbaijan)," said T. Don Stacy of Amoco.

According to the Dallas Morning News, "the Clinton administration's energy policy-makers have worked feverishly behind the scenes to support the efforts of Western companies seeking to unlock the Caspian's oil riches - even though the administration is prevented by law from providing Azerbaijan with a penny of aid because of its simmering conflict with Armenia."

President Clinton's work has helped to ensure that G-7 corporations control the majority of the oil that lies within Azerbaijan. G-7 companies own two-thirds of the oil in the Azeri-Chirag-Guneshli field, one of the world's largest oil reserves. They also own majority shares in at least three other major joint ventures.

* AIOC (Azeri, Chirag and Guneshli fields)

Called "the contract of the century," this first oil exploitation joint venture in Azerbaijan was formed in 1994, when 11 companies created the Azerbaijan International Operating Co. (AIOC).
The AIOC will develop the Azeri, Chirag and Guneshli fields in the Caspian Sea at an estimated cost of $7.4 billion. The three fields hold an estimated 4.1 billion barrels of oil, rivalling some of the world's largest reserves.

This venture is 64.6% controlled by G-7 corporations. Investors include: British Petroleum (U.K., 17.1%), Amoco Corp. (U.S., 17%), State Oil Co. Of Azerbaijan Republic (SOCOR, 10%), Lukoil (Russia, 10%), Unocal (U.S., 10%), Statoil (Norway, 8.6%), Exxon (U.S., 8%; purchased 5% from Socar in 1995, 3% from Pennzoil in 1996.), TPAO (Turkey, 6.8%), Pennzoil (U.S., 4.8%), Itochu (Japan, 3.9%), Ramco (U.K., 2.1%), and Delta-Nimr (Saudi Arabia, 1.7%)

G-7 equipment and service suppliers include East-West Helicopters, an Azerbaijan-Canada joint venture; McDock and McShelf, Azeri-US joint ventures for supply bases; and Itochu, which has conducted seismic surveys on the shelf. In addition, Azerbaijan has agreed to have Conoco (U.S.) rehabilitate wells and further develop the Guneshli field.

"Our participation in the Azerbaijan project is a key element in our growth strategy," said Marty Miller, a Unocal vice president, in 1996.

In January 1997, the government of Turkmenistan claimed sovereignty over two of AIOC's three Caspian oil fields. Conoco is also interested in the Guneshli field: it is hoping to develop concessions that are not controlled by the AIOC.

* Karabakh field (CIPCO)

In November 1995, four companies agreed to develop the Karabakh field, which holds
between 550 million and 1.1 billion barrels of oil, under a joint venture called the Caspian International Petroleum Company (CIPCO). The $1.7 billion project's investors include: Lukoil (Russia, 32.5%), Agip (Italy, 30%), Pennzoil (U.S., 30%), and SOCAR (7.5%). Ramco (U.K.) claims it has the right to 5.25% of the field.

* Dan-Ulduzu and Ashrafi fields

In 1996, four foreign companies made a deal with SOCAR to explore and develop the Ulduzu and Ashrafi fields, next to the Karabakh field. The corporations in the $1.5 billion deal include: Amoco (U.S., 30% stake), Unocal (U.S., 25.5%), Itochu (Japan, 20%), and Delta-Nimir (S. Arabia, 4.5%).

* Shakh Deniz

In June 1996, British Petroleum, Statoil and Elf (France) signed a production sharing contract for the Shakh Deniz offshore field, which may contain up to 5 billion barrels of liquids.

**Pipelines**

The initial two pipelines from Azerbaijan's oil fields will run to the Black Sea ports of Novorossiysk, Russia (via Grozny, Chechnya), and to Supsa, Georgia, beginning in August and 1998, respectively. The first oil will flow from the Bank-financed Guneshli field. In December 1996, the AIOC chose seven final candidates for the Supsa pipeline, including Saipem of Italy, which already won the contract for building a pipeline from the AIOC fields (including Guneshli) to the mainland. The pipes are to be supplied by Itochu (Japan).

These smaller pipelines will be supplanted by one or two larger pipelines, for which Russia (via Chechnya) and Turkey (via Georgia) are vying for consideration. The pipeline will handle up to 100 million metric tons of crude annually, and may eventually extend across the Caspian to the Kazakhstan oil fields.

It appears that the World Bank favors the Georgia-Turkey route. In September 1996, the World Bank (IBRD) approved a $5 million loan for technical assistance in support of the proposed Baku to Ceyhan, Turkey, pipeline. G-7 transnationals Shell and Chevron have formed a tentative joint venture to build the pipeline to Ceyhan.

Turkey argues for its proposed Mediterranean port destination as a means of avoiding the crowded and dangerous passage of oil tankers through the Bosphorus Strait. "Not a drop of oil will pass through the Bosphorus" if the pipeline project goes to Russia, warned Turkey Prime Minister Tansu Ciller in 1995.

In April 1997, the Bank's IDA approved a $1.4 million credit to finance a feasibility study for a pipeline to run from Baku to Supsa. The goal of the study is to "improve Georgia's ability to benefit from oil development in the Caspian region by attracting private investment in the necessary transport infrastructure," according to the Bank.
The Bank is eyeing future financing for the main pipeline, but a Bank official said that it will not finance construction until legal disputes over Caspian oil ownership are resolved.

U.S. President Bill Clinton is said to favor building two pipelines, one to Russia, the other to Turkey. In 1995, he "expressed his support for commercially viable early constructed and multiple oil pipelines from the Caspian Sea region that would benefit the companies that were investing in oil development as well as all the countries of the region," said White House press secretary Mike McCurry.


BANGLADESH

Type of Industry: natural gas pipelines  
Subsidized Project: Bangladesh gas transmission  
Location: Bangladesh  
Owner of Project: government of Bangladesh  
G-7 TNC Involvement: Sumitomo (Japan, providing equipment to Bakhrabad Gas Systems); Unocal, UMC, Occidental (US), Cairn Energy, Halliburton (UK) hold gas reserves in Bangladesh.  
World Bank Agency: IDA  
Amount of Financing (estimated total cost): $120.8 million of $161.6 million. The U.K. Overseas Development Association also contributed $26.9 in grant financing.  
Year of Approval: FY1995  
Reserves/Production: Proved natural gas reserves in the Bay of Bengal and land territory of Bangladesh are around 21 trillion cubic feet.  
World Bank Description: "The two gas transmission subsystems in the country will be interconnected, thereby alleviating gas-supply shortages." (World Bank Annual Report FY1995) In addition, in 1996, the IFC "arranged funding to retain experts to advise the government on natural gas production sharing and gas purchase and sales contracts." (IFC Annual Report FY1996)  
Notes: This project involves the construction of a 58 kilometer gas pipeline from Ashuganj to Bakhrabad, which will connect the country's two gas transmission sub-systems; it also finances production at three wells in the Rashidpur gas field. In 1996, Power Asia reported that "implementation of the Ashuganj-Bakhrabad pipeline project has been delayed a year, causing gas starvation in power stations." In 1996, Bakhrabad Gas Systems Ltd. hired Sumitomo (Japan) to provide $2.4 million in pipeline casing and tubing.  
In 1993, according to Independent Energy magazine, the World Bank cut its support to
Bangladesh because it "had not demonstrated a commitment to opening their markets to private sector participation." These cuts were lifted after Bangladesh opened the power sector to private investment in 1995, beginning with an offer to private investors for ownership and operation of a new 300 megawatt natural gas power plant near Dhaka.

The same year, the IDA agreed to finance the construction pipeline that will tap into Bangladesh's massive gas reserves in the Bay of Bengal and onshore. G-7 transnationals hold significant blocks of these reserves, including Occidental, Unocal, United Meridian Corp. (U.S.), Cairn Energy (U.K.), Halliburton (U.K.) Shell is hoping to get a share of Bangladesh's gas fields, and has offered to provide free technical advice at the Bakrabad gas fields, one of the coupling points of the IDA-financed pipeline. (Independent Energy, Sept. 1996; The Economist, March 22, 1997; AsiaMoney, March 1997; Pipe Line & Gas Industry, Jan. 1997; Oil & Gas Journal, June 10, 1996; Power Asia, June 12, 1995, Sept. 16, 1996; International Gas Report, Apr. 4, 1997)

BOLIVIA

**Type of Industry:** oil and natural gas production, pipeline  
**Subsidized Project:** Bolivia hydrocarbons  
**Location:** Bolivia  
**Owner of Project:** Yacimientos Petroliferos Fiscales Boliviano (Bolivian government)  
**G-7 TNC Involvement:** YPFB spun off into companies; major new investors include Amoco, Enron, and Shell  
**World Bank Agency:** IDA; IBRD  
**Amount of Financing (estimated total cost):** IDA provided $10.6 million of $13.3 million project in FY1996; IBRD is considering issuing a partial credit guarantee for the Bolivia to Brazil pipeline.  
**Year of Approval:** FY1996; guarantee proposal under development  
**Reserves/Production:** Chaco's oil fields have proved reserves of 35 million barrels of oil and 1.4 trillion cubic feet of natural gas. The Andina field produces 10,000 barrels of oil and 106MM cubic feet of gas each day. Bolivia has 4.5 trillion cubic feet of natural gas proved reserves.  
**World Bank Description:** "The government will be assisted in the analysis, planning, design, and execution of its hydrocarbon-sector adjustment program and in the capitalization of the state-owned oil company." (World Bank Annual Report FY1996)  
**Notes:** The Bank-aided privatization of Bolivia's state oil company, Yacimientos Petroliferos Fiscales Boliviano resulted in its recent fracturing. In December 1996, private investors (including three G-7 corporations) purchased up to 50% shares of three companies.

(1) Enron and Shell invested 25% apiece in the transportation sector spin-off, which the new owners named Transredes, for $263 million. The other half of the company is owned Bolivian pension funds (34%) and current and former YPFB employees (16%), which also hold a combined 50% share in the other two spin-offs.

"We are proud to contribute to positioning Bolivia as the natural gas hub of Latin America's southern cone and to the enhancement of the economic integration of the region," said Kenneth L. Lay, chairman and CEO of Enron Corp, on May 19.
Transredes owns great lengths of existing pipelines for natural gas (2,648 kilometers) and oil and liquids (2,300 kilometers). It also holds a 33% share in the $1.7 billion, 3,000 kilometer Bolivia to Brazil natural gas pipeline project. In 1992, the Bank provided Bolivia with assistance in developing a private sector gas pipeline project. Bolivia is creating a network of natural gas pipelines from its fields to neighboring countries.

(2) Amoco purchased a 50% in the Chaco unit for $307 million, which was named Empresa Petrolera Chaco. Chaco is an oil exploration and production company which owns one of the YPFBs two big oil and gas fields. According to Amoco, the new company will intensify natural gas production to feed the Rio Grande, Bolivia to Sao Paolo and Puerto Allegre, Brazil pipeline.

"We're confident our new Bolivia opportunity, combined with our upstream operations in Venezuela, Argentina, Trinidad and Tobago, and Colombia will provide profitable growth that will drive us toward our goal of being the premier integrated petroleum company in the western hemisphere," L. Richard Flury, Amoco's exploration and production executive vice president.


CAMEROON

(See also Chad)

Type of Industry: oil production
Subsidized Project: Rio Del Rey and Lokele offshore oil field production
Location: Cameroon
Owner of Project: Pecten Cameroon (Shell)
G-7 TNC Involvement: Shell (UK/Neth., ownership of Pecten Cameroon), Elf (25% owner of a new Lokele field well)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $40 million loan, $65 million syndication of $130 million.
Year of Approval: FY1994
Reserves/Production: Cameroon's total offshore oil reserves in 1997 were estimated to be 298 million barrels. In 1995, it had estimated reserves of four trillion cubic feet of gas. In 1995, the Rio del Rey fields produced 95,000 barrels of oil a day. Shell Pecten produced 31,000 barrels a day of oil in 1994. The Asoma-Sud field (within Lokele permit area) held under 500,000 tons of oil reserves in 1995.
World Bank Description: "Pecten Cameroon Company will improve recovery and extend
the production of oil from the Rio Del Rey and Lokele offshore oil fields." (IFC Annual Report, FY1994)

Notes: Cameroon's oil production, which began in 1977, peaked in 1995 then fell at a rate of 11 to 12% a year from 1985 to 1995. In 1990, with encouragement from the Bank and IMF, Cameroon began privatizing its oil production industry. Elf (France) and Shell (U.K./Netherlands, operating under the name Pecten Cameroon) now dominate foreign investment in the country's production, which is concentrated in the Rio del Rey and Lokele tracts. Since the 1994 Bank credit, Elf and Shell have entered into several new well production joint ventures in both fields.

Lokele field: In 1996, Asoma, a new field within Pecten Cameroon's Lokele III permit, started oil production. Elf holds a 25% interest in the well, as does Pecten Cameroon (Shell).

Rio del Rey field: The Rio del Rey oil field accounts for about 75% of the country's oil production, but it is drawing empty. In 1995, Offshore magazine said the Rio del Rey field suffers from "exhaustion." World Oil said the government was "unable to halt declining productivity of Rio del Rey fields.

In 1994, the government of Cameroon extended "new fiscal concessions [which] assure that foreign oil and gas developers receive at least 26% of a project's gross profit. That rate of return would place Cameroon's fiscal regime among the world's top 25, according to estimates by some international sources," according to Oil & Gas Journal. The Rio Del Rey oil fields are adjacent to Cameroon territory to which Nigeria has laid claims. In May 1996, a Nigerian newspaper reported that "Cameroon is said to be offering mouth-watering incentives to oil prospecting companies, in the form of tariff concessions to such companies willing to prospect for oil in the disputed area. Oil firms which accepted to operated in the area would have unimpeded rights to prospect oil in Bakasi, now classified by a recent Cameroonian law as "marginal fields." The companies have an option of paying compensation to Cameroon in cash or in kind. Sources say the deal is primarily designed for oil companies that are mainly based in France.... Nigerian government officials at the Ministry of Foreign Affairs who got wind of this law from Nigerian officials in Cameroon are said to have warned that Cameroon action is bound to have serious implications and consequences on the dispute between her and Nigeria over the ownership of Bakasi."


CHAD

Project Profile

Type of Industry: two oil field developments, pipeline, mini-refinery and diesel power plant
Subsidized Project: Doba and Sedigi oil fields, pipeline to Cameroon
Location: Sedigi oil field, Doba basin oil fields (Chad) to port of Kribi, Cameroon
G-7 TNC Involvement: Pipeline and Doba, Sedigi production consortium owned by Exxon (40%), Shell (40%) and Elf (20%, France). Exxon will operate the pipeline. Short-listed pipeline construction contractors: Saipem (Italy), Bechtel (U.S.), Willbros (U.S.), and Mannesmann (Germany). Wackenhu (U.S.) to provide security for the pipeline. Saur
France) interested in acquiring 51% of state electricity network. Mitsubishi (Japan) is interested in investing in the diesel power plant.

**World Bank Agency:** IDA, IBRD, IFC

**Amount of Financing (estimated total cost):** The IDA has agreed to loan a total of $120 million to the Chad and Cameroon governments to invest in the pipeline. According to Africa Energy & Mining in May 1997, the "Bank group is still ready to put up $1 billion in loans towards the $1.8 billion Doba-Kribi pipeline project." The IFC will invest in a $250 million share of the pipeline project. The IDA is also considering a $12 to $15 million loan for reform in the Chad government's management of the oil sector and a separate loan for production in the Sedigi oil field, a refinery, and a 16 megawatt diesel power plant in Ndjamena, Chad's capital. (Africa Energy & Mining, May 7, 1997)

**Board date:** possibly June 1997

**Reserves/Production:** The Doba basin (in which the Kome, Bolobo and Miandoum fields lie) reportedly holds proven reserves of 900 million barrels; Sedigi holds an additional 150 million barrels. (Africa Review World of Information, Feb. 1997)

**World Bank Description:** Chad "is endowed with petroleum resources, which have not been exploited. The development and export of Chad's substantial petroleum reserves in the southwestern part of the country (Doba) could significantly improve its development prospects." In 1978, "oil production started and became the cornerstone of economic growth. Since 1985, however, Cameroon has suffered major shocks due, inter alia, to a sharp decline in oil production, external terms of trade, and an appreciation of the real exchange rate... The project would involve: (a) the development of Chad's Doba oil fields; (b) the construction of a ... 1,100 km buried pipeline from Chad's Doba fields to Cameroon's Atlantic coast... and (c) the installation of marine export terminal facilities in Cameroon, and associated marine pipelines and related facilities. IDA would also include funds to finance a small institutional development component to strengthen Chad's capacity to manage the petroleum subsector and revenues through the provision of technical assistance, training and equipment. The cost of the project is currently estimated to be about US$3.5 billion, including US$1.7 billion for development of the oil fields (the upstream facilities), and US$1.8 billion for the pipeline and marine installations (the downstream facilities). [A] full environmental assessment will be required. The length of the pipeline is over 1,100 km and would traverse areas of varying ecological sensitivity." (World Bank Project Information Document, Project ID TDPA534, April 4, 1995)

"Africa's hinterland oil, whose potential is not confined to Chad or Sudan, bears heavy political risks, unlike offshore operations. But it will be the next promised land if the Doba project goes through without hitch." -- Africa Energy & Mining, Dec. 4, 1996

In 1975, amid fighting between rival ethnic groups, U.S. transnational corporation Chevron discovered oil in the Doba region of Chad.  

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26Chevron is adept at operating during military crises. Take the case of Somalia: Conoco and three other G-7 transnationals (Amoco, Chevron and Phillips) were granted concessions to two-thirds of Somalia's territory for oil and gas exploration and production the final years of Siad Barre's government. As the U.S. Marines arrived in Mogadishu, Conoco's embassy became a de facto U.S. embassy. It served as the government's official "facilitator" during the intervention.

"They sent all the wrong signals when [U.S. envoy Robert] Oakley moved into the Conoco compound," an unnamed
Subsequent years of exploration have unveiled an estimated 900 million barrels of high-quality oil in the Doba fields. More oil lies in Chad's Sedegi fields. One of the most impoverished countries in the world is the target of a global oil rush. Exxon is leading the charge, and expects to pump the first oil from Chad in the year 2000. Oil may flow at a rate of over 12 million tons of oil per year from the Doba field (250,000 barrels/day).

John Hervey, an oil analyst with a New York firm, told the Houston Chronicle last November that he thought that current reserve estimates for the Doba Basin are "probably conservative. The deposit is actually enormous. I think it could be multibillion barrels."

Gordon Barrows, another analyst, agreed: he noticed that the pipeline is surprisingly large. "Obviously, they expect much greater things out of Chad than anybody's talking about."

Barrows noted the difficulty of developing the oil project in the politically-tense region. "They sure find oil in inhospitable places," he said. "You couldn't be in a worse situation... It just seems to be a rule. Oil doesn't seem to be found in any place that seems worth visiting."

The oil production projects, and a 650-mile pipeline project to export the oil via Cameroon's port of Kribi, may receive up to $1 billion in World Bank financing. The Chad oil developments and the pipeline have generated considerable social and environmental concerns.

"A potential environmental and social disaster is planned for central Africa and it is going to be part funded by the taxpayer," said Friends of the Earth campaign director Tony Juniper in May.

One question is how much money from the project will actually reach the people of Chad. Similar projects elsewhere in Africa have hardly boosted the health of many people.

Roy May, director of African Studies at Coventry University (U.K.) told Inter Press Service in May that it is "pretty unlikely" that all of the Bank's money will reach the intended development projects.

The Environmental Defense Fund (U.S.), which has joined Friends of the Earth in a global campaign against the Chad projects, said the both Chad and Cameroon's governments have "a lack of commitment to poverty alleviation." Revenues from Cameroon's offshore oil

Somalia expert told the Los Angeles Times in January 1993. "It's left everyone thinking the big question here isn't famine relief but oil -- whether the oil concessions granted under Siad Barre will be transferred if and when peace is restored," the expert said. "It's potentially worth billions of dollars, and believe me, that's what the whole game is starting to look like."

An unnamed Conoco executive denied the implication that there was a quid pro quo for the use of their headquarters. "With America, there is a genuine humanitarian streak in us... that many other countries and cultures cannot understand," he said. (Los Angeles Times, January 18, 1993)
production have disappeared, said EDF.

"While it's true that the countries have suffered from poor government and civil conflict in the past, it's not necessarily true that they cannot use money well in the future," Andrew Rogerson, World Bank representative for Britain and Ireland, told IPS.

Other potential impacts include social upheaval from the influx of migrant workers to construction sites, possible leaks from the pipeline, disruption of Chad's most productive agricultural area, and a constant threat of oil spills into national reserves near the port of Kribi. Many lengths of the Exxon-Shell-Elf-owned pipeline will clear stretches of undisturbed rainforest in which tribal peoples live.

"Anybody who complains (about the project in Chad) does so at their own risk," claimed Inter Press Service in May. "In March the government of President Idriss Deby was accused of torture and extrajudicial executions of government opponents and civilians by the human rights group Amnesty International."

Amnesty said that the project could exacerbate tensions between Doba, a center of rebellion against the president, and N'Djamena. "If an enormous amount of money is generated and displaced people don't see much of it, it is bound to aggravate the situation," said a spokeswoman.

"Many fear the project may create another Ogoniland, the Nigerian oil development debacle," reads a March 12, 1997, editorial by Korinna Horta of EDF in the Journal of Commerce. "The oil companies, which plan to use public assistance from the World Bank and other U.S. taxpayer-backed agencies, would be wise to reexamine the lessons of that disaster... The promise of oil wealth in southern Chad risks reigniting smoldering tensions. According to the State Department's recent human rights report, the governments of both Cameroon and Chad are responsible for serious human rights violations."

"The underground pipeline will pass through ecologically fragile rainforest areas, including one that is home to a Pygmy population of traditional hunters and gatherers. Once development begins, an uncontrollable influx of people in search of work will occur at construction sites. Deforestation, wildlife poaching and the loss of local village farm land will likely result..... As in Nigeria, the people of Chad and Cameroon may derive little or no benefit from oil development, and may instead turn on both the oil companies that take over their environment and the governments that enable the development," concluded Ms. Horta.

Barrows said the area's political turmoil should not impact Exxon, Shell and Elf's investments. Any government in Chad "can't screw it up. It will be such a mainstay of the economy, any
oil company would have to be treated with kid gloves, even if a new president shoots his way to the top."

For more information about this project, see Korinna Horta, Environmental Defense Fund, "Questions Concerning The World Bank and Chad/Cameroon Oil and Pipeline Project: Makings of a New Ogoniland? Corporate Welfare Disguised as Aid to the Poor?" (EDF, Washington, D.C., March 1997.)


CHINA

**Type of Industry:** Gas field development, oil and gas sector restructuring, privatization  

**Subsidized Project:** Sichuan province hydrocarbons development  

**Location:** China (gas field development in Sichuan province)  

**Owner of Project:** China National Petroleum Corp. (State-run, owns project via Sichuan Petroleum Administration subsidiary)  

**G-7 TNC Involvement:** Enron (U.S, evaluating possible production joint venture in Sichuan gas production); H&G Engineering Ltd. (U.K., technical assistance to Bank-financed fertilizer plant which consumes gas under development); see also procurement appendix.  

**World Bank Agencies:** IBRD, GEF  

**Amount of Financing** (estimated total cost): $235 million of over $1 billion; IBRD is financing $225 million, GEF $10 million.  

**Year of Approval:** FY1994  

**Reserves/Production:** The World Bank project was expected to stimulate an additional 68 billion cubic meters of gas between 1995 and 2015. The SPA accounts for 98% of production in Sichuan. The province's proven natural gas reserves totalled about 400 billion cubic meters in 1994, including 270 bcm in east Sichuan, where the Chuandong gas field generated 27% of China's gas in 1996.  

**World Bank Description:** "Implementation of the upstream oil and gas-sector restructuring will be supported, and the levels and structure of gas pricing will be rationalized. In addition, gas field development, stimulation, and rehabilitation in Sichuan province will be financed. Institution-building assistance is included." (World Bank Annual Report FY1994)  

**Notes:** The Bank-financed program includes: rehabilitating 90 existing wells in eastern Sichuan, 100 in central Sichuan, sinking 100 new wells, seismic exploration, upgrades to the 2800 kilometers of gas pipelines in the province, the construction of 300 kilometers of new pipelines, and commercializing the CNCP and SPA. According to Gas World International, "plans call for 1 billion cubic meters, equivalent to 60% of the planned annual increase in gas production, to be supplied to two large fertilizer plants now under construction in Sichuan. The balance of the increased production will be supplied mainly to household consumers and
to other chemical industries." In the 1980s, the Bank financed the modernization of the Luzhou Natural Gas plant in Sichuan province, along with 18 other chemical fertilizer plants in 10 provinces. In 1997, the Luzhou plant embarked on a new project to produce 300,000 tons/year of ammonia and 520,000 tons/year of urea. In 1994, 65% of China's natural gas was consumed by fertilizer plants. (Gas World International, July and August 1994; Petroleum Economist, June 1994; Fertilizer International, Jan. 1991; Chemical Business Newbase, April 11, 1997; International Gas Report, June 9, 1995; Xinhua, Jan. 11, 1985, May 7, 1988; Journal of Commerce, Dec. 11, 1990; Asia Pulse, April 2, 1997)

COLOMBIA

**Type of Industry:** gas pipeline  
**Subsidized Project:** Promigas gas pipelines  
**Location:** Colombia  
**Owner of Project:** Promotora de la Interconexion de los Gasoductos de la Costa Atlantica S.A., ESP (Promigas), owners include: Enron (39%), the IFC, and Corfivalle.  
**G-7 TNC Involvement:** Enron (U.S.) purchased state-owned shares in Promigas in 1996 for $100.5 million; TransCanada (Can., 40% partner with Promigas, also 40%, in central Colombia gas pipeline operation); BP has exploration contract in area near pipeline; Amoco is in a gas refining project at the terminus of the pipeline (Barrancabermeja)  
**World Bank Agency:** IFC  
**Amount of Financing** (estimated total cost): In 1996, $10 million loan, $25 million syndications of $57.5 million; in 1994, $5 million loan, $25 million syndications of $50.8 million project  
**Year of Approval:** FY1994 and FY1996  
**Reserves/Production:** not available  
**World Bank Description:** "Expand the transportation network capacity of the main trunk pipeline and expand operation of the country's gas transportation company." (IFC Annual Report FY1996); "Promigas S.A. will increase its gas transportation capacity and build a 64-kilometer pipeline from Santa Marta to Rio San Diego and about 300 kilometers of regional pipelines to connect more than 51,000 households to the gas supply system." (IFC Annual Report FY1994)  

CONGO (Brazzaville)

**Type of Industry:** oil production  
**Subsidized Project:** N'Kossa oil field development  
**Location:** offshore Congo (Brazzaville)  
**Owners of Project:** Elf Congo, Engen Congo
G-7 TNC Involvement: Elf Aquitaine (France) is the beneficiary of one loan. Elf (51%), Chevron (30%), Hydro-Congo (15%) and Engen (4%) are partners in the N’Kossa oil field development. Bouygues (France) built the "sea monster" oil rig.

World Bank Agency: IFC

Amount of Financing (estimated total cost): $50 million loan of $1.6 billion for Elf Congo; $15 million loan, $2.9 equity, $28.5 quasi-equity and $45 syndications of $99.8 million for Elf.

Year of Approval: FY1995

Reserves/Production: N’Kossa field holds an estimated 440 million tons of crude.

World Bank Description: One loan is for Elf to "develop the N’Kossa offshore oil field in partnership with other oil companies." The other financing package is to "assist a South African company [Engen] finance its share of the N’kossa oil field development and other work in the Haute Mer area." (IFC Annual Report 1995)

Notes: Elf discovered the N’Kossa oil field in 1984. Here, 60 kilometers offshore Congo, Elf erected the 210-meter long "sea monster" -- the largest oil rig in Africa, which will drill oil from reserves over 3 kilometers below sea level for the next 30 years. Elf and its partners accounted for 80% of Congo’s 9 million tons of oil production in 1995. Agip (Italy), in association with four other companies, produced the other 20%. Production is projected to increase to 13 million tons in 1997, due to the opening of the N’Kossa deepwater oil field in June 1996. "We hope to derive significant and lasting benefit from the exploitation of Nkossa," said a prefect in Congo last year. "We want jobs for our young people and we also want our environment protected." An Inter Press Service report noted that most of the people working on the "sea monster" are expatriates. "Isn't it the first time that there has been an oil boom in our country," a resident of Pointe Noire told Inter Press Service. "I remember the boom in the 1980s as a result of which Congo was labelled a middle-income country instead of a poor one. A quarter of a century from now you and I will see that the country has sunk further into poverty. What has been done with the income from oil?" (PR Newswire, June 10, 1996; Inter Press Service, Sept. 25 and Nov. 27, 1996; Journal of Commerce, Oct. 9, 1996)

COTE D'IVOIRE

Type of Industry: oil and gas development

Subsidized Project: Cote d'Ivoire hydrocarbon production

Location: Cote d'Ivoire

Owner of Project: Block CI-11 Hydrocarbon Development (partners include: PETROCI - national oil company of C. d'I., 40%; United Meridian Corp. - U.S., 25%; IFC - 15%; Seagull Energy - U.S., 10%; and Yukong Ltd. - S.Korea, 10%)

G-7 TNC Involvement: UMC, Seagull Energy (ownership); Oceaneering International (U.S., engineering services)

World Bank Agency: IFC

Amount of Financing (estimated total cost): $30 million loan, $27.3 million equity, $40 million syndications of $161 million

Year of Approval: 1995

Reserves/Production: The recently-explored Lion and Panthere fields in Block CI-11
produced the only oil in Cote d'Ivoire in 1996, at a rate of 16,000 barrels of crude oil and 40 million cubic feet of gas per day. The rate would increase by 8000 barrels and 50 million cf a day under the Bank-financed program.  
**World Bank Description:** "Produce 24,000 barrels of oil a day and supply 90 million cubic feet of gas from an offshore facility for power generation."  (IFC Annual Report FY 1995)  
**Notes:** United Meridian Corp., one of the owners of Block CI-11, is building a new liquid petroleum gas extraction plant in Abidjan, the capital city. While Block CI-11 was the only producer of crude in Cote d'Ivoire in 1996, transnational corporations believe the country has a lot of development potential. "What is needed to be done is to get investors in to help exploit it," said a Shell official in April 1997. "That is why we are here." (Inter Press Service, April 29, 1997; Southwest Newswire, Aug. 26, 1996; PR Newswire, Sept. 20, 1996, Dec. 18, 1996)

**EGYPT**

**Type of Industry:** oil and gas production  
**Subsidized Project:** oil and gas field exploration  
**Location:** Egypt  
**Owner of Project:** Apache Oil (U.S., 75%), Seagull Energy (U.S., 25%)  
**G-7 TNC Involvement:** Apache (owner/operator) and Seagull (investor)  
**World Bank Agency:** IFC  
**Amount of Financing** (estimated total cost): $37.5 million loan, $10 million equity, $45 million syndications of $154.9 million  
**Year of Approval:** FY1996  
**Reserves/Production:** The Qarun concession holds an estimated 80 million barrels of oil.  
**World Bank Description:** This project will "develop and continue to explore the Qarun oil and gas concession in the western desert." (IFC Annual Report FY1996)  
**Notes:** An October 1996 Houston Chronicle article reads, "Qarun, a shah who lived in Moses' time, is said in the Koran to have had so much treasure that it was a burden to a body of strong men.' But his wealth was his undoing - he was swallowed up by the earth, weighed down by his riches. These days at the oil field in Egypt's western desert that bears the name of the greedy king, and at five other sites, two Houston independent oil companies are drawing Egypt's natural riches from the earth at a furious pace, drilling more than two wells per month this year on one concession alone... So far in 1996, 25 wells have been drilled in the Qarun concession and two more wells are being drilled. The companies have kept five drilling rigs working there constantly." In March 1997, Egyptian President Hosni Mubarak met with Apache and Seagull's chairmen to discuss the oil developments in Egypt. "We spoke of our mutual desire to step up the pace of exploration and development in Egypt," said Apache chairman Raymond Plank. "For economic and environmental reasons, he wants to export more oil and use natural gas to fuel the Egyptian national energy grid. We're ready to accommodate him on both counts." (Houston Chronicle, October 10, 1996, April 13, 1997; PR Newswire, March 14, April 9, 1997)
**Type of Industry:** Natural gas field development  
**Subsidized Project:** Calub gas development  
**Location:** Calub natural gas deposit, Ogaden Basin, Ethiopia  
**Owner of Project:** Calub Gas Share Company (state-run)  
**G-7 TNC Involvement:** Parsons Corp. (U.S., awarded $50 million contract for construction of gas processing plant)  
**World Bank Agency:** IDA  
**Amount of Financing** (estimated total cost): $74.3 million of $130.8 million, with cofinancing from African Development Bank ($27 million) and the Netherlands ($4 million).  
**Year of Approval:** FY1994  
**Reserves/Production:** Calub holds an estimated 74 billion cubic meters of natural gas deposits.  
**World Bank Description:** "By increasing the availability of fuel from the Calub natural gas deposit in the country's southeast region, Ethiopia's unbalanced structure of energy supply will be partially righted and the supply of petroleum products needed in the modern sectors of the economy increased. Road rehabilitation, technical assistance, and a poverty-alleviation component -- aimed at supporting income diversification among poor urban fuelwood carriers --is included." (World Bank Annual Report FY 1994)  
**Notes:** This is Ethiopia's first natural gas field development. Construction is to start in 1997 and be completed in 1998. Parsons called the project "a starting point for Ethiopia's long-term development of fossil-fuel resources." (Business Wire, Feb. 6, 1996; Xinhua, Feb. 23, 1997; Oil & Gas Journal, Feb. 12, 1996; Africa News, Feb. 26, 1997; ESP-Business Opportunities in Africa & the Middle East April 1, 1996)

**GEORGIA**

**Type of Industry:** Baku to Supsa oil pipeline feasibility study  
**Subsidized Project:** Baku (Caspian Sea oil) pipeline  
**Location:** Georgia  
**World Bank Agency:** IDA  
**Amount of Financing** (estimated total cost): $1.4 million  
**Date of Approval:** April 8, 1997 (FY1997)  
**Reserves/Production:** Included in Azerbaijan entry.  
**World Bank Description:** "The World Bank on April 8 approved a $1.4 million (equivalent) IDA credit to finance a feasibility study of a major oil export pipeline from Baku, Azerbaijan to Supsa, Georgia." (World Bank News, April 17, 1997) "...[I]ncreased stability has focused attention on Georgia as one possible outlet for the huge oil reserves of the Caspian region.... [M]uch remains to be done if Georgia is to realize its full potential as a transit country.... The objective of the proposed project is to enhance the capacity of Georgia to undertake international negotiations in respect of oil pipeline transit. This will improve Georgia's ability to benefit from oil development in the Caspian region by attracting private investment in the necessary transport infrastructure." (World Bank Project Information Document, PID GEPE44830, April 4, 1997)  
**Note:** see Azerbaijan.
GUATEMALA

Type of Industry: oil production and transportation
Subsidized Project: Basic oil field development
Location: Guatemala
Owner of Project: Basic Petroleum International Ltd.
G-7 TNC Involvement: Basic (France, owner); Norcen (Canada, may merge with Basic); Amoco (imports some oil from Basic)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $10 million loan, $6 million syndications, $4 million equity of $33 million
Year of Approval: FY1994
Reserves/Production: Basic produces 18,600 barrels/day of oil from its Xan fields in Guatemala, with an expected increasing rate to 23,000 bpd. Basic holds 65 million barrels of proved oil reserves, and another 18 million barrels of probable reserves. All of Basic's global production occurs in Guatemala.
World Description: BPI "will develop its oil reserves and build a 120-kilometer pipeline to transport crude oil." (IFC Annual Report FY1994)
Notes: "Guatemala has tantalized geologists because of its promising geology and proximity to formations similar to productive areas in Mexico. Decades of guerrilla activity in northern Guatemala and general political instability have discouraged exploration but a recent peace treaty between the government and guerrillas has revived interest," reported Latin American Energy Alert in May 1997. Area residents formed a blockade against the transportation of oil from the Xan field in April 1996. Basic is building a pipeline from the Xan field to its refinery in La Libertad, using part of the Bank loan, which will eliminate the current truck convoys of oil to the refinery. Sir James Goldsmith is a major Basic shareholder. (Latin American Energy Alert, May 20, 1997; Energy Alert, March 29 and May 15, 1996, Caribbean Update, August 1994; Platt's Oilgram News, June 9, 1994)

INDIA

Type of Industry: Coal mining expansion
Subsidized Project: India - Coal Sector Rehabilitation
Location: India
Owner of Project: Coal India Ltd. (Calcutta)
G-7 TNC Involvement: none yet, but Bank, if it finalizes its mining expansion loan, will require global bidding for equipment contracts.
World Bank Agency: IBRD, IDA
Amount of Financing (estimated total cost): Approved: $63 million (IDA) of $84 million social and environmental mitigation at 24 coal mines. Under consideration: $535 million of $1.8 billion for expanding production at mines.
Date of Approval: IDA assistance approved in FY1996. Expansion loan to be considered in FY1998.
Reserves/Production: 20 of the 24 mines hold a combined 1.4 billion tons of coal reserves, according to the Bank.
**World Bank Descriptions**: IDA assistance: "Coal India will be assisted in achieving its objective of making coal production more socially and environmentally sustainable. The implementation of Indigenous Peoples Development Plans for 25 mines that are slated to receive financial assistance is expected to improve the lives of some 186,000 people, most of whom are poor." (World Bank Annual Report FY1996)  IBRD loan: "The bulk of the proposed loan would finance the purchase of mining equipment for 24 opencast mining operations in Madhya Pradesh, Maharashtra, Uttar Pradesh, Bihar and Orissa. The loan would also provide technical assistance for redrafting the regulatory framework that governs operations in the coal industry. The aim is to enhance competitiveness and efficiency in the coal industry. ... The Bank has made three loans to the Indian coal industry: in 1984, a loan of US$151 million for the development of the Dudhichua coal mine in Singrauli; in 1985, a loan of US$248 million for the development of an opencast mine (Block II) and an underground mine (Pootkee-Bulliary) in the Jharia coalfield; and in 1987, a loan of US$340 million for the expansion of an opencast mine (Gevra) in the Korba coalfield, the construction of an opencast mine (Sonepur-Bazari) in West Bengal, and imports of coking coal. In 1992, the Board approved a credit of (US$12 million for a technical assistance program to deal with mine fires in the Jharia coalfield.... Implementation of the projects supported by these loans has been uneven..... [T]he process of rehabilitating project-affected people has not been completed, and the resettlement and rehabilitation efforts under these as well as all other coal projects that have received financial support from the Bank in the past are being reviewed in the context of the Coal Sector Environmental and Social Mitigation Project.... The opencast mine project in the Jharia coalfield and the Sonepur- Bazari project were plagued by land acquisition problems and social issues. This not only delayed their implementation and the disbursements of the loans, it also reduced the commercial viability of these projects. People affected by these projects demanded employment with the respective subsidiary coal companies, at a time when these companies were under financial pressure to reduce their staff.” (World Bank Project Information Document, PID INPA9979, February 10, 1997.)

**Type of Industry**: oil and gas venture fund  
**Location**: India  
**Owner of Project**: Creditcapital Venture Fund Ltd (India)  
**World Bank Agency**: IFC  
**Amount of Financing** (estimated total cost): $4 million loan, $4 million equity of $10 million  
**Year of Approval**: FY1996  
**Reserves/Production**: not available  
**World Bank Description**: The investments will "establish a venture capital fund to finance small and medium-sized oil and gas projects." (IFC Annual Report FY1996)  

**Type of Industry**: Liquid Natural Gas ship  
**Subsidized Project**: Varun second-hand vessel  
**Location**: India  
**Owner of Project**: Varun Shipping Company Ltd.  
**World Bank Agency**: IFC  
**Amount of Financing** (estimated total cost): $5.7 million loan, $6 million syndication of $16.6 million. The IFC holds a 10% investment in Varun.  
**Year of Approval**: FY1996  
**Reserves/Production**: not available
World Bank Description: The project will "increase and diversify the tonnage of a 10-vessel shipping fleet by acquiring a second-hand liquid petroleum gas carrier." (IFC Annual Report FY 1996)

Notes: In 1996, Varun purchased its second LPG carrier, the Maharshi Vasishtha, from Bergossen (Norway) at a cost of $17 million. Varun operates a total of 11 ships. (South China Morning Post, July 3 and Sept. 27, 1996)

Type of Industry: coal, aluminum

Subsidized Project: Rain Calcining plant

Location: India

Owner of Project: Rain Calcining Limited

G-7 TNC Involvement: Houston Industries Energy (U.S.) (Owns 20% of project and provides technical services for the power plant); Applied Industrial Materials Corp. (U.S., investor)

World Bank Agency: IFC

Amount of Financing (estimated total cost): $18.3 million loan, $5.4 million equity, $1 standby loan of $94.2 million

Year of Approval: FY1995

Reserves/Production: Accounted for in power plant section.

World Bank Description: "Produce calcined petroleum coke for the aluminum industry and co-generate 45 megawatts of power for sale to third parties." (IFC Annual Report FY1995)

Note: See power plant inventory for more details.

INDONESIA

Type of Industry: gas pipeline

Subsidized Project: Sumatra to Java pipeline

Location: Grisik, Sumatra province to Jakarta, West Java province, Indonesia

Owner of Project: (Borrower) Republic of Indonesia; (Implementing Agency) PT Perusahaan Gas Negara (PT PGN, Jakarta)

G-7 TNC Involvement: (gas suppliers), Itochu Corp. (Japan), Gulf (U.S.), Maxus (U.S.), Carmanah (Canada), Bow Valley Energy (Canada), Novus (Canada), Exxon (U.S.), Mobil (U.S.), Santa Fe Energy Resources (U.S.); (possible gas users in power plants, refineries) Enron (U.S.), British Gas (U.K.), Caltex (U.S.); (possible pipeline builders) Mannesman Demag (Germany); Talisman (Canada)

World Bank Agency: IBRD

Amount of Financing (estimated total cost): Approximately $160 million of $533 million.

Projected Board Date: February 1998

Reserves/Production: Southern Sumatra's Corridor Block holds reserves of 1.5 trillion cubic feet of natural gas. Southern Sumatra's Camar field holds an estimated 70 billion cubic feet of gas. The Natuna natural gas field in the South China Sea holds over 200 trillion cubic feet of natural gas (46 tcf commercially recoverable) and will eventually feed into the national pipeline system. Thus, at least 47.57 trillion cubic feet may feed into the Bank-financed pipeline system.

World Bank Description: "The investment objective of the project is to support the development of Indonesia's Integrated Natural Gas Pipeline Transmission System. In particular, the project would help fund construction of a gas transmission line from gas fields in Southern Sumatera to industrial consumers and power generators in West Java, the most
important gas market in Indonesia.... (a) Provision by PT PGN of a 546 kilometer gas transmission pipeline from gas gathering stations in South Sumatera to PT PGN's distribution network in West Java, along with gas gathering facilities, metering, compression, telecommunications, gas control and corrosion control facilities; (b) Technical assistance to GOI for gas sector planning and economic and environmental regulation.... It also would help establish the early phase of a national gas transmission system and pave the way for further private sector investment in gas infrastructure." (World Bank Project Information Document, PID IDPA44320, March 1997)

**Notes:** Indonesia exports more liquified natural gas than any other country in the world. The World Bank project is part of an overall $2.7 billion plan to build natural gas pipelines inter-connecting the Indonesian archipelago's gas fields and consumers, and will extend into Singapore and, possibly, Thailand. By 2003, a huge natural gas field in the South China Sea (Natuna, being developed by Exxon - 50% share, and Mobil - 26% share, and Pertamina of Indonesia - 24% share), which holds an estimated 200 trillion cubic feet of natural gas, will feed into the pipeline system.


**KAZAKHSTAN**

**Country Profile**

Kazakhstan plans to become the sixth largest oil producer in the world by the year 2010. The country holds some of the world's largest oil reserves, much of which are falling under transnational corporate control at the World Bank's urging. The Bank's assistance fits neatly within the country's president's economic and political system.

In October 1993, World Bank economist Bernard Funck said that Kazakhstan "has stable institutions, skilled workers and vast natural resources. It is a country that is taking the right steps toward becoming a more stable, market-oriented economy."

In March 1997, the Middle East Review World of Information reported that "President Nursultan Nazarbayev has eschewed western models of democratic development, preferring to follow the example of the 'tiger' economies of south-east Asia, where economic liberalism and political authoritarianism go hand-in-hand.... President Nazarbayev, who has ruled Kazakhstan since independence, has limited patience with democracy - if parliament fails to do his bidding he dissolves it. After dismissing the assembly for the second time in February 1995, fresh parliamentary elections were held in December 1995. The election was again marred by irregularities."

The rapid sell-off of Kazakhstan's oil and gas sector has prompted an "anti-privatization" push by many oil workers.

Workers at the Mangistaumunaigaz enterprise, said opposition parliamentarian Zamanbek
Nurkadilov, oppose a planned privatization because "nowhere is it written that foreign investors should continue with social programs."

"There is a view in the oil sector that the government is giving too much away," an unnamed "Western analyst" told East European Energy Report in February 1997.

"There have been widespread accusations of corruption, coercion and chaos amid the breakneck speed of the sales," reported EEER in November 1996.

In April 1997, according to EIU Business Russia, "The Kazakh government announced that Essex Refinery Corporation, an obscure company registered in the British Virgin Islands, had lost the right to its 53.1% stake in the Atyrau refinery barely two weeks after winning the tender. Essex had failed to meet its promises, Almaty declared, which will not surprise those who wondered how Essex would find the $1bn it pledged in investment. The episode underlined the dangers of Kazakhstan's frantic pace of privatisation--too often, neither the government nor investors are taking sufficient time to vet the other. But the need for quick cash on the Kazakh side, and the hunt for a bargain on the part of investors, continues to propel the selling spree forward."

Akshabulak Fields

The IFC has been an active promoter of private investment in and development of the Akshabulak and associated fields. In 1993, German companies Veba Oel (later bought out by RWE-DEA) and Erdol Erdgas (subsidiary of Gaz de France) entered into a joint venture with Yuzhneftegazi, then-subsidiary of the state-owned Munaigas, to develop the Akshabulak, Aksay, and Nuraly oil fields. Shortly thereafter, the Bank approved its first loan to their development venture, including a 65-kilometer pipeline.

In 1996, production began in the oil field, and a Canadian company took over a 50% Kazakhstan-based investment in the project. At the same time, the Bank extended an additional loan to the oil field development. In August, Hurricane Hydrocarbons won a $120 million bid to purchase 89.5% of the equity of Yuzhneftegaz. When Hurricane Hydrocarbons purchased Yuzhneftegaz, it suddenly became Canada's biggest oil company. Yuzhneftegaz held over 300 million barrels of oil reserves in 1996.

Oil from the Akshabulak, Nuraly and Aksay fields covered by the Bank's 1996 package is slated to be exported to a refinery in Germany.
Uzen Field

Uzen is the second largest oil field in Kazakhstan. It also has the largest surface oil spill lakes in the former Soviet Union. Production has been slowed by idle wells. The World Bank loan is intended to facilitate privatization, well rehabilitation, and environmental cleanup. $104 million is to go to parts and equipment, with about $8 million going to environmental remediation.

Shortly after the Bank extended the loan, the government of Kazakhstan offered Uzenmungai up for sale. Amoco, Unocal (U.S.)/Petronas (Malaysia) and the China National Petroleum Corp. are the three finalists for field ownership bids. Amoco offered $636 million over five years, the CNPC offered $1 billion over five years, and the Petronas/Unocal joint bid offered $531 million, rising to an eventual $1.3 billion. The government said it would announce the winning bid in late May 1997.

Other Privatized Pieces of Kazakhstan's Oil and Gas Industry

* The Karachaganak field, in which British Gas and Agip (Italy) purchased 42.5% stakes in 1992, has reserves of an estimated 750 billion cubic meters of gas and 200 million tonnes of oil.
* Chevron (50%), Mobil (25%) and the government (25%) are in a $20 billion, 40-year joint venture to develop the Tengiz oil field, the largest in Kazakhstan.
* K Hill International is in a joint venture with Karazhanbastermneft, which is recovering oil from the Karazhanbas oil field.
* Snow Leopard Resources of Canada is developing the northwest Kazakhstan fields of Teplovskoye-Tokarevskoye, Imashevskoye and Sazan-Kurak fields in northwest Kazakhstan.
* Texaco and Exxon have expressed interest in the Zhanugol field.
* Triton Vuko (U.S.) owns 95% of the Karazhanbasmunay oil producer.

* Bonus Petroleum of Canada is reworking 1200 to 1500 wells in a joint venture with Mangystalmunaygas, in which Indonesia's Central Asia Petroleum recently bought a 60% stake. Other Mangystalmunaygas joint ventures include one with Anglo-Dutch Petroleum to develop the Tenge field, which has estimated reserves of 600 million barrels of crude and 1.8 trillion cubic feet of gas. Another joint venture is called Zhetybayquest, with Beta Well Service of Canada.

* Another big joint venture is a deal between Chinese Petroleum (Taiwan, 33.25%), the Kazakh
government (50%) and other unnamed foreign companies (16.75%) to extract oil from a 90 million barrel field in the northwest Caspian Sea.

* One of the key developments is a planned $1.8 billion pipeline between the Tengiz oil fields and Novorossi, Russia, a port on the Black Sea. Investors in the 3 billion ton/year pipeline include: the governments of Russia (24%), Kazakhstan (19%, financed by Amoco of U.S.), and Oman (7%) and the following corporations: Chevron (15%), LUKoil (12.5%, Russia), Mobil (7.5%), Rosneft (7.5%), Agip (2%) (Italy), British Gas (2%), Oryx (1.75%, U.S.) and Muniagaz (1.75%, Kazakhstan). Chevron and Mobil will be the leading oil suppliers, and Transneft (Russia) will operate the pipeline.

* In addition to the Uzen field and the pipeline investments, Amoco is considering taking up five other projects, including a 7% stake in the KazakhstanCaspiaShelf consortium, a 90% stake in the Aktobemunaygaz local producer, development of the Alibekmola oil field, and exploration in the Temir and South Embinsky blocks.

* The proposed oil pipeline from Azerbaijan to Turkey or Russia might also be extended to tap into Kazakhstan's fields, and a pipeline to China's Pacific coast, which would be the world's longest, is also being considered.


**Type of Industry:** oil and gas privatization, production and pipelines development  
**Subsidized Project:** Kazakhstan oil and gas sector restructuring  
**Location:** Kazakhstan  
**Owner of Project:** (Implementing Agency) Ministry of Energy and Fuel Resources  
**G-7 TNC Involvement:** In addition to companies listing in the Akshakbulak and Uzen summaries, the following G-7 companies are investors or suppliers to Kazakhstan's oil industry: K H International, Oryx, Triton Vuko (U.S.), Snow Leopard Res. (Canada), Bonus Petroleum (Canada), Agip (Italy), British Gas (UK)  
**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $15.7 million of $19.6 million.  
**Date of Approval:** March 1994  
**Reserves/Production:** Kazakh geologists estimate that the country holds over 15 billion barrels of oil and 63 trillion cubic feet of gas. In 1996, the country produced 22.9 million tonnes of oil and 4.24 billion cubic meters of gas.  
**World Bank Description:** "Technical assistance will be provided to help the government
strengthen the capacity of key petroleum subsector agencies to attract foreign investments, promote the efficiency and long-term financial viability of the petroleum industry, and formulate sound investment and organizational strategies for the integration of domestic primary petroleum production, processing, transport, and distribution." (World Bank Annual Report FY1994) A component of the project will "assist the Government to implement effectively a program of corporatization and restructuring of the petroleum industry, and prepare the basis for increased private sector participation in the industry." Another component will "review the economic feasibility of the Government's plans to construct new product pipelines as well as a crude oil pipeline to connect the oil fields in the west to the two refineries in the eastern part of the country." Another piece of the program will fund "the assessment of the regional and domestic market potential for natural gas and the supply and investment options for Kazakhstan in the subsector." (World Bank Project Information Document, Project ID KZPA8501, January 13, 1994)

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<thead>
<tr>
<th>Type of Industry:</th>
<th>oil field development (production and pipeline)</th>
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<tbody>
<tr>
<td>Subsidized Project:</td>
<td>Akshabulak oil field development</td>
</tr>
<tr>
<td>Location:</td>
<td>Kazakhstan</td>
</tr>
<tr>
<td>Owner of Project:</td>
<td>Kazgermunai (joint venture between RWE-DEA of Germany -25%, Gaz de France - 25%, and Hurricane Hydrocarbons of Canada - 50%)</td>
</tr>
<tr>
<td>G-7 TNC Involvement:</td>
<td>(Owners) RWE-DEA (Germany), Gaz de France, Hurricane Hydrocarbons (Canada)</td>
</tr>
<tr>
<td>World Bank Agency:</td>
<td>IFC</td>
</tr>
<tr>
<td>Amount of Financing (estimated total cost):</td>
<td>In 1994, the IFC extended $40 million loan, $7.5 million syndications, and $10 million quasi-equity toward a $296.4 million project. In 1996, the IFC extended $0.1 million equity, $65.6 million quasi-equity toward a $266.9 million project. ($123.2 million total IFC financing).</td>
</tr>
<tr>
<td>Years of Approval:</td>
<td>FY1994, FY1996</td>
</tr>
<tr>
<td>Reserves/Production:</td>
<td>Akshabulak holds reserves of 14.5 million tonnes of oil.</td>
</tr>
<tr>
<td>World Bank Description:</td>
<td>1994: &quot;Kazgermunai....will develop the Akshabulak oil field in central Kazakhstan.&quot; 1996: &quot;Develop the reservoir of the Akshabulak oil field to produce 23,000 barrels a day at peak production.&quot; (IFC Annual Report FY1996)</td>
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<tr>
<th>Type of Industry:</th>
<th>oil field production</th>
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<tr>
<td>Subsidized Project:</td>
<td>Uzen oil field development</td>
</tr>
<tr>
<td>Location:</td>
<td>Kazakhstan</td>
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<tr>
<td>Owner of Project:</td>
<td>Uzenmunaigas</td>
</tr>
<tr>
<td>G-7 TNC Involvement:</td>
<td>Amoco and Unocal (U.S.) have bid for the Uzen oil field, along with Petronas (Malaysia) and the China National Petroleum Corp. (Taiwan)</td>
</tr>
<tr>
<td>World Bank Agency:</td>
<td>IBRD</td>
</tr>
<tr>
<td>Amount of Financing (estimated total cost):</td>
<td>$109 million</td>
</tr>
<tr>
<td>Date of Approval:</td>
<td>July 2, 1996 (FY1997)</td>
</tr>
<tr>
<td>Reserves/Production:</td>
<td>The Uzen field holds about 850 million tonnes of oil reserves.</td>
</tr>
<tr>
<td>World Bank Description:</td>
<td>&quot;IBRD loan of $109 million to help reduce production drops in the Uzen oil fields, generate reinvestment resources, reorganize the Uzenmunaigas company and improve environmental management. The project will finance the procurement of equipment&quot;</td>
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and chemicals; replacement of flowlines; testing and logging of wells; hiring of a contractor for workover programs; supplying equipment, technical assistance, studies, audits and a pilot program for environmental protection and cleanup; consulting and technical assistance to Uzenmunaigas for improved financial, accounting and management systems; acquisition of computer systems and software for financial and reservoir management; and project management and training services and support." (World Bank News, July 4, 1996)

MADAGASCAR

Type of Industry: petroleum sector privatization
Subsidized Project: Madagascar petroleum
Location: Madagascar
Owner of Project: Government of Madagascar
G-7 TNC Involvement: Simon Petroleum Technology Ltd. (providing technical assistance to government)
World Bank Agency: IDA
Amount of Financing (estimated total cost): $51.9 million of $79.2 million.
Year of Approval: FY1994
Reserves/Production: In 1985, it was estimated that Madagascar has up to 200 million barrels of offshore oil reserves near Sakaraha and Morondava. Ten years later, at least 820 million recoverable barrels of oil and 2 trillion cubic feet of natural gas reserves were reported throughout the country.
World Bank Description: "Governmental reforms in the petroleum sector, which have introduced a competitive environment and the involvement of the private sector, will be supported, and basic infrastructure investments required to increase operational efficiency and attract private operators and investors will be financed. Institution-building measures are included." (World Bank Annual Report FY1994)
Notes: In 1995, after receiving the Bank loan, Madagascar opened bidding for its petroleum fields. "At present, there are no license holders in the country and all the acreage is available," Michael Scrutton, marketing director for Simon Petroleum Technology Ltd., told a Houston audience of oil executives in 1995. "We're talking about a geographic area nearly the size of Texas with 72 wells in it," said Mr. Scrutton, who emphasized that the country's oil potential has barely been explored. Madagascar's petroleum industry currently revolves around its only oil refinery. In 1993, a World Bank strategy document demanded that "calls for bids must be issued for the privatization of the Toamasina oil refinery," according to the Indian Ocean Newsletter. (Africa Review World of Information, Feb. 1997; Platt's Oilgram News, March 20, 1995; Indian Ocean Newsletter, April 22, 1995)

MONGOLA

Type of Industry: Coal mining (and copper)
Subsidized Project: Mongolia mining
Location: Mongolia
World Bank Agency: IDA
Amount of Financing (estimated total cost): $20 million of $25.4 million.
Year of Approval: FY1994
Reserves/Production: Mongolia has between 10 and 15 billion tons of identified reserves and produces about 9 million tons a year from 20 mines.
World Bank Description: "Imports and technical assistance urgently needed to maintain and develop coal and copper mining production and the transport sector will be financed." (World Bank Annual Report FY1994)
Note: In 1994, the government of Mongolia sought a foreign partner to build a 20 million ton/year coal mine in its largest field, the Tavantolgoi deposit, which holds an estimated 1.5 billion tons of coking coal and 3.5 billion tons of steam coal.
(Mining Annual Review, July 1994)

Type of Industry: coal mining
Subsidized Project: Shivee-Ovoo and Baganuur coal mines
Location: Mongolia
Owner of Project: government of Mongolia
G-7 TNC Involvement: possibly Japanese companies (equipment, investment)
World Bank Agency: IDA
Amount of Financing (estimated total cost): $35 million of $60.4 million. Japan has provided $48 million in loans to the two coal mines in this Bank project.
Year of Approval: FY1996
Reserves/Production: Shivee Ovoo, according to the Mining Journal, has 560 million tons of coal reserves, and Baganuur produces about 4 million tons of brown coal a year, used in Ulaanbaatar power stations.
World Bank Description: "Sustainable production levels at the country's major open-pit coal mine [Baganuur] will be increased through the modernization of technology." (World Bank Annual Report FY1996)
Notes: According to Asia Times, the Japanese and World Bank loans "are to be used to develop the Shivee Ovoo coal mine and to modernize the country's largest coal mine." Mongolia's Prime Minister Mendsaikhani Enkhsaikhan has requested Japanese direct investment in the country's coal sector, and in February 1997, the Japanese government agreed to loan Mongolia $48 million to develop the Baganuur and Schvee-Ovoo coal mines. (Agence France Presse, Feb. 25, 1997; Asia Times, Feb. 23, 1996)

MOZAMBIQUE

Type of Industry: gas production
Subsidized Project: Pande Gas Engineering Project
Location: Pande gas field, Mozambique
Owner of Project: (Borrower) Republic of Mozambique; (owner) Enron (U.S.)
G-7 TNC Involvement: Enron (U.S., owner), KCA (U.K., appraisal), Halliburton (U.S., feasibility study)
World Bank Agency: IDA
Amount of Financing (estimated total cost): $30 million of $48.7 million
Year of Approval: FY1994 (June 1994)
Reserves/Production: Sasol of South Africa in 1993 estimated that Pande holds between
one and two trillion cubic feet of gas. A more recent estimate put the number at 2.5 trillion cf, with a 40% likelihood that the total reserves may be as high as 6.6 trillion cubic feet.

**World Bank Description:** "All predevelopment work necessary to enable the government and the private sector to make a firm decision to develop the Pande gas field to enable gas to be exported (mainly to South Africa) and used domestically will be undertaken." (World Bank Annual Report FY1994) "[E]ncouragement of foreign exchange earning investments, such as the Pande project, is vital to lifting Mozambique from its exceptional dependence on donors. Mozambique's best prospects for exports lie in agriculture, mining and energy. Now that the armed attacks have ceased it should be possible for Mozambique to achieve success in gaining private investment in these areas.... The Pande gas field, located near the coast in central Mozambique, was discovered by a Gulf/Amoco group in 1961, but the concession was relinquished because of lack of market at that time. Since then, ENH with financial assistance from a variety of donors, has drilled further wells on structure and has brought the reserves about to a level needed for commercial development.... [T]he existence of sufficient market potential has been substantially proven. The Pande gas development is expected to lead to annual gas exports to South Africa of $150 million.... This is the purpose of the engineering project - to bring all the parties to a stage where they should be able to decide in favor of project development.... No significant environmental damage is expected. Except from the blowout at Pande 4, which caused significant damage over an area of 1 sq.km., no material environmental impact is visible at previous well sites or at seismic locations." (World Bank Project Information Document, Project ID MZPA1780, June 16, 1994)

**Notes:** In October 1994, Enron beat out Sasol (S.Africa) and PlusPetrol (Argentina) for control of the Pande gas field. Enron also hoped to invest in another field, Pemane, but, according to Africa Energy & Mining, "the authorities... don't want the country's entire gas production to fall into the hands of a single company."

The Mozambique privatization deal followed intensive lobbying by U.S. embassy officials on behalf of Enron. "Elements of the embassy did a bit of lobbying for the company, which I find a bit strange, because this is a commercial agreement," said Mozambique's Minister of Energy Resources, John Kachamila, who added that he was "told that other aid to Mozambique might be in jeopardy if this agreement was not signed."

"It was a little more nuanced than that," an unnamed Clinton administration official told the New York Times. "It is difficult to say we should give Mozambique $40 million a year, if it's going to take an opportunity for a $700 million project and not do it."

Enron wants to build a $700 million, 900 kilometer pipeline from the Pande field to a direct reduced iron (DRI) steel plant in South Africa. The pipeline and steel plant might receive World Bank funding in the future.

According to Africa Energy & Mining magazine, "With the help of the Mozambican government, Enron began to negotiate with state-owned Industrial Development Corporation (IDC) to construct a 2.5 billion rand ($573m) DRI plant in South Africa's Northern Province. But
AEM understands that Enron irked IDC by trying to push it into a quick decision."

Enron and the Mozambique government also plan to ship magnetite from the Phalaborwa steel mine to Maputo via a pipeline that would run through South Africa's renowned Kruger National Park. According to an April 1997 report from the U.S. embassy in Pretoria, "fears are being expressed by environmental groups that the project may be at an advanced stage and that the public is only now becoming aware of the implications."


**Type of Industry**: coal tar production

**Subsidized Project**: Maputo coal terminal expansion

**Location**: Mozambique

**Owner of Project**: Maputo Carvao de Coque, Limitada

**G-7 TNC Involvement**: Oil from the terminal regularly flows to European destinations, including U.K.

**World Bank Agency**: IFC

**Amount of Financing** (estimated total cost): $1 million loan, $0.3 million equity

**Year of Approval**: FY1995

**Reserves/Production**: The upgraded coal terminal will handle up to 3 million tons of South African and Zimbabwean coal per year.

**World Bank Description**: The 1995 investment is to "build a plant to produce 94,000 tons a year of reductant coke and coal tar at the Matola coal terminal." (IFC Annual Report FY1995) In 1994, the IFC "secured funding, through its Technical Assistance Trust Funds Program, for a study on expanding and rehabilitating" the terminal. (IFC Annual Report FY1994)

**Notes**: The rehabilitation of the Matola coal terminal is being conducted by CMR Engineers and Project Managers. The Matola coal terminal handles coal from mines in South Africa and Zimbabwe. In the first six months of 1996, the terminal transferred 420,000 tonnes of South African coal. The upgrade, the main cost of which involves dredging Maputo harbor, will expand capacity to up to 3 million tons of coal per year. (Mining Magazine, June 1996; Coal Week International, Nov. 26, 1996; International Coal Report, Feb. 6, Sept. 4 and 18, 1995)

**NIGERIA**

**Country Profile**

Nigeria, a petroleum-rich country, has traditionally formed joint ventures with foreign
corporations like Shell, Mobil, Chevron, Texaco, Elf-Aquitaine and Agip (Eni) for the exploitation of its oil and gas. But last year, Nigeria announced that it would privatize the oil sector. In October 1996, Nigerian Finance Minister Anthony Ani told a symposium organized by the World Bank’s MIGA that "privatization will open our economy up for the foreign investment we very much need." He announced that Nigeria would sell its 49% shares in the joint ventures and privatize its refineries.

The World Bank had urged Nigeria to sell its refineries. In a 1996 report on Nigeria, the Bank said, "leasing run-down facilities requires prior rehabilitation investments whereas divestment can bring in the necessary capital financing in exchange for a lower sale price," a recent report said.

The Bank is eager to finance such petroleum privatization schemes. But it faces widespread opposition to the prospect of Bank support for a government that kills opponents of oil projects.

Opponents were horrified and galvanized by the Nigerian government's execution of Ogoni leader Ken Saro-Wiwa and eight others, who were demanding compensation for Shell's environmental and social destruction in their Ogoniland villages.

On November 10, 1995, the same day the Ogoni activists were killed, the World Bank announced that it decided to not take a 2% stake (through $300 million in IFC equity and loans) in Nigeria's liquified natural gas for export project, in which Shell has a lead technical role.27

The World Bank said its concerns revolved around economics, not human rights. "We have consistently made it clear that we could only proceed if there was sufficient progress in certain critical areas of macroeconomic reform," said IFC executive vice president Jannik Lindbaek. "While there has been progress on the fiscal and monetary side, key policy decisions have yet to be implemented."

World Bank President James Wolfensohn told a conference of oil executives that the decision to withdraw from the LNG project was based on economics not human rights. "It was a financial judgement, but it was based on an assessment of the political environment. It was a government that I didn't feel we could easily deal with."

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27 For a detailed report on Shell's activities in Nigeria and worldwide, see "Independent Annual Report" on Shell, by Rainforest Action Network, Project Underground and Oilwatch. Copies may be ordered for $9 from Project Underground, 1847 Berkeley Way, Berkeley, California 94703 project_underground@moles.org.
While the Bank has had some qualms about dealing with Nigerian government, companies like Shell, which produces half of Nigeria's oil, do not. In June 1996, Shell official Emeka Achebe told the Calgary Herald, "Shell has been in business in Nigeria since 1938. In those years there have been about 11 regimes and the colonial government. Since independence in 1960, Nigeria has been ruled by one form of military regime or the other. We've had two civilian regimes in that time. Shell's business in Nigeria is the oil business. Since oil was discovered in 1958, Shell has made significant contributions to the economy and well-being of Nigeria."

Days after the executions, Shell, Agip and Elf-Aquitaine announced that the LNG project was going forward, with or without the IFC involvement. "This project is a long-term project and is not something which should be influenced by recent events no matter how sad they are," said Theo Oerlemans, CEO of the consortium.

The IFC first became involved in the natural gas project in 1994, when Nigeria LNG Ltd. asked the IFC to arrange $2.5 billion in financing for the pipeline.

The project involves the construction of a natural gas processing plant in Bonny, Nigeria, and the export of 7.2 billion cubic meters of liquified natural gas to Europe each year. The $4 billion complex, Africa's largest construction project, is owned by the Nigerian Liquified Natural Gas consortium, which includes Nigerian National Petroleum Corp. (state-owned, 49%), Shell (24%), Elf-Aquitaine (15%) and Agip (10%). Shell is also the technical director of the project.

In February 1997, as the pipeline construction was underway, representatives of more than 100 villages claimed that their communities deserved compensation for the damage the project was causing. Victor Lesli-Atata, a spokesman for the villages, said "The NLNG neither paid compensation nor told the villagers what is to become of their destroyed farms and other properties" such as fish ponds.

Nigeria is lining up European gas customers while construction continues. Enel (Italy) has agreed to purchase 3.5 billion cubic meters of Nigerian LNG each year, although the company's commitment to buy came into question earlier this year. Other purchasers include Enegas of Spain (1.6 billion cubic meters/year), Botas of Turkey (1.2 bcm/year), Gaz de France (0.5 bcm/year) and, possibly, Transgas of Portugal (up to 0.5 bcm/year).

Transnational corporate suppliers for the LNG project include Technip (France), Snamprogetti (Italy), Dresser Industries (U.S.), and Japan Gasoline Co., which won the plant construction contract, and Tad Eurotube (U.K.), which won a contract to supply steel pipes for the project.
Type of Industry: oil company pontoon
Subsidized Project: ferry to oil field
Location: Nigeria
Owner of Project: Bailey Bridges (Nigeria) Ltd.
World Bank Agency: IFC
Amount of Financing (estimated total cost): $0.1 million loan of $0.5 million
Date of Approval: May 1996
Reserves/Production: not known
World Bank Description: "Operate a pontoon under a 3-year contract to strengthen an oil company" (IFC Annual Report FY1996)
Notes: This project funds the building of a ferry bridge across the River Orashi to access oil fields in the Omoko area. (Reuters, May 31, 1996) The IFC approved the small but symbolic loan just seven months after the execution of the Ogoni activists.

PAKISTAN

Type of Industry: natural gas production
Subsidized Project: Sui gas field
Location: Pakistan
Owner of Project: Pakistan Petroleum Ltd. (63.9% owned by Burmah Castrol of U.K; IFC owns 6%, Pakistan government 29%)
G-7 TNC Involvement: Burmah Castrol (ownership); British Gas (contracted to study installation of compressor); National Power (U.K., operates 26% stake in a 950-megawatt power plant that consumes Sui gas)
World Bank Agency: IFC
Amount of Financing (estimated total cost): The 1994 financing included a $31.1 million loan and $21 million syndications; in 1995, the IFC added $2 million in syndications to the package.
Years of Approval: FY1994, 1995
Reserves/Production: In 1994, the Sui field produced 6.7 billion cubic meters of gas (90% of Pakistan's total production).
World Bank Description: "Pakistan Petroleum Ltd. will install compression facilities to extend the life of the Sui natural gas field." (IFC Annual Report FY1994)
Notes: Sui is the largest gas field in Pakistan. It lies in a region in which political and military conflicts are frequent. In October 1995, the government ordered over 3,000 paramilitary troops to take control over the 96 square kilometer field. The move broke a strike by 1200 gas field workers labor strike. "If we had not asked the government's help, the plant would have been under serious threat," said the field manager. "One bullet and this whole area will be up in flames," said the area army officer in charge. Burmah Castrol is trying to sell its controlling
stake in Pakistan Petroleum to BHP of Australia, but some politicians are demanding that the shares be sold only to a Pakistani company. In 1983, the IFC provided a $88.2 million loan for compression facilities and drilling operations at the Sui field. (OPECNA, Jan. 7, 1983; Deutsche Presse-Agentur, October 18, 1995; The Times (London), Dec. 13, 1994; Press Association Newsfile, April 9, 1994; AFX News, March 27, 1996; Asia Times, Feb. 23, 1996; Japan Economic Newswire, June 4, 1996)

PAPUA NEW GUINEA

Type of Industry: petroleum sector privatization
Subsidized Project: PNG petroleum reform
Location: Papua New Guinea
G-7 TNC Involvement: (investors in PNG oil and gas fields) Chevron (U.S.), BP (U.K.), Mitsubishi (Japan), Mobil (U.S.), International Petroleum Corp. (Canada), Monument Oil & Gas (U.K.), and Nissho Iwai Corp., Nippon Oil Co., and Japanese Petroleum Exploration Co. (Japan)
World Bank Agency: IBRD
Amount of Financing (estimated total cost): $11 million of $12.2 million
Year of Approval: FY1994
Reserves/Production: The Kutubu, Gobe and Pandora fields hold a combined 13.4 trillion cubic feet of natural gas reserves.
World Bank Description: "A second project in support of the country's petroleum sector will help strengthen the government's capability in policy formulation, safety regulation, evaluation of development proposals, and monitoring of ongoing sector-development programs, thereby enhancing the attractiveness of the sector to international investors."
(World Bank Annual Report FY1994)
Notes: The main oil development in PNG is the Kutubu oil project, backed by Pioneer Industries (Australia), Chevron, BHP, BP, and Mitsubishi. The first oil exports from Kutubu occurred in 1992. By 1993, over 45.8 million barrels of oil flowed from the Kutubu field to foreign markets. Chevron and its Kutubu partners hope to build a $3 billion, 2500 kilometer pipeline from the field to a future 600 megawatt gas-fired power plant amid the traditional lands of the Aboriginal peoples in north Queensland, Australia. The gas may also supply other industries, including an alumina refinery and mines in Australia. Production is also planned from the Gobe oil field, which holds reserves of 116 million barrels of oil and 400 million cubic feet of gas. Chevron (U.S.) and Niugini (Australia) are partners in a new joint venture to exploit the Gobe fields, with production to start in 1998. Another potential export-oriented development is the Pandora field by a consortium that includes Mobil (U.S.), International Petroleum Corp. (Canada), Ampolex and Oil Search (Australia), Monument Oil & Gas (U.K.), and three Japanese companies (Nissho Iwai Corp., Nippon Oil Co., and Japanese Petroleum Exploration Co.). It holds an estimated 4 trillion cubic feet of proved gas reserves and another 8.4 trillion cubic feet of possible reserves. The only natural gas producer in 1992 was British Petroleum (U.K.), which extracted gas from its Hides field for domestic use. (Oil Daily, Aug. 11, 1992; Platt's Oilgram News, December 30, 1996; ESP-Business Opportunities in Asia & the Pacific April 1, 1997; Asia Pulse, May 22, 1997; International Gas Report, April 18, 1997; Financial Times, Jan. 11, 1991; East Asian Executive Reports, May 15, 1994)
POLAND

Type of Industry: new LPG terminal  
Subsidized Project: Gaspol terminal  
Location: Gdansk, Poland  
Owner of Project: Gaspol S.A. (Part-owned by SHV Holding/Pamgas of Netherlands)  
World Bank Agency: IFC  
Amount of Financing (estimated total cost): $20 million loan, $5 million equity of $60 million  
Year of Approval: FY1996  
Reserves/Production: Natural gas demand in Poland is expected to rise from 10 billion cubic meters in 1996 to 25 billion in 2010. The Gaspol terminal will handle up to a half billion cubic meters of gas a year.  
World Bank Description: "Build and operate a liquid petroleum gas terminal to increase gas storage capacity and upgrade and renovate existing filling plants." (IFC Annual Report FY1996)  
Notes: This Gdansk terminal will import LPG from Qatar. (Polish News Bulletin, July 24, 1996; EIU Business Eastern Europe, September 23, 1996)

Type of Industry: coal/methane  
Subsidized Project: methane exploration  
Location: Poland  
Owner of Project: Amoco Poland Petroleum Company  
G-7 TNC Involvement: Amoco  
World Bank Agency: IFC  
Amount of Financing (estimated total cost): $8.7 million quasi-equity of $86.5 million  
Year of Approval: FY1994  
Reserves/Production: Not relevant  
World Bank Description: "Amoco... will evaluate coalbed methane gas resources in the Upper Silesian basin." (IFC Annual Report FY1994)  
Note: From Polityka newsletter, June 30, 1996: "You will be Europe's gas Kuwait yet," predicted, early in the 1990s, American specialists affiliated to the U.S. Environmental Protection Agency. These experts estimated that coal deposits in the Rybnik and Jastrzebie regions held between 1,200 billion and 1,500 billion cubic metres of methane. Soon, western firms appeared in Silesia, led by AMOCO, a U.S. oil and gas giant. As the gas euphoria was spreading, Silesian gas, that godsend, was strongly politicized.... Regrettably, by now the gas bubble has burst. We are going to have plenty of gas in future, or so we are told, but it will be coming from the "big pipe" connecting Russia with western Europe. So much for Poland as "Europe's. Licenses for extracting gas from Silesian coal deposits were granted to AMOCO (U.S.A.), [and several other companies. But now, only one company, Pol-Tex Methane] is still showing appreciable interest.... What happened, then, to the over 1,000 billion cubic tons of gas discovered on the heels of our system changeover? It has been said, off the record, that what started the American concerns on their Polish gas rush was an error in the processing of intelligence supplied by spy satellites which are programmed to look for natural resources, among other tasks."

ROMANIA
Type of Industry: petroleum sector privatization
Subsidized Project: Romania petroleum
Location: Romania
Owner of Project: state of Romania
G-7 TNC Involvement: (Oil investors in Romania) Amoco, Coastal, MI Drilling (U.S.), Enterprise Oil (UK), Shell (U.K./Neth.)
World Bank Agency: IBRD
Amount of Financing (estimated total cost): $175.6 million of $345.6 million
Year of Approval: FY1994
Reserves/Production: Romania held at least 517 million cubic feet of natural gas and 300 million barrels of oil reserves in 1994.
World Bank Description: "The government's petroleum-sector restructuring strategy, designed to promote private sector investments, strengthen institutional capabilities, and establish a suitable regulatory framework to facilitate the development of an efficient and commercially oriented petroleum sector, will be supported." (World Bank Annual Report FY1994)
Notes: In 1994, the Bank said that it decided that "Romania's ambitious reform efforts merited continued international assistance and indicated significant support through financial and technical assistance." It also urged the government to "simplify bureaucratic procedures and to assure the consistency of economic policies to provide an appropriate climate for foreign investments." The 1994 Bank loan was divided between four state units: Romgaz ($70.3 million, gas authority), Conpat Autonomous ($63.1 million), Petrom ($35 million, oil exploration), and the Ministry of Industry ($7.2 million). Romania planned to use the loan toward well and pipeline equipment imports and selected field joint ventures with foreign firms. Amoco holds a production sharing contract signed with the Romanian government in 1992 for a 700 square kilometer area northeast of Bucharest. (UPI, April 13, 1994, Business Wire June 7, 1994; Reuter European Business Report, June 8, 1994; Platt's Oilgram News, April 7, 1994; Emerging Markets Week, September 25, 1995;)

RUSSIA

Type of Industry: oil field development
Subsidized Project: Petroleum Joint Venture
Location: Western Siberia, Russia
Owner of Project: YUKOS, Amoco Eurasia
G-7 TNC Involvement: Amoco
World Bank Agency: IBRD
Amount of Financing (estimated total cost): IBRD was to provide up to $500 million (primarily in the form of guarantees) of the $3.2 billion project.
Date of Approval: none, deleted (World Bank Monthly Operational Summary, May 1997)
Note: This project, which would have financed a joint venture between Amoco (US) and Yukos (Russia) to develop the 700 million barrel North Priobskoye oil field in Western Siberia, was deleted from the Bank's list of prospective projects in May 1997. For more information about this project, see Ellen Schmidt, "The World Bank and Russian Oil: A Dark Future for Man
Type of Industry: oil production expansion  
Subsidized Project: western Siberia oil field  
Location: western Siberia, Russia  
Owner of Project: six Russian production associations  
G-7 TNC Involvement: Partners with Russian producers using Bank loans include: Calgary Overseas, Canadian Fracmaster (Canada), Agip (subsidiary of Eni, Italy), Arco, Amoco, Anglo-Suisse, Baker Hughes, Benton Oil & Gas, Conoco (subsidiary of DuPont), Exxon, Solomon, Texaco (U.S.), BP, Hamilton Oil, Dana Petroleum (U.K.), Deminex, Kat Oil (Germany), Petrus Well Services (Can./U.S.), Shell (U.K./Neth.), Itoh (Japan), and Elf (France). See also procurement appendix for more G-7 involvement.  
World Bank Agency: IBRD  
Reserves/Production: The associations targeted by the World Bank loans hold over 7.1 billion barrels of oil reserves.  
World Bank Description: "Essential inputs will be provided to support existing oil-production operations in western Siberia, thereby providing -- at peak production -- 12 million tons of incremental oil annually, representing a 3 percent increase in national output." (World Bank Annual Report, FY1993) "A second oil-rehabilitation project seeks to slow the rate of oil-production decline in Western Siberia; transfer international technical, environmental, and managerial practice to the operation of oil fields in Western Siberia; and promote a more efficient and environmentally sustainable use of the country's petroleum resources." (World Bank Annual Report FY1994)  

Russia Oil Aid Overview

"It is quite likely that private capital will be more efficient than Soviet rule was in developing Siberia's riches. The question is, will it be more humane towards nature and human beings?"
--Isvestiya broadcast, Jan. 31, 1996

"Never in the history in of multilateral investment funding has so much money been pumped into one country within such a short period of time," wrote Ellen Schmidt of the German non-governmental organization, WEED. "From the World Bank's point of view, the oil and gas sector plays a key role in Russia's overall transformation process.... Officially, the World Bank has emphasized its commitment to promote ‘climate friendly’ investment programs. However, the World Bank's involvement in Western Siberia raises serious doubts of this commitment."

There is little question about the Bank's commitment to privatization, in Russia and
everywhere else in the world. It has financed over $1 billion in loans toward rehabilitation at numerous Western Siberian oil fields, using imported equipment for drilling operations by joint ventures with considerable G-7 corporate investments. These loans represent the cutting edge of the Bank's efforts to open Russia's oil reserves -- the fifth largest in the world -- to the global marketplace.

Much of the money remains undisbursed. Some aid recipients complained of high Russian tariffs on imported equipment, others of the Bank's insistence that the rehabilitation equipment should be imported, not domestic.

In August 1996, the U.S. embassy in Moscow reported that "the World Bank, European Bank for Reconstruction and Development and U.S. Export Import Bank have been active in attempting to support foreign equipment sales to Russian petroleum producers, having made available loans totaling $ 5.5 billion through special programs for oil field workovers, oil production joint ventures and refinery modernization. However, only a tiny fraction of these funds has been disbursed to date due to high taxes imposed on the petroleum sector by the Russian government which has made utilization of foreign loans uneconomical."

"We are very sympathetic at the project level with the oil companies that have withdrawn" from the Bank-financed equipment import scheme, said Peter Pease, the World Bank's oil project task manager.

On the other hand, some Russians have found the World Bank's insistence on purchasing foreign equipment to be absurd. "World Bank rehabilitation loans routinely have open international tenders mounted for buying the equipment required and open to whatever companies from Bank member-countries," reported Russia's Segodnya magazine in 1996. "As it happens, Russian equipment has a patent edge in the event, habitually costing at least forty percent less than overseas facilities at much the same technical standards fitting Russia's requirements; its further assets are adequate repair facilities, personnel, and modest transportation expenses. Crucially, the standards and quality of such Russian equipment, essentially metal-intensive unsophisticated articles, have dramatically improved following some defense factories joining in their output as part of a drive to convert to civilian production. Going by past experience, though, such tenders are inherently a losing battle for Russian bidders; ludicrously enough, now and then the foreign winners of such tenders ultimately come to supply precisely Russian equipment for such projects."

When Yuganskneftegaz canceled its $190 million loan from the World Bank in March 1996, Moscow's Economic News Agency reported that, "a major factor in declining the loan was a condition that only foreign companies be allowed to tender to supply equipment, which is available from Russian producers at between a third and half the price. [Russian producers] Tatneft and Permneft have in the past refused World Bank credits for similar reasons."
"Wariness is advised in regard to the environmental aspects of these loans," said Ms. Schmidt of WEED. "Instead of paying close attention to environmental aspects, the World Bank's rehabilitation loans focus primarily on increasing production by modernizing and reconditioning abandoned wells."

**World Bank Loan #1:**

In 1993, the Bank extended $610 million in loans to three Russian production associations for the rehabilitation of some of their oil fields.

* Kogalymneftegaz ($272 million), subsidiary of Lukoil (Russia's second largest oil company). In 1996, the company canceled the remaining $130 million of its loan, saying that taxes and levies imposed after the credit were too much to bear. The Bank agreed that these levies were interfering with the project. Kogalymneftegaz has entered into a contract with Calgary Overseas (Canada) to work over 1,000 idle wells. In 1994, it formed a joint venture with numerous foreign corporations, including Agip (of Eni, Italy), Arco (U.S.), Dana Petroleum (U.K.), Deminex (Germany), Kat Oil (Germany), Petrus Well Services (Can./U.S.), and Scandinavia (Sweden/Estonia). Another Western-Kogalymneftegaz consortium involves Amoco, Conoco, Exxon, Hamilton Oil, Neste, Norsk Hydro, Shell and Texaco, along with Russian companies Arkhangelskggeologic and Rosself. The company has over 5 billion barrels of known reserves.

* Purneftegaz ($158 million). In 1996, Purneftegaz, a subsidiary of Rosneft (Russia's largest oil company) canceled the remaining $40 million of its loan, for the same reasons as Kogalymneftegaz. Perneftegaz, which works with BP (U.K), Conoco (subsidiary of Dupont, U.S.), and Benton Oil & Gas (U.S.), has an estimated 1.4 billion barrels of reserves.

* Varyeganneftegaz ($170 million). Siderca of Argentina won a contract to rework some of this company's oil wells. Varyeganneftegaz has not canceled any loans, but has complained that equipment import duties would cripple them. The company is part of Russia's Sidanco oil company and works with foreign transnationals Anglo-Suisse (U.S.), Itoh (Japan), Elf (France) and Solomon (U.S.). Baker Hughes (U.S.) has a contract with Varyeganneftegaz for well clean-out and recompletion services in Western Siberia. Varyeganneftegaz has an estimated reserve of 179 million barrels in two fields (Varygansk and Tagrinsk).

**World Bank Loan #2**

In 1994, the Bank extended $500 million in loans to three other Russian producers for oil field rehabilitation.
* Megionneftegaz. This company is the only oil producer within Russia's Slavneft company, whose president was assassinated in 1994. In 1996, a U.S. company estimated that it held 284.5 million tons of proven oil reserves which could last for 15 years. Megionneftegaz is associated with Ramco (U.K.) and Canadian Fracmaster. In late 1994, it put out bids for drilling equipment, road construction, pipes, etc., using the Bank credit.

* Tomskneft. This is the main oil producer of the Eastern Oil Co. of Russia (Vostochnaya Neftyanaya Kompaniya), which holds at least 290 million tons of proven reserves.

* Yuganskneftegaz. This is a major producer for the Yukos company, which is Russia's third largest oil company. In 1995, it requested bids for $90 million of oil field equipment for rehabilitation. Since 1989, it has been in a joint venture with Canadian Fracmaster for Western Siberia oil field rehabilitation, called Yuganskfrakmaster, the largest JV in Russia. The company exports its production to Western Europe. They were to workover 600 of the company's 3000 idle oil fields. In all, the 3000 fields represent 33% of the company's recoverable oil.


Type of Industry: coal mining
Subsidized Project: coal sector safety net
Location: Russia
Owner of Project: Rusogol (Russia)
World Bank Agency: IBRD
Amount of Financing (estimated total cost): $525 million, in two parts ($500 and $25 million)
Year of Approval: FY1996 (both loans)
Reserves/Production: Russia holds over 100 billion tonnes of coal reserves, enough to last 400 years at current rates of extraction. Russia's reserves are not calculated in this report due to the Bank's stated desire to reduce coal production in Russia and the social, rather than productive, nature of their loans. However, this project inevitably sets the stage for the privatization and later expansion of Russia's coal sector.
World Bank Description: $500 million loan: "The effective implementation of a far-reaching restructuring program in the coal sector, including reduction (and eventual elimination) of subsidies, provision of safety-net support, and sector commercialization, will
be supported." (World Bank Annual Report FY1996) The project will "encourage community support and job programs in areas where coal-related unemployment is expected to be high... implement the initial steps of the restructuring program. (World Bank News). $25 million loan: This project includes "technical assistance and training for commercialization and demonopolization of coal companies, environmental management and mine closure guidelines" (World Bank News, July 4, 1996)

Note: The World Bank has described Russia's coal sector as being in a "disastrous state." It has urged Rosugol to cut production from 260 million tons a year to 180 million tons, and slash its workforce. Rosugol has complained that this reflects a desire to "force Russia out of the European fuel market." (East European Energy Report, January 27, 1995; Russia Express-Perestroika: Executive Briefing, Feb. 27, March 27, 1995.)

TANZANIA

Type of Industry: Natural gas field development
Subsidized Project: Songo Songo Gas Development
Location: Tanzania
Owner of Project: SONGAS (new private power and gas utility)
G-7 TNC Involvement: Ocelot Energy Inc (Canada).and TransCanada PipeLines Ltd. (Sponsors); see also procurement appendix.
World Bank Agency: IDA, IFC
Date of Approval: Negotiations scheduled for May 1997.
Reserves/Production: The Songo Songo gas field holds an estimated 1 trillion cubic feet of reserves.
World Bank Description: "This project represents a major private sector initiative in Tanzania's power and gas sub-sectors. It also presents a unique opportunity to create the first majority privately owned and operated power and gas utility in the country, and to establish a precedent for the private provision of basic infrastructure... The Songo Songo gas reservoir was discovered by Agip in 1974 and relinquished to the Government shortly thereafter. IDA's involvement in the development of the Songo Songo gas reservoir began in 1980 when IDA made a $30 million Credit for a Petroleum Exploration Project (Credit S/27-TA) to assess the petroleum potential of the Songo Songo area. Credits 1199-TA and 1604-TA assisted the Government in the drilling, testing and evaluation of the Songo gas reservoir during the 1980s.... In recent years, the Government has made efforts to promote private sector involvement in Tanzania. This includes international exploration promotion exercises in 1990 and 1992 during which the Government disseminated information about the Songo Songo gas-to- electricity project.... In February 1994, the Government selected the Ocelot Energy Inc. and TransCanada PipeLines Ltd. (OTC) consortium for project negotiations... The project builds on the ongoing commercialization and sector reform program under the Power VI Project (Credit 2489-TA)." (World Bank Project Information Document, Project ID TZPA2797, July 1996)

Note: See Songo Songo entry in power plant section for more details.

THAILAND

Type of Industry: petroleum refining
Subsidized Project: Star Petroleum refinery
Location: Rayong Province, Thailand
Owner of Project: Star Petroleum Refining Company Ltd. ( Owned by Chevron, Texaco - combined 64%, and Petroleum Authority of Thailand, 36%)
G-7 TNC Involvement: Chevron, Texaco (joint venture partners); JGC and Nissho Iwai (Japan, equipment and services)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $25 million loan, $75 million syndications of $100 million.
Year of Approval: FY1994
Reserves/Production: This is a 130,000 barrel per day refinery. Over the course of 20 years, it would handle 949 million barrels of oil.
World Bank Description: "IFC approved additional financing for Star Petroleum Refining Co. Ltd., a joint venture between Caltex [Chevron and Texaco] and the Petroleum Authority of Thailand that is building a 130,000 barrels-per-day oil refinery. Star Petroleum Refining retained IFC to help structure and arrange its financing requirements." (IFC Annual Report, FY1994)
Notes: In June 1994, Japan's Export-Import Bank provided a $334 million credit for the purchase of goods and services from Japan's JGC and Nissho Iwai corporations at the Star Petroleum refinery. The plant, Thailand's fifth refinery, began operations in mid-1996 and officially opened in early 1997. It produces LPG, unleaded gasoline, jet fuel, diesel and fuel oil.
In October 1996, shortly after the plant started operations, a transfer of oil en route to Star Petroleum leaked an estimated 1,000 barrels of crude oil into the sea off the southeastern Thai coast. The government blamed the spill on "workers' carelessness" during the ship-to-barge transfer. (COMLINE Daily News Tokyo Financial Wire, June 10, 1994; Reuters, Oct. 18, 1993, Oct. 31, 1996; Bangkok Post, Feb. 25 and March 3, 1997; Deutsche Presse Agentur, Oct. 31, 1996)

Type of Industry: natural gas pipelines
Subsidized Project: Thai natural gas distribution
Location: Thailand
Owner of Project: Petroleum Authority of Thailand
G-7 TNC Involvement: Unocal (U.S., owns 80% and operates Erawan gas field feeding into pipeline); Mitsui (Japan, owns 20% of Erawan field); Total (France) operates gas field tied to pipeline.
World Bank Agency: IBRD
Years of Approval: FY1993 and FY1995
Reserves/Production: "Unocal Thailand Ltd currently produces about 800 million cubic feet of gas and 31,000 barrels of condensate a day from six offshore fields in the gulf." (Reuters, Dec. 22, 1992) At the end of 1995, Thailand's Department of Mineral Resources estimated that
the country's Gulf of Thailand gas fields held total proved gas reserves of 6.3 trillion cubic feet. (International Gas Report, May 24, 1996)

**World Bank Description**: "The country's ability to increase the supply of natural gas will be enhanced through expansion of the gas-transmission system and strengthening of the Petroleum Authority of Thailand." (World Bank Annual Report FY1993) : "An offshore and onshore gas pipeline, together with related facilities, will be constructed, thereby increasing the utilization of domestic natural gas resources." (World Bank Annual Report FY1995)

**Notes**: The Bank financed the construction of a new 300-kilometer gas pipeline from a processing platform in the Unocal-operated offshore Erawan gas field, which is also tied into production from other Gulf of Thailand gas fields, including Total Petroleum's Bongkot field. The pipeline gas is to be used by several power stations in Thailand. The pipeline was to be built by a 50-50 joint venture between Ipco (Singapore) and Gregory & Cook (U.S.). (Reuter, Sept. 22, 1992; Feb. 14, 1994; Xinhua, June 12, 1993; Business Times, October 27, 1994; Petroleum Times, November 14, 1994; Oil & Gas Journal, February 7, 1994; International Gas Report, August 5, 1994; Platt's Oilgram News, September 2, 1994)

**TURKEY**

(See Azerbaijan for more details)

**Type of Industry**: oil pipeline for export

**Subsidized Project**: Baku, Azerbaijan to Ceyhan, Turkey oil pipeline

**Location**: Turkey

**G-7 TNC Involvement**: Eni (Italy), Shell (UK/Neth.), Chevron and Unocal (US) reached agreement with Turkey to set up the pipeline, with a joint venture possibly forming in 1997. (Reuters, May 15, 1997)

**World Bank Agency**: IBRD

**Amount of Financing** (estimated total cost): $5 million

**Date of Approval**: Sept. 19, 1996 (FY1997)

**Reserves/Production**: See Azerbaijan.

**World Bank Description**: "The IBRD loan of $5 million [is] for a technical assistance project in support of the Baku-Ceyhan oil export pipeline. The project will help identify and evaluate viable and environmentally sustainable pipeline route options for the export of up to 45 million metric tons of crude oil a year from Baku to Turkey. (World Bank News, Sept. 19, 1996)

**UKRAINE**

**Type of Industry**: coal mining sector reform

**Location**: Ukraine

**World Bank Agency**: IBRD

**Amount of Financing** (estimated total cost): $15.8 million of $28.5 million. The Bank is considering an additional $100 million loan for coal mining restructuring.

**Year of Approval**: FY1996

**Reserves/Production**: The mines financed by the initial loan are virtually exhausted so no
greenhouse gas emissions have been calculated. The Bank does plan to invest in 20 profitable and productive mines, for which emission calculations should be made, but the particular mines in the program and their reserves have not yet been determined.

**World Bank Description:** "The social and environmental consequences that arise from the government's decision to close uneconomical coal mines, as part of the restructuring program for the sector, will be mitigated." (World Bank Annual Report FY1996)

**Notes:** The initial Bank loan is for mitigation at more than 20 mines that are closing, mainly due to exhaustion of reserves. This loan is part of a long-term reform program which will identify the most profitable mines and make them attractive to foreign investors. The Bank's proposed 100 million loan would encourage modernization at 20 of Ukraine's most profitable mines. (East European Energy Report, May 24, 1996, Jan. 24, 1997; Interfax news agency, Feb. 1, 1997)

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**VENEZUELA**

**Type of Industry:** oil field development  
**Subsidized Project:** Colon, La Quiamare oil production  
**Location:** Venezuela  
**Owner of Project:** Tecpetrol (Argentina) de Venezuela S.A.  
**G-7 TNC Involvement:** Nomenco (U.S.), Corex (Fr), Wascana (Canada)  
**World Bank Agency:** IFC  
**Amount of Financing** (estimated total cost): $15 million loan, $1.1 million equity, $15 million quasi-equity, and $30 million syndications of $98.4 million  
**Year of Approval:** FY1996  
**Reserves/Production:** The Colon oil field is expected to produce 80,000 barrels a day of light crude by the turn of the century.

**World Bank Description:** "Rehabilitate and continue to develop the Colon and la Quiamare oil fields." (IFC Annual Report FY1996)

**Notes:** Colon is a marginal field on Indian territory. Field operators include PDVSA (Ven. State), Tecpetrol (Arg.), Nomenco (U.S.), Corex (Fr.) and Wascana (Can.). In May 1996, Tecpetrol began operating the Colon field. In 1996, Platt's Oilgram News reported that a "delegation from the Bari Indian tribe [has complained] this week to complain to the government that the opening up of Venezuela's oil industry is squeezing them out of their territory. The 1,500-strong tribe is complaining that Argentinean company Tecpetrol is trying to operate in their land on the Colombian border. The Indians said the size of their territory had shrunk considerably in the past. Chief Jose Aragdou said Tecpetrol was also trying to discredit them by linking them with the Colombian guerrillas.... Tecpetrol's president in Venezuela Ricardo Perez said, 'There has been a misunderstanding that needs to be resolved by the government...we have nothing against the Indians and don't mean to harm them, but we are an oil company and we want the oil.' He denied that there had been any attempt to discredit the Indians and said he was confident an agreement could be reached. The 3,200-km area is currently producing 6,000 b/d, he said. Meanwhile, Marielba Barboza from human rights group Asocliva, said, 'The opening up of the oil industry is harming Indians across the country.'" La Quiamare oil field's operators include Ampolex (Australia), Astra, Tecpetrol and Sipetrol (Arg.), in cooperation with PDVSA of Venezuela. It is
located in the Eastern Venezuelan Basin. The development of the Colon and la Quiamare fields is part of PDVSA's plan to boost production from 2.6 to 4 million barrels a day. 


**Type of Industry:** hydrogen plant for oil refinery

**Subsidized Project:** Compania de Hidrogenos de Paraguana (joint venture between Foster Wheeler, U.S., and PDVSA, Ven.)

**Location:** Venezuela

**Owner of Project:** CHP

**G-7 TNC Involvement:** Foster Wheeler (U.S., partner); BOC Holdings (U.K., investor)

**World Bank Agency:** MIGA

**Amount of Financing** (estimated total cost): $30 million guarantee

**Year of Approval:** FY1996

**Reserves/Production:** not available.

**World Bank Description:** "MIGA issued a $30 million guarantee to BOC Holdings of the UK for its equity investment in the construction and operation of a hydrogen plant... CHP, the project enterprise, is a joint venture with a U.S. industrial engineering services group and is located on the Paraguana Peninsula. Lagoven, a subsidiary of the state-owned Petroleos de Venezuela, will provide the natural gas, boiler feedwater, and cooling water for the plant, along with land use rights, permit support, and site utilities. Lagoven's Amuay oil refinery will purchase the hydrogen and steam the plant produces, making it easier for Lagoven to meet the environmental standards of its major export market, the U.S., and enabling the firm to process heaviers, higher-sulfur crude oil, resulting in improved profitability." (MIGA Annual Report FY1996)

**Note:** The plant is scheduled to open in 1997.  (Octane Week July 31, 1995)

**ZAMBIA**

**Type of Industry:** Oil distribution

**Subsidized Project:** Tazama pipeline

**Location:** Zambia

**World Bank Agency:** IDA

**Amount of Financing** (estimated total cost): $30 million of $48 million, with $15 million cofinancing from European Investment Bank.

**Year of Approval:** FY1994

**World Bank Description:** "The Tazama pipeline from Dar es Salaam (Tanzania) to Ndola (Zambia) will be rehabilitated, and the oil-products depot at Ndola modernized. Institutional strengthening and technical assistance, designed to support the petroleum industry's efforts to become more competitive and cost effective, are included." (World Bank Annual Report FY1994)

**Note:** The Tazama pipeline is 1710 kilometers long, of which 1500 kilometers are to be renovated in this project.  (Africa Energy & Mining, April 13, 1994, Jan. 11, 1995)


Inventory of greenhouse gas-emitting power plants financed by World Bank Group, mid-1992 to present

ARMENIA

Type of Industry: Thermal and hydro power plant construction rehabilitation
Subsidized Project: Armenia power rehabilitation
Location: Armenia
G-7 TNC Involvement: Hill International (U.S.) is construction manager of the Hrazdan power plant.
World Bank Agency: IDA
Amount of Financing (estimated total cost): $13.7 million of $14.5 million
Year of Approval: FY1995 (December 8, 1994)
World Bank Description: "The deterioration of selected power-generation units will be arrested and reversed, and electricity-dispatch communications and distribution systems will be strengthened and maintained." (World Bank Annual Report FY1995) "The project consists of (a) maintenance of two existing 200 MW thermal units at the Hrazdan power plant, one 150 MW thermal unit at Yerevan power plant, one 100 MW and one 44 MW plant on the Sevan-Hrazdan hydro-power cascade, and one 170 MW plant on the Vorotan hydro-power cascade; (b) strengthening and maintenance of the electricity dispatch communications and distribution system; and (c) technical assistance for project implementation and upgrading the electricity dispatch system." (AID/WATCH)
Notes: According to Hill International, the Hrazdan power project involves the construction of a 300-megawatt gas-fired power plant. (PR Newswire, Feb. 17, 1995)

CHINA

Country Profile

Overview

China is adding more coal-fired power capacity than any other country in the world. The World Bank is a major financier of this rush to burn coal. Since 1992, the World Bank has issued $1.37 billion in loans and guarantees for the installation of new coal and diesel power plants totalling 4,395-megawatts at five locations. The Bank is considering an additional $800 million in loans to catalyze investments in two separate massive power projects which, when fully completed, will generate a combined 8,800 MW of coal-fired power for Beijing and Shanghai.

"China is inefficiently using huge amounts of coal," said She Jinming, China's deputy director of the state planning commission last December. (South China Morning Post, December 8, 1996)

China and India now account for 14 per cent of global greenhouse emissions. According to the Paris-based International Energy Agency, they will account for a quarter of carbon dioxide emissions in 15 years. (South China Morning Post, September 22, 1995)

"China must add 100,000 megawatts of power-generating capacity by 2000 and invest
approximately $100 billion to finance those projects, according to one expert. "This is the biggest power market in the world," said Lorenzo Lamadrid, China managing director of the Houston-based Wing Group, Ltd., a company involved in a variety of power-plant projects." (Washington Post, Feb. 21, 1995)

Most of the increased capacity is expected to come from coal, which accounted for 83% of all electricity generated in China in 1994. (South China Morning Post, October 14, 1994)

G-7 transnational corporations, particularly those based in the U.S. and Japan, have been major beneficiaries of the World Bank's financial backing of coal-fired power projects in China. U.S. corporate owners or equipment suppliers for the plants receiving World Bank backing include Enron, Westinghouse, McDermott International, Raytheon and Coastal Corp. Japan-based corporate equipment suppliers include Mitsui, Toshiba and Ishikawajima-Harima Heavy Industries.

Approved financing includes:

* Tuoketuo, Inner Mongolia: In May 1997, the IBRD approved a $400 million loan toward the development of a huge new coal mine-mouth power plant in Tuoketuo county in China's Inner Mongolia Autonomous Region. The first phase is a $1.3 billion project. The first two 600 megawatt burners may become operational in the year 2001, with eventual capacity expanding to 3600 MW (six units). This would make the power complex the largest in Asia. Most of the power from this plant would flow to Beijing. China opened international bidding for equipment supply contracts this year.


* Henan Province: In February 1996, the IBRD approved a $440 million loan toward the construction of a new 1,200-megawatt coal-fired power plant called the Henan (Qinbei) Thermal Power Plant, and related transmission lines. The project includes two 600-megawatt units. Henan is one of China's largest coal-producing provinces. (Xinhua News Agency, Jan. 4, 1996; Jan. 29, 1996)

* Jiangsu Province (Yangzhou No. 2 Power Project): In FY1994, the IBRD approved a $350 million loan toward a new 1,200 megawatt coal-fired power plant and related transmission lines in Yangzhou City and Jiangsu Province. The primary beneficiaries of this loan were two U.S. corporations: McDermott International and Westinghouse, which are supplying the bulk of the plant's equipment. According to the Journal of Commerce, the Yangzhou project "is the first to be undertaken wholly by U.S. companies in all construction

* Jiangsu Province (Wuxi Huada Gas Turbine Electric Power Co.): In FY1997, MIGA extended $13.5 million in risk insurance to Coastal Corp. (U.S.) for its interest in a joint venture that built a 40-megawatt diesel/natural gas combined cycle power plant in Jiangsu Province. This plant began producing power in November 1995.

* Zhejiang Province: In FY1995, the IBRD approved a $400 million loan and a $150 million guarantee toward a massive coal-fired power project in Zhejiang Province. The project includes the addition of three 600-megawatt coal-fired power units at the Beilungang Power Station. Equipment is to be supplied by three Japan-based corporations, Mitsui, Toshiba and Ishikawajima-Harima Heavy Industries. This plant had previously received a World Bank loan in the 1980s, which financed the import of a boiler which exploded in 1992. The tragedy killed 23 workers.

Pending loans include:

* Shanghai: The IBRD is considering investing $400 million toward a $2.144 billion development at the Waigaoqiao Power Plant, in the Pudong industrial zone, 18 kilometers from Shanghai’s city center. Four 300 MW units are expected to open in 1997. The Bank is considering financing the next phase: two “supercritical units” of 900 to 1000 MW each. The third and final phase would add another 1,800 to 2,000 MW of capacity.

**Inventory and further description of China power projects**

**Type of Industry**: 150-megawatt diesel power plant  
**Subsidized Project**: Hainan/Enron  
**Location**: Hainan Island, China  
**Owner of Project**: Hainan Meinan Power Company CJV  
**G-7 TNC Involvement**: Enron Corp. (U.S.) (Owner)  
**World Bank Agency**: MIGA  
**Amount of Financing** (estimated total cost): $16.7 million guarantee  
**Year of Approval**: FY1996  
**World Bank Description**: "MIGA issued a $16.7 million to Atlantic Commercial Finance, B.V., of the Netherlands, a wholly owned subsidiary of Enron Corporation of the United States, for its equity investment in a 150-megawatt combined cycle diesel power plant on the east coast of Hainan Island, China. MIGA’s guarantee covers the risks of currency transfer, expropriation, and war and civil disturbance. The project enterprise, Hainan Meinan Power Company CJV (HMPC), is an intermediate load plant, designed specifically to overcome some of the province’s power problems... The project will represent about 13% of Hainan’s current installed power capacity and contribute significantly to the growth prospects of the local economy.... Measures have been taken to ensure that thermal discharges and emissions of sulphur dioxide and nitrogen oxide conform to relevant World Bank guidelines. The plant also has a comprehensive oil spill contingency plan and has put in place noise abatement measures.” (MIGA Annual Report FY1996)

**Type of Industry**: 1,200-megawatt coal-fired power plant, transmission lines
**Subsidized Project:** Henan (Qinbei) Thermal Power Plant  
**Location:** Henan Province, China  
**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $440 million of $1.161 billion. Loan is guaranteed by the government of Henan.  
**Year of Approval:** FY1996 (February 27, 1996)  
**World Bank Description:** "Acute power shortages will be reduced and integrated development of the power system in Henan province will be fostered through a program of investments, power-sector reforms, and institutional development." AID/WATCH: "The project components will include the construction of new coal-fired thermal power units and an online performance monitoring system to increase plant performance, the erection of transmission lines to connect the power plant to the existing power transmission network; a technical assistance package to support the implementation of a power sector reform action plan; an electricity conservation component; and training to build capabilities in power system operation and management practices."

**Sources:** WBAR 1996, AID/WATCH, BBC, March 19, 1996

**Type of Industry:** 1,200-megawatt coal-fired power plant  
**Subsidized Project:** Yangzhou Power Plant  
**Location:** Jiangsu province, China  
**G-7 TNC Involvement:** Westinghouse, McDermott/Babcock-Wilcox (U.S.) (Equipment supply) Raytheon/Ebasco (U.S.) (Engineering Services)  
**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $350 million of $1.081 billion, with $120 million cofinancing by commercial banks and Japanese insurers.  
**Year of Approval:** FY1994  
**World Bank Description:** "Through the construction of a coal-fired thermal power plant, the erection of new transmission lines, and the reinforcement of the existing power-transmission network, the critically needed power-generation capability of Jiangsu province and the East China power grid as a whole will be greatly increased. Technical assistance and training are included." (World Bank Annual Report FY1994)  
**Notes:** Babcock & Wilcox, a unit of McDermott, received a $155 million contract in December 1994 to supply two 600-megawatt coal-fired boilers and auxiliary equipment for the Yangzhou No. 2 power project. The equipment was to be produced at the company's plants in North America and China. Babcock & Wilcox supplied China with more than 10,000-megawatts of boiler capacity from 1986 to 1994. At the same time, Westinghouse received a $150 million contract to supply two 600 megawatt steam turbine-generators, four boiler feed pump turbines and other equipment to the Yangzhou power plant in Jiangsu Province, with financing provided by the World Bank. The equipment is to be produced in the U.S. and Canada. The plant is due to start operations in 1998. According to the Journal of Commerce, the Yangzhou project "is the first to be undertaken wholly by U.S. companies in all construction processes." (Reuters, December 8, 1994; Reuters, December 20, 1994; Journal of Commerce, December 22, 1994; PR Newswire, June 1, 1994)

**Type of Industry:** 40 MW diesel power plant  
**Subsidized Project:** Wuxi Huada Gas Turbine Electric Power Co.  
**Location:** Jiangsu Province, China  
**G-7 TNC Involvement:** Coastal Corp. (U.S.) via Cayman Islands subsidiary, Coastal Wuxi
World Bank Agency: MIGA

Amount of Financing (estimated total cost): $13.5 million in risk insurance

Year of Approval: FY1997

World Bank Description: "Coastal Wuxi Power Ltd. of the Cayman Islands, a wholly-owned subsidiary of Coastal Corporation of the United States, has invested in a joint venture with two Chinese state-owned companies to develop, construct, and operate a 40-megawatt diesel power gas turbine in the Jiangsu Province of China. Two MIGA insurance contracts, totaling US$13.5 million, cover Coastal Wuxi's equity and loan investments against the risks of transfer restriction, expropriation, and war and civil disturbance. The project enterprise, Wuxi Huada Gas Turbine Electric Power Company, is created to alleviate shortage of peak-hour electrical supply in Wuxi City. Coastal will provide technical and managerial expertise to the project, and will employ and train local staff in power plant operation and maintenance." (MIGA News, Spring 1997)

Notes: The Wuxi power plant began operation in November 1995. Coastal Corp. said this plant might expand to more than double its current 40-megawatt capacity. (Business Wire, Dec. 12, 1995) (PR Newswire, March 14, 1996)

Type of Industry: Power generation expansion (incl. three 600 MW coal-fired power plants)

Subsidized Project: Zhejiang (Beilungang) Power Development Project

Location: Zhejiang province, China


World Bank Agency: IBRD

Amount of Financing (estimated total cost): $400 million of $1.789.3 billion

Year of Approval: 1995

World Bank Description: "Rapidly expanding power demand in Zhejiang province will be met through large generation additions and associated transmission and power-sector reforms will be promoted." (World Bank Annual Report FY1995) "The project will include power sector reform, investment and institutional development components as follows: 1) a time-bound implementation plan for power sector reform, including commercialization and incorporation of the power company; 2) Beilungang Phase 2 consisting of the addition of three 600 MW coal-fired units at the Beilungang Power Station;" ... transmission lines, distribution, management and other technical assistance." (AID/WATCH)

Notes: In 1988, the World Bank extended a $165 million loan for the first phase of the Beilungang power plant. On March 10, 1993, shortly after the plant opened, an imported boiler exploded, killing 23 people and injuring 24. According to the Bank, built-up coal slag caused the explosion. It is not clear which foreign company sold the boiler unit, but in 1988, the Xinhua News Service reported that bids were cast by "eight corporations from Britain, Sweden, France and the United States." The second phase of the project will burn about 5.7 million tons of coal annually, and force 645 households to relocate. (UPI, March 3, 1995; Journal of Commerce, June 21, 1988; Japan Economic Newswire, April 28, 1995; Xinhua, April 27, 1988)

Type of Industry: China boilers

World Bank Agency: GEF
**Amount of Financing** (estimated total cost): $32.8 million grant Date of Approval: December 23, 1996 (FY1997)

**World Bank Description:** "A $32.8 million grant from the Global Environment Facility was approved on December 23 to install new combustion systems and equipment needed to upgrade heating and power boilers in China; introduce modern manufacturing techniques and new boiler designs; and support technical assistance and project management." (World Bank News, Jan. 8, 1997)

**Type of Industry:** 3,600-megawatt coal-fired power plant

**Subsidized Project:** Tuoketuo Power Plant

**Location:** Tuoketuo, Inner Mongolia Region, China

**Owner of Project:** People's Republic of China (borrower); Tuoketuo Electric Power Generating Co.; shareholders in Tuoketuo: North China Electric Power Group Co., Beijing Energy Management Co. (to be confirmed)

**G-7 TNC Involvement:** Foreign bids are currently being sought.

**World Bank Agency:** IBRD

**Amount of Financing** (estimated total cost): $400 million of $1.3 billion Date of Approval: none - project under development

**World Bank Description:** "The proposed project is intended to: (a) increase electricity supply and electricity trade in north China through creation of an independent power company to develop a mine-mouth power plant in Inner Mongolia Autonomous Region that will supply the Beijing-Tianjin-Tangshan (Jing-Jin-Tang) grid through long term contractual arrangements; (b) improve the efficiency of energy supply and use in the region by: (i) introducing modern technologies and implementing effective operations and maintenance practices and procedures in power generation, and (ii) reducing losses in the transmission and distribution systems of Beijing; (c) advance the power sector reform process in China by: (i) promoting the development of electricity supplies in North China through market oriented commercial arrangements; and (ii) encouraging non utility and private sector investment in existing and new power sector enterprises; (d) diversify financing sources and improve the access of power entities to international financial markets; and (e) increase economic activity and also improve soil conservation and desertification control in Tuoketuo county.... The major investment components will be in (a) power station construction, (b) loss reduction measures on the Beijing transmission and distribution systems; and (c) a soil conservation and desertification control component to be implemented within the same time frame as the Tuoketuo project. A coal-burning thermal power station will be built in Tuoketuo county in the Inner Mongolia Autonomous Region, about 70 km from the capital city Hohhot.... The initial capacity of the station is to be 1200 MW (2x600 MW) but plans are for an eventual capacity of 3600 MW (6x600 MW). The schedule is for the first unit to begin commercial operation in July of 2001 and the second in September of the following year. The station will be the first Bank-supported mine-mouth power station in China.... The first two units will consume about 4 million tons of coal per year. All power generated by the plant... is intended primarily for supply to Beijing.... The commercial operation of the first generating unit is expected in July 2001 and the second unit in September 2002." (World Bank Project Information Document, Project ID CNPA3650, undated, processed by World Bank Public Information Center in November 1996)

**Notes:** In April and May 1997, China opened international bidding for power plant and transmission equipment for the Tuoketuo Thermal Power Project. The government of the Inner Mongolia Autonomous Region is seeking foreign ownership for the Tuoketuo power
plant. According to UPI, when completed Tuoketuo would be "Asia's biggest power plant complex." (UPI, August 20, 1996; Asia Pulse, April 29, May 2 and May 12, 1997)

Pending power project in China

**Type of Industry:** 1,800 to 2,000-megawatt coal fired power plant  
**Subsidized Project:** Waigaoqiao Power Station (second phase)  
**Location:** near Shanghai, China  
**Owner of Project:** People's Republic of China; Shanghai Municipal Electric Power Co.  
**G-7 TNC Involvement:** Likely from Japan, U.S., or Germany. Foreign procurement consultants currently being sought.  
**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $400 million of $2.144 billion. Cofinancing from Japan Export-Import Bank (up to $50 million loan) is expected. Date of Approval: none - project under development  
**World Bank Description:** "The primary objectives of the project are to: (a) increase electricity supply to reduce the acute power shortages in Shanghai through development of two very large coal-fired thermal units; (b) develop a program to apply for the first time in China the 'bubble concept' for cost effective air quality management within Shanghai Municipality; (c) support the ongoing power sector reform by restructuring SMEPC in line with the power sector reform strategy; encouraging private sector involvement through listing of the generation company; and rationalizing the tariff structure as well as adjusting the tariff level to accommodate the stricter sulfur dioxide emission standards; and (d) promote an innovative and diversified financing model for a large infrastructure project and improve the access of power entities to international financial markets.... The major investment components will be in: (a) the power station and associated transmission line construction; (b) application of the most suitable desulfurization technologies in the existing priority (more polluting) power plants; and (c) technical assistance to support reform and institutional strengthening.... The Waigaoqiao Power Plant is located in the Pudong New Area of Shanghai at the mouth of the Yangtze river, which is about 18 km away from the city center. Following the completion of the first phase of the Waigaoqiao power plant (4X300MW) in 1997, SMEPC plans to initiate the second phase of development of the site through the construction of two coal-fired supercritical units of 900-1000 MW each, followed by a third and final phase of installation of another 1,800-2,000 MW. The station will be the first two supercritical coal-fired units of 900-1000 MW in China. This very large thermal unit is a new technology in China. There are only 27 coal-fired thermal power plants of this size currently under operation and another 11 under construction, all in the US, Japan, and Germany.... SMPG is currently the size of a typical medium sized utility in the US and by the year 2000, it will be the size of a typical large utility in the US. The project requires: (a) acquisition of about 1,272 mu of land, (b) demolition of about 41,000 square meters of floor space; (c) relocation of 273 households and 17 town or village enterprises. Overall, about 1,298 people will be affected by the project." (World Bank Project Information Document, Project ID CNPE44485, undated, processed by World Bank Public Information Center in March 1997)  
**Notes:** In May 1997, the SMEPC encouraged international companies to apply for procurement consulting services in anticipation of receiving an IBRD loan for the second phase of the Waigaoqiao Thermal Power Plant Project. The first two units (Phase One) of the Waigaoqiao plant opened by November 1995. (Xinhua, Nov. 19, 1995; Asia Pulse, May
COTE D'IVOIRE

Type of Industry: Natural gas-fired power plant expansion (100 megawatts)
Subsidized Project: Vridi II power plant
Location: Cote d'Ivoire
Owner of Project: Compagnie Ivoirienne de Production d'Electricite (CIPREL)
G-7 TNC Involvement: Ownership: Electricite de France/Saur (France, 75%); Plant construction: Alsthom (France); Gas field operator: Apache (U.S.); Gas refiner: United Meridian Corp. (U.S.)
World Bank Agencies: IDA, IFC
Amount of Financing (estimated total cost): IDA provided $79.7 million credit; IFC provided $16.9 million loan, $0.9 million equity
Year of Approval: FY1995 (Both IDA and IFC)
World Bank Description: The IDA is providing finance "in support of power-sector reform, power-generation expansion through a private power producer and power-system reinforcement works." (World Bank Annual Report FY1995). The IFC is providing finance to "construct a 100 megawatt gas-fired power plant under a 19-year concession agreement with the government." (IFC Annual Report FY1995)
Notes: Vridi II is Africa's first private power plant. The new facility, which opened in 1995, uses gas from the Apache-operated natural gas field in Cote d'Ivoire. Energy and Mines Minister, Lamine Fadika, said the new plant would help turn his country into an energy exporter. "All the countries in the sub-region -- Ghana, Togo, Benin, Burkina Faso, Mali, even Guinea, will be supplied by Ivory Coast," he predicted. Two of the turbines are dedicated for export to Ghana and Togo. The first state (3 x 33-megawatt turbines) opened in April 1995, with much of the financing coming from Electricite de France, part-owner of CIPREL. The second stage (100-megawatts), funded by the World Bank, was to open by mid-1996. If Cote d'Ivoire becomes the target of additional mining projects, there may be a third phase of plant expansion. (Financial Times, Oct. 16, 1996; Reuter European Business Report, April 26, 27 and 30, 1995)

CROATIA

Type of Industry: Gas-fired Power Plant rehab and expansion
Location: Zagreb, Croatia
Owner of Project: Croatian National Electricity (Hrvatska Elektroprivreda - HEP)
G-7 TNC Involvement: Possibly Enron (U.S.), which is negotiating to build a 180-megawatt gas-fired power plant in Zagreb. (Financial Times, May 1, 1997)
World Bank Agency: IFC
Amount of Financing (estimated total cost): Expected to be $80 million of $100 million.
Date of Approval: Had projected Board date of January 1996, but no approval was announced.
World Bank Description: "The proposed project includes: (i) reconstruction and extension of existing aging power and heat generation units (2 x 32 MW) at the Zagreb East Power Station into a gas-fired combined-cycle cogeneration plant with a total capacity of 152 MW; (ii) reconstruction and expansion of the 110 kV switchyard; (iii) connection and integration of the new combined-cycle cogeneration plant to the existing power and heat supply system; (iv) consultancy services for design and engineering; and (v) technical assistance for

CZECH REPUBLIC

**Type of Industry**: coal-fired power plant expansion (332-megawatts)

**Subsidized Project**: Kladno power plant

**Location**: Czech Republic

**Owner of Project**: ECK Generating

**G-7 TNC Involvement**: Ownership: NRG Energy and Northern States Power (U.S.)

**World Bank Agency**: IFC

**Amount of Financing** (estimated total cost): $125 million

**Date of Approval**: July 1996 (FY1997)

**World Bank Description**: "The International Finance Corporation (IFC) has approved an investment of US$125 million for the environmental upgrading and expansion of Energy Center Kladno Generating (ECK Generating), an electric power plant in Kladno, near Prague, the Czech capital. The expansion will increase the plant's output from 28 megawatts of electricity to 332 megawatts (sic) and will provide clean energy at competitive rates, IFC said. This is IFC's first investment in the power sector in Eastern Europe and one of the first new private power projects in the region. IFC's financing consists of a loan on its own account of US$45 million, a syndicated loan of US$65 million and convertible subordinated debt of US$15 million. The total cost of the project is estimated at US$375 million, with Czech banks expected to provide most of the financing balance." (World Bank News, 7/25/96)

**Notes**: ECK Generating is consortium of Independent Power, a subsidiary of ACT (U.S.), NRG Energy, part of Northern States Power (U.S.), and Stredoceska Energeticka, a Czech electricity distribution company. The IFC-financed expansion involves the addition of two coal-fired and one gas-fired units at the Energy Centrum Kladno facility in Kladno, Czech Republic. Capacity will increase from 28-megawatts to 365-megawatts. The biggest local power consumer (45 megawatts) is the Poldi steel company. (Reuter, July 19, 1996; Financial Times, July 23, 1996)

DOMINICAN REPUBLIC

**Type of Industry**: 185 megawatt barge-mounted oil-fired power plant

**Subsidized Project**: Puerto Plata power project

**Location**: Dominican Republic

**Owner of Project**: Smith-Enron Cogeneration Limited Partnership

**G-7 TNC Involvement**: Owners: Smith Cogeneration Group; Enron (U.S.); Investor: Thermo Ecotek (U.S.)

**World Bank Agency**: IFC

**Amount of Financing** (estimated total cost): $1.5 risk management of $1.5 million

**Year of Approval**: FY1996

**World Bank Description**: IFC financing will "support a 185 megawatt combined-cycle power facility mounted on a barge at Puerto Plata through a currency swap." (IFC Annual Report FY1996)

**Notes**: This barge-mounted power plant started up in 1995. "The power project is expected to be immediately additive to earnings, cash flow and earnings per share in 1996," said
Rodney Gray, chairman of Enron's 59% subsidiary, Enron Global Power & Pipelines, which acquired the parent company's 50% share in the barge power plant last year. The Bank is currently considering extending a further $75 million to "implement a legal and regulatory framework for the energy subsector [in the Dominican Republic] and help expand the installed capacity through the private sector." This would include establishing a new private company to operate a 250 megawatt power plant. (PR Newswire, July 27, 1995, June 19, 1996; Journal of Commerce, April 18, 1997; World Bank Project Information Document, PID D0PA07011, 1994.)

ETHIOPIA

**Type of Industry:** power generation expansion (type unclear)

**Subsidized Project:** Power Distribution

**Location:** Ethiopia

**World Bank Agency:** IDA

**Amount of Financing** (estimated total cost): $200 million

**Date of Approval:** "Appraisal mission scheduled for December 1996."

**Notes:** AID/WATCH: "Project will help supply energy, both for domestic use and export, by expanding both T&D and generation capacity."

**Sources:** IIEC database summary by AID/WATCH

GABON

**Type of Industry:** electricity sector privatization (type of energy unclear)

**Location:** Gabon

**World Bank Agency:** IFC

**Amount of Financing** (estimated total cost): none

**Year of Approval:** 1996

**Notes:** "Advised the government on the design, preparation, negotiation and implementation of a privatization strategy for the country's water and electricity services." (IFC Annual Report, FY1996)

GEORGIA

**Type of Industry:** Thermal and hydro power rehabilitation

**Subsidized Project:** Power Rehabilitation

**Location:** Georgia

**Amount of Financing** (estimated total cost): $30 million

**Date of Approval:** "Project preparation is in progress" as of 1996.

**Notes:** AID/WATCH: "Will assist in the rehabilitation of thermal & hydro power plants as well as the associated transmission and distribution networks."

**Sources:** AID/WATCH summary of IIEC database.

GHANA

**Type of Industry:** new 300 MW oil and gas combined-cycle power plant, transmission lines

**Subsidized Project:** Takoradi Thermal Power Project

**Location:** Aboadze village, Ghana
GUATEMALA

Type of Industry: 100-megawatt diesel-fired power plant
Subsidized Project: power project
Location: Puerto Quetzal, Guatemala
Owner of Project: Puerto Quetzal Power Corp. (Created by Enron)
G-7 TNC Involvement: Part-owner and operator: Enron (U.S.), 50% investor: King Ranch Inc. (U.S.), Barge construction: McDermott (U.S.)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $0.7 million risk management facility.
Year of Approval: FY1996
World Bank Description: The IFC financing will "improve the capacity of a 100 megawatt electricity generation plant through an interest rate swap." (IFC Annual Report FY1996)
Notes: The two barge-mounted burners began operation in 1993. It was the first privately-financed power project in Central America. The IFC extended a $20 million loan to this project prior to 1993. Enron has partially funded a grade school in Puerto Quetzal. (Journal of Commerce, May 20, 1993; Arkansas Democrat-Gazette, March 16, 1997)

HONDURAS

Type of Industry: 60-megawatt diesel power plant
Subsidized Project: Puerto Cortes
Location: Puerto Cortes, Honduras
Owner of Project: Electricidad de Cortes S.A. de R.L. de C.V. (ELCOSA). Investors in ELCOSA include: Wartsilla Diesel Development Corp. (10%), Honduran Electric

G-7 TNC Involvement: Wartsila, Illinova, Scudder (U.S.);
World Bank Agency: IFC, MIGA
Amount of Financing: IFC: $10.5 million loan, $2.6 million equity, $3.5 million quasi-equity, $36.6 million syndications; MIGA: $50 million in guarantees.
Year of Approval: IFC and MIGA: FY1995

World Bank Description: IFC financing will help "Build, own and operate a diesel power plant to supply electricity to the government-owned electric utility and industrial customers." (IFC Annual Report FY1995) "MIGA issued its first guarantees in Honduras (totaling US$27 million in maximum liability) to Wartsila Diesel Development Corporation, Inc., for a 60MW diesel electric power plant near the Atlantic port of Puerto Cortes.... The ELCOSA project will have a very significant developmental impact on the Honduran power system. The project enterprise will upgrade the existing local power network and provide an urgently-needed increase in capacity to relieve chronic power shortage problems in Honduras, where most of the country receives only 12-16 hours of electricity per day. Ninety percent of the electrical output is to be sold to Empresa Nacional de Energia Electrica, a local government-owned utility, with the remaining 10 percent sold to HECO companies." (MIGA News, Fall 1994)

Notes: This is the first privately-owned power plant in Honduras linked to the national grid. (Journal of Commerce, Apr. 28, 1995)

HUNGARY

Type of Industry: new 137-megawatt gas-fired power plant
Subsidized Project: Kelenfold Power Plant
Location: Hungary Ownership: Budapest Power Co.
G-7 TNC Involvement: Gas turbine supplier: General Electric (U.S.); Control and instrumentation system: Honeywell (U.S.)
World Bank Agency: IBRD
Amount of Financing (estimated total cost): $100 million of $242.5 million.
Year of Approval: FY1994
World Bank Description: "The next investment (construction of a gas-fired combined-cycle cogeneration unit) in the national least-cost power generation-investment program, designed to improve energy efficiency and environmental conditions at one of the country's most important power stations and reduce dependence on fuel imports, will be supported. Institution-building assistance and training are included." (World Bank Annual Report FY1994)

Notes: This plant opened in 1996. ELIN of Vienna, Austria, was the main contractor for the plant construction. Austrian company Energy and Environment supplied the furnace and associated equipment. In January 1997, the GE-built gas turbine was shut down partially because of "technical difficulties," stalling plans to sell Budapest Power to the IVO/Tomen Corp., a Finnish-Japanese consortium. In 1995, residents in the neighborhood of the Kelenfold Power Station protested the placement of the natural gas pipeline to the plant through their neighborhood. "They first laid the pipeline and they wanted the people to accept it as a fact. It is high time for monopolies to realize that we now live in a democracy and they, too, have to play by the rules," said local politician Janos Janzso. (MTI Econews, March 1, 1994, Feb. 8, 1996 and June 26, 1996; Montreal Gazette, May 6, 1995; Budapest
(Pending) **Type of Industry**: Two 120-megawatt quick start diesel-fired power plants  
**Subsidized Project**: Quick Start Gas Turbine Power Plants  
**Location**: Liter and Sajoszoged, Hungary  
**Owner of Project**: (borrower) Magyar Villamos Muvek Rt. (Budapest)  
**G-7 TNC Involvement**: companies not yet chosen  
**World Bank Agency**: IBRD  
**Amount of Financing** (estimated total cost): Projected loan of $100 million of total cost of $140 million. Date of Approval: Projected Board Date of November 1996 (no approval announced)  
**World Bank Description**: "The objective of the Project is... to assist Hungary in meeting its secondary reserve requirements by providing approximately 200 MW of simple cycle (quick start) gas turbines.... The gas turbines will operate on diesel oil, as detailed studies concluded that natural gas would be too costly because of the low rates of utilization (up to 20 times per annum, for periods up to two hours each). The project will thus consist of 200 MW (20%) of simple-cycle (quick start) gas turbines to be installed in two major substations located in Eastern and Western Hungary, selected on the basis of network studies. The power plants will not be manned - operation and maintenance will be conducted by nearby power generation companies which MVM will contract for that purpose.... The Bank has made so far two operations in Hungary's power sector, the Power Project (Loan 2697-HU of May 20, 1986, a US$64 million loan, largely aimed at rehabilitating power plants and other electrical facilities), and the Energy and Environment Project (Loan 3705-HU of February 17, 1995, a US$100 million loan comprising a combined cycle power plant, the upgrading of the dispatch center, and technical assistance aimed at upgrading human resources).... Although the Project is not strictly speaking a conventional power plant, it is proposed to be rated category A. The two gas turbines will be located within the compounds of existing substations, at a distance of about 4 km from nearby villages. The main environmental consideration relates to noise levels, but this is minor given that the units will operate sporadically. No resettlement issues are anticipated with respect to the Project."  
**Notes**: In 1997, Hungarian officials said the backup power plants would be built by 1999. Six bidders have offered to build the power plants. In 1997, the configuration of the plants was changed to 120-megawatts from 100-megawatts. (MTI Econews, Aug. 12, 1996 and March 18, 1997)  

**INDIA**

**Type of Industry**: 420-megawatt coal-fired power plant  
**Subsidized Project**: Ib Valley  
**Location**: Ib Valley, Orissa, India  
**Owner of Project**: Ib Valley Power Private Ltd.  
**G-7 TNC Involvement**: Public Service Electric and Gas Co. (U.S., in negotiations for ownership joint venture via subsidiary, Community Energy Alternatives); Stein Industrie (France) supplied boilers with grant provided by French government.  
**World Bank Agency**: IFC  
**Amount of Financing** (estimated total cost): $50 million loan, $20 million equity, $80 million syndications of $720.6 million
**Type of Industry:** 500 megawatt coal-fired power plant  
**Subsidized Project:** Balagarh Power Plant  
**Location:** Balagarh, West Bengal, India  
**Owner of Project:** Balagarh Power Co. Ltd.  
**G-7 TNC Involvement:** Contractor: Parsons Turbine Generators (U.K., via Rolls-Royce Power Generation Systems subsidiary)  
**World Bank Agency:** IFC  
**Amount of Financing** (estimated total cost): $37 million syndication.  
**Year of Approval:** FY1996  
**World Bank Description:** "Finance the construction of a 500 megawatt power plant and transmission line by increasing a loan syndication."  
**Notes:** In 1993, Rolls-Royce won a contract to build two 250-megawatt power generators for CESC Ltd. on an island in the Hoogly River in West Bengal. (PR Newswire, Nov. 19, 1993)  
CESC has concluded a power purchase agreement with the Balagarh Power Co. Ltd., in which BPCL will build, own and operate the power plant. The Asian Development Bank has also extended considerable equity toward this project. The IFC also extended loans to the plant prior to FY1993. (Asia Pulse, March 6, 1997)
electricity will be sold to industrial consumers in Andhra Pradesh, said Houston Industries. (The Hindu (India), Feb. 25, 1997, Deutsche Press-Agentur, Aug. 28, 1995; Ogrin Universal News Services Ltd., Aug. 28, 1995)

**Type of Industry:** general financing for coal and gas-fired power plants  
**Subsidized Project:** NTPC five year investment program  
**Location:** India  
**Owner of Project:** National Thermal Power Corporation  
**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $400 million of $4.96 billion  
**Year of Approval:** FY1993  
**World Bank Description:** "Funds will be provided to help the National Thermal Power Corporation finance a five-year time slice of its least-cost investment program of new coal and gas-based power stations, and the corporation will be assisted in meeting its targets for capacity additions through increased mobilization of funds from internal resources, domestic and foreign capital markets, and through joint operations with the private sector. In addition, the NTPC's environmental and resettlement and rehabilitation-management capability will be strengthened." (World Bank Annual Report FY1993)

**Type of Industry:** Transmission lines  
**Subsidized Project:** Orissa State Power Sector Restructuring Project  
**Location:** Orissa, India  
**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $350 million of $997.2 million  
**Year of Approval:** FY1996  
**World Bank Description:** "Orissa state will be assisted in implementing a program of regulatory, institutional, and tariff reforms in its power sector." (World Bank Annual Report FY1996)  
**Note:** This project funds the construction of three transmission lines which are tied to a network of coal-fired power plants. (World Bank Environmental Assessment, "Orissa State Power Sector Restructuring Project," Loan No. 4014, February 1, 1995)

**Type of Industry:** 15-megawatt power plant (type unclear) and cement plant  
**Subsidized Project:** DLF Cement complex  
**Location:** Rajasthan, India  
**Owner of Project:** DLF Cement Ltd.  
**G-7 TNC Involvement:** Nihon Cement Corp. (Japan, collaborator)  
**World Bank Agency:** IFC  
**Amount of Financing** (estimated total cost): $11 million loan, $17 million syndications, and $8.5 million quasi-equity of $130.4 million  
**Year of Approval:** FY1994  
**World Bank Description:** "DLF Cement Ltd will establish a greenfield cement plant with a capacity of 1.4 million tons per year in the Pali district of Rajasthan. The project includes the construction of a 15-megawatt power plant.... IFC advised DLF Cement Ltd. on the feasibility of establishing a greenfield cement plant near Ras in Rajasthan." (IFC Annual Report FY1994) Additional Source: Business Line, April 26, 1997

**Type of Industry:** 235-megawatt gas/naphtha-fired combined cycle power plant
Subsidized Project: GVK power plant
Location: Jegurupadu, Andhra Pradesh, India
Owner of Project: GVK Industries Ltd.
G-7 TNC Involvement: CMS Energy (U.S., 18.75% owner, operator); ABB (builder)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $40 million loan, $70 million syndications, and $8.3 million equity of $290.7 million
Year of Approval: FY1994
World Bank Description: "GVK Industries Ltd. will build a 235-megawatt gas/naphtha-fired combined cycle power plant in Andhra Pradesh, and own and operate it for 30 years, selling the output to the Andhra Pradesh State Electricity Board." (IFC Annual Report FY1994)
Notes: This is the first foreign-owned power plant operating in India and started operating in July 1996. There are plans to double production at the new power plant to 470-megawatts by 1999. (Business Line, April 20, 1997; International Herald Tribune, Sept. 11, 1996; Reuters Financial Service, Sept. 4, 1996; AFX News, Aug. 13, 1996)

Type of Industry: 250-megawatt lignite-fired power plant
Subsidized Project: Tamil Nadu power plant
Location: Tamil Nadu, India
Owner of Project: ST-CMS Electric Power Company
G-7 TNC Involvement: CMS (part-owner), ABB (equipment supply)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $30 million loan, $150 million syndications, $18 million equity of $450 million
Year of Approval: FY1994
World Bank Description: "ST-CMS Electric Power Co. will build a 250-megawatt lignite-fired thermal power plant in Tamil Nadu, and own and operate it for 30 years, selling the output to the state electricity board... Through its Technical Assistance Trust Funds Program, IFC supported an assessment of the environmental impacts of a proposed 250-megawatt lignite-based power plant." (IFC Annual Report FY1994)
Notes: In 1995, CMS said that it had to reopen negotiations with the Indian government over the Tamil Nadu power plant. (Financial Times, June 23, 1995; Business Times, Sept. 20, 1994)

Type of Industry: power project (type unclear)
Subsidized Project: Haryana Power Sector Restructuring
Location: India
Amount of Financing (estimated total cost): $300 million Date of Approval: "Project preparation under way." Notes: "The project will support the process of reforming the Haryana power sector with the goal of (a) supplying electric power under the most efficient conditions in terms of quality and cost; and (b) generating financing resources." (AID/WATCH summary of IIEC database).

Type of Industry: 400-megawatt combined-cycle power plant
Subsidized Project: Kayamkulam Combined Cycle Power Plant Project
Location: India
Owner of Project: National Thermal Power Corp.
Amount of Financing: unclear, project is under review
World Bank Description: In September 1996, the World Bank released an environmental assessment "concerned with the NTPC which will construct and operate a Combined Cycle Power Plant of 400 mw capacity. The project will also include the construction of a transmission system consisting of lines and extension of substations as well as the transfer and storage of Naphtha." (World Bank Environmental Assessment, Report No. 153, Sept. 1, 1996)

INDONESIA

Type of Industry: two 615-megawatt coal-fired power plants
Subsidized Project: Paiton Units 7 and 8
Location: East Java, Indonesia
Owner of Project: Paiton Generating Complex
G-7 TNC Involvement: (investors) General Electric (U.S., 12.5%), Edison Mission Energy (unit of Edison International Corp., U.S., 40%), Mitsui & Co. (32.5%, Japan). The other owner is Indonesian coal supplier P.T. Batu Hitam Perkasa (15%). Duke Power Co. (U.S.), Fluor Daniel (U.S.), and Toyo Engineering Co. (Japan) are providing construction management and engineering services. Thermo Sentron (U.S.) is providing coal-weighing and verification equipment. ABB (Switz) is supplying $300 million boiler islands.
World Bank Agency: MIGA
Amount of Financing (estimated total cost): $50 million guarantee
Year of Approval: FY1996
World Bank Description: "MIGA issued a $50 million guarantee to Capital Indonesia Power I C.V., an affiliate of General Electric Capital Corp. of the U.S. (GE), for its $61.2 million equity investment in the construction and operation of two 615 megawatt coal-fired electricity-generating plants in Indonesia... The plants will be located at the Paiton Power Generating Complex, and the power output will be sold to the government-owned electricity corporation... [This project] will further develop the coal industry and allow the country to maintain its oil export levels." (MIGA Annual Report FY1996)
Notes: The huge power project is scheduled to start in late 1998. The U.S. Export-Import Bank is helping to finance U.S. equipment and services exports to Paiton worth more than $500 million. Other government financing for the $1.8 billion project include the Export-Import Bank of Japan ($900 million) and the U.S. Overseas Private Investment Corp.

Type of Industry: electricity generation
Subsidized Project: power sector privatization
Location: Indonesia
Owner of Project: PLN
G-7 TNC Involvement: not clear, possibly Electricite de France
World Bank Agency: IBRD
Amount of Financing (estimated total cost): $260.5 million of $688.9 million, with cofinancing from Austria and Australia ($23.7 million) and export credits ($92 million).
Year of Approval: FY1994
**World Bank Description:** "Efforts to increase private sector participation in electricity generation and to restructure the state electricity company (PLN) and establish it as a commercial entity will be supported. In addition, environmentally sustainable expansion of PLN's electricity-generation and transmission capacity will be financed."

**Notes:** In 1994, the PLN floated bonds to finance transmission networks and power stations. These included construction of coal-fired power plants in Surabaya, West Java and Ombilin, West Sumatra, and continued operation of three units of a coal-fired power plant in Muara Karang, North Jakarta. Indonesia is planning to double its power plant capacity between 1994 and 1999 to about 9,500-megawatts. French concern Electricite de France is looking to invest in a privatized PLN. (Business Times, Sept. 19, 1994; Reuters, June 8, 1994; Reuter European Business Report, Oct. 20, 1995)

**IRAN**

**Type of Industry:** 300-megawatt combined-cycle power plant expansion

**Subsidized Project:** Qom Power Plant

**Location:** Iran

**Owner of Project:** Government of Iran

**World Bank Agency:** IBRD

**Amount of Financing** (estimated total cost): $165 million of $414 million. Cofinancing in the form of suppliers’ or export credits ($48 million) is expected. Date of Approval: March 1993 (FY1993)

**World Bank Description:** "Through the addition of generating capacity, the financing of distribution equipment, and provision of technical assistance, the supply/demand gap in the power sector should be reduced and efficiency enhancements achieved." (World Bank Annual Report FY1993)

**Notes:** The U.S. government strongly objected to the Bank loan for the Qom power plant. "Iran does not deserve the support of the World Bank," said U.S. Secretary of State Warren Christopher. "Their determination to acquire weapons of mass destruction leaves Iran as an international outlaw." U.S. State Department spokesman Richard Boucher said, "We've actively opposed the resumption of World Bank business-as-usual lending to Iran. We think it's inappropriate, given Iran's record of terrorism, its building of weapons of mass destruction, and in addition, its mounting debt arrears." Iran's official Tehran Radio replied that "Washington's baseless claims cannot hinder the national determination for economic reconstruction." The refurbished Qom plant -- with some older gas-fired units converted and two new 100-megawatt combined-cycle units added, for a net gain of 300-megawatts -- is due to come on line by early 1998. Asea Brown Boveri of Switzerland won the contract to convert and expand the plant. (Xinhua, April 3, 1993; Reuters, March 30, 1993, December 23, 1996; Financial Times, April 7, 1997)

**JAMAICA**

**Type of Industry:** 74-megawatt diesel power plant

**Subsidized Project:** Old Harbour Power Station

**Location:** Old Harbour, Jamaica

**Owner of Project:** Jamaica Energy Partners (JEP)

**G-7 TNC Involvement:** Illinova Generating Co. Scudder Latin America Power, McDonnell Douglas Finance Corp. (U.S., investors)
World Bank Agency: IFC, MIGA


World Bank Description: The IFC's financing is designed to "Build, own and operate a barge-mounted diesel power plant to sell power to the state-owned utility under a 20-year contract." (IFC Annual Report FY1995) "MIGA issued $30 million in coverage to a group of equity and debt investors for the construction and operation of a 74-megawatt barge-mounted diesel power plant, JEP.... The enterprise, located at Old Harbour, Jamaica, is the country's second privately financed power plant supplying the national grid. MIGA insured the first foreign power facility, at Rockfort, in 1995. Wartsila Power Development initially received a MIGA guarantee for its equity investment in the project enterprise, with the option to transfer coverage to future equity investors and lenders. In separate contracts MIGA then insured equity investments made by Wartsila (for $5.2 million in coverage); Illinova Generating Co. ($3.0 mil.); and two Cayman Islands investors, Barge Energy LLC ($3 mil) and Scudder Latin American Power (in two contracts totaling $6.2 million). MIGA also issued a $12.6 million in guarantees to JEP for a loan made by Wartsila's parent company, Metra Finance Oy AB of Finland." (MIGA Annual Report FY1996) "In Jamaica, MIGA further expanded its involvement in the power sector by insuring McDonnell Douglas Finance Corporation of the United States for its loan to Jamaica Energy Partners" (MIGA News, Spring 1997) "The Jamaica Public Service Company (JPS) had an explosion at the Old Harbour Power Station on June 3, 1994, which destroyed the Unit 4 boiler and damaged Unit 3. The restoration of the power station to its original capacity will occur at the same time that a new 72 MW medium speed diesel barge facility is to be installed at the Old Harbour Plant." (World Bank Environmental Assessment, Report No. 3944, Loan No. 3944, December 1, 1994.)

Type of Industry: 60 MW diesel power plant
Subsidized Project: Jamaican Private Power Co.
Location: Rockfort, near Kingston, Jamaica
Owner of Project: JPP
G-7 TNC Involvement: CMS Energy (U.S., bought out Niagara Mohawk Power, previous owner of JPP) (Reuters, Oct. 21, 1994)

World Bank Agency: MIGA

Amount of Financing (estimated total cost): $43.2 million in equity insurance
Year of Approval: FY 1995

World Bank Description: "MIGA facilitated the limited-recourse financing for power projects in Jamaica and Honduras. In Jamaica, MIGA concluded contracts with five investors to insure a major portion of the equity investment in the construction and operation of a US$144 million, 60 MW slow-speed diesel power plant. The equity accounts for US$43.2 million; the remaining will be financed by long-term debt provided by the Private Sector Energy Fund (PSEF), which is partly funded by the World Bank and the Inter-American Development Bank. MIGA will insure the equity contributions (US$35.7 million) of Hydra-Co Enterprises Inc., International Energy Partners, USEC-Precursor Inc., Rockfort Power Association (Uutilco), and Energy Investment Funds II, L.P. MIGA's guarantee of US$50 million covers expropriation, currency transfer, and war and civil disturbance risks. The enterprise, Jamaican Private Power Company, will be located in Rockfort, near the Kingston harbor. It is the largest private infrastructure investment ever undertaken in Jamaica and is the first build-own-operate project in the country. The IBRD supported the
project in several ways during its long gestation period, including assistance in restructuring of the power sector by the Jamaican government and the establishment of a new regulatory system. A Bank loan of US$40.5 million was critical to the project's financing." (MIGA News, Winter 1994/95)

**Type of Industry:** power generation expansion  
**Subsidized Project:** Jamaica privatization/expansion  
**Location:** Jamaica  
**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $60 million. Cofinancing ($56 million) is expected from the Inter-American Development Bank.  
**Year of Approval:** FY1993  
**World Bank Description:** "Urgently required power-generation capacity will be provided, the enabling environment needed to attract private investments in the power sector will be established, and the government's deregulation and privatization program in the energy sector will be supported." (World Bank Annual Report FY1993)

**Type of Industry:** power sector  
**Location:** Jamaica  
**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $21 million of $76.5 million  
**Year of Approval:** FY1996  
**World Bank Description:** "Lost generating capacity will be replaced, generation costs reduced through upgrading existing facilities, system reliability enhanced, electricity tariff reforms supported, and environmental damage reduced and controlled." (World Bank Annual Report FY1996)

**KENYA**

**Type of Industry:** Diesel, geothermal and hydro power plants  
**Subsidized Project:** First Energy Project  
**Location:** Kenya  
**World Bank Agency:** IDA  
**Amount of Financing** (estimated total cost): $100 million credit of $1 billion. OECF, CDC, and EIB "are considering cofinancing for the project." Projected Board Date: March 11, 1997 (no decision was announced)

**World Bank Description:** "The proposed project would include six components: (i) Sector Restructuring and Reform comprising consultancy services to assist GOK in restructuring the power sub-sector, instituting a legal and regulatory framework, and promoting private sector participation.... (iv) Power Expansion and Rehabilitation at least-cost, including two 75MW [diesel] power plants in Mombasa, two 32MW [geothermal] power plants at Olkaria, a 60MW Hydropower plant on the Sondu River; Mombasa-Nairobi and Nairobi-Kiambere 220 kV transmission lines, rehabilitation of the Nairobi and Coastal area distribution systems, and expansion of other distribution facilities.... The Kipevu diesel unit will be designed to meet western air emission standards and liquid wastes will be treated on site. A new waste water treatment plant is expected to provide for the facility's limited water requirements." (World
KYRGYZ REPUBLIC

Type of Industry: 90-megawatt coal-fired power plant expansion, rehabilitation
Subsidized Project: Power and District Heating Rehabilitation Project
Location: Kyrgyz Republic
Owner of Project: Kyrgyzenergoholding
World Bank Agency: IDA

Amount of Financing (estimated total cost): $20 million of $87.5 million
Date of Approval: FY1996 (May 23, 1996)

World Bank Description: "Economic growth will be supported by rehabilitating and upgrading the country's electricity and heat-supply infrastructure." (World Bank Annual Report FY1996) "The project consists of: (a) Rehabilitation of the Bishkek combined-heat-and-power (CHP) plant - TES-1. The proposed Project will provide for the refurbishment of seven most recent boilers; installation of Turbogenerator-11 (90 MW boiler); upgrading of the plant instrumentation and control systems and retrofitting of the essential auxiliary system (coal supply; water make up, compressed air, ash storage); installation of monitoring devices for emissions; and provision for a metal testing laboratory and vibration monitoring equipment." (AID/WATCH)

Note: The Kyrgyz Republic is planning to privatize Kyrgyzenergoholding, the state power company, in 1997. (ITAR-TASS news agency, April 11, 1997)

MOROCCO

(Pending) Type of Industry: 660-megawatt coal-fired power plant expansion
Subsidized Project: Jorf Lasfar Power Plant
Location: Morocco O
Owner of Project: Jorf Lasfar Energy Co. (Joint venture between CMS of the U.S. and ABB of Switzerland

G-7 TNC Involvement: (50% owner) CMS Generation (U.S.)
World Bank Agency: IBRD

Amount of Financing (estimated total cost): not clear
Projected Board Date: June 1997

World Bank Description: "Following the new policy on private participation, the Government of Morocco (GOM) issued competitive bidding for the concession (lease) of the two existing 330 MW coal-fired/steam-based turbo-generators (units 1 and 2) at Jorf Lasfar and for the construction and transfer of ownership to ONE (Office National de l'Electricite) of units 3 and 4, in exchange for the right to operate the four units for a period of thirty years. The contracts, for which negotiations and financial closure are progressing satisfactorily, were awarded to the consortium ABB Energy Ventures B.V. (ABB) of Switzerland and CMS Generation Co. (CMS) of USA. The power plant is located along the coast near the port of Jorf Lasfar, 100 km. south of Casablanca. The existing power plant consists of 2x330 MW coal-fired/steam-based turbo-generators (units 1 and 2) which were commissioned respectively at the end of 1994 and during early 1995. The project provides for expansion of the power plant through the addition of two 330 MW turbo-generators (units 3 and 4) of similar characteristics as the existing generators, to be developed by the project Sponsors. The Sponsors of the project are ABB Energy Ventures B.V. (ABB) and
CMS Generation Co. (CMS). A special purpose company, Jorf Lasfar Energy Co. (JLEC), has been established by the sponsors under the laws of Morocco. Each sponsor will own 50 percent of the shares of JLEC. Financial closure for the project is expected to take place shortly. The transfer of units 1 and 2 and the start of construction of units 3 and 4 should follow after financial closure. Commissioning of the latter units is scheduled 33 and 39 months after closure (March and September 2000 respectively)." (World Bank Project Information Document, Project ID MA-GU-45615, February 1997)

Notes: The U.S. government-run Overseas Private Investment Corporation has extended $200 million in political risk insurance for the project. This will be the first foreign-owned power plant in Morocco. With an ultimate production capacity of 1,320-megawatts, this will be the largest independent power plant in Africa. (Journal of Commerce, Oct. 29, 1996; Reuters, Aug. 13, 1995; PR Newswire, March 13, 1996)

OMAN

Type of Industry: new 100-megawatt natural gas-fired power plant
Subsidized Project: Al-Manah Power Plant
Location: Oman
Owner of Project: United Power Corp. (Consortium including Belgian companies Tractabel and Powerfin and Omani companies National Trading Co., Tawoos, W.J. Towell, and Zubair Enterprise)
G-7 TNC Involvement: European Gas Turbines (France, gas turbines); Amec Power Ltd. (U.K., transformer stations and power lines)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $15 million loan, $57 million syndications, and $4 million equity of $204.5 million
Year of Approval: FY1994
World Bank Description: "United Power Corp. will build own, and operate, on a BOT basis, a 90 megawatt thermal power facility at Manah, and 186 kilometers of transmission lines and associated substations. The company will sell electricity to the Government electricity monopoly." (IFC Annual Report FY1994)
Notes: This is the first private power plant in the Gulf-Near East region. It opened in April 1996 and consists of three gas turbines of 33-megawatts each. A Powerfin statement said, "This project reflects the Sultanate's desire to encourage privatization in the energy field." (UPI, June 29, 1994 and Nov. 25, 1996; Moneyclips, Nov. 25, 1996)

PAKISTAN

Project Profile

Type of Industry: new 1,469-megawatt oil-fired power plant
Subsidized Project: Hub River power station
Location: Pakistan
Owner of Project: Consortium of National Power (UK, 40%) and Xenel Industries (Saudi Arabia, 40%); lesser shareholders include Mitsui and IHI (Japan), K&M and Entergy Corp. (U.S.), Pakistan Power. Other
G-7 TNC Involvement: Ansaldo Energia (Italy, supplying four 323-megawatt turbines); Mitsui and Ishikawajima-Harima Heavy Industries (Japan, contractors); Campenon Bernard
SGE (France, contractor)

**World Bank Agency:** IBRD  
**Amount of Financing** (estimated total cost): $250 million of $2.390 billion  
**Year of Approval:** FY 1995

**World Bank Description:** "The private sector's role in the development, ownership, and operation of power and related infrastructure facilities will increase through the financing of selected subprojects." (World Bank Annual Report FY1995)

Although it is impossible to decipher from the World Bank's annual report, this financing scheme supports, in the words of the Financial Times, "Asia's most controversial power project."

When fully completed in 1997, this massive plant -- Pakistan's first thermal power project -- will supply about 15% of the country's electricity. The first two 323-megawatt units began generating power in July 1996.

Hubco's chief executive, D.M. Woodroffe boasted, "This project is one of the most significant developments in Pakistan and... the model for the government's very successful private power generation policy of 1995. There are few financial institutions which fund power projects and even fewer who were willing to fund these projects in Pakistan. This problem was taken care of when the World Bank stepped in and decided to cover Pakistan's risk."

When the first boilers roared to life near the Hub River estuary, Pakistan's Prime Minister Benazir Bhutto said, "Pakistan is heading towards an energy revolution. We will add 5,000 megawatts of new generation capacity by the 21st century. This is a great day for Pakistan. Hubco is a clear manifestation of the cycle of economic rebirth in Pakistan."

A much different view of Hub River and other power plants is emerging in the new government of Prime Minister Nawaz Sharif and some economists.

In 1996, researchers at an investment firm estimated that the plants will increase the cost of fuel imports into Pakistan from $1.5 billion to $4 billion. A senior Finance Ministry official said the government had no plan for the increasing price of power. "There is still no strategy under which we will be operating," the official told Asia Times in May 1996.

Earlier this year, security firm Credit Lyonnais advised its clients to sell off Hubco stock. "The government is finding it difficult to meet its financial obligations towards independent power plants," the company said, which estimated that the government is having to pay "a staggering $1.275 billion (a year)" and might have to raise power rates by 33 percent.

Last month (May 1997), shortly after the plant went into full operation, Pakistan's state-run Water and Power Development Authority threatened to terminate its agreement to purchase power from the Hub River plant because a seal broke on one of two meters used to measure power flowing to the national grid.

The threat followed repeated expressions of fear by the government of new Prime Minister Nawaz Sharif over the costs of the new power plants and the potential for an over-supply of
power in Pakistan.

In March 1997, Finance Minister Sartaj Aziz said, "We do not know if it was deliberate or not, but the damage done by the energy policy of the last government was an unforgivable crime."

Woodroffe dismissed the government's worries. "I don't think that the government would like to run down HUBCO," he said in May. "We are a flagship company not just for Pakistan but for the whole region."


Type of Industry: new 586 megawatt gas-fired combined-cycle power plant
Subsidized Project: Uch Power Project
Location: Baluchistan province, Pakistan
Owner of Project: Uch Power Limited (consortium of Midlands Electricity (UK, 40% stake), Tenaska Inc. (USA), General Electric (USA), Hawkins Oil & Gas Inc. (US), Hasan Associates (Pakistan), and the IFC (8% stake))
Additional G-7 TNC Involvement: GE ($340 million construction and equipment supply contract, in which GE is subcontracting with Harbin, a Chinese construction company); Raytheon (US, overall project manager)
World Bank Agency: IFC
World Bank Description: The IFC financing will help to "build own and operate a 586 megawatt gas-fired combined-cycle power plant." (IFC Annual Report FY1996) Since the mid-1980's, the Government of Pakistan has been implementing a broad-based structural adjustment program supported by the Bank and the Fund. The reforms were extended to the energy sector with Bank support in the form of two Energy Sector Loans and several investment operations. In February 1994, [Pakistan] began the implementation of a three-pronged strategy in the power sector: (i) restructuring and privatization of power sector entities and unbundling of their activities, including gradual divestiture of the Water and Power Development Authority's thermal generating plants and distribution system and privatization of the Karachi Electricity Supply Corporation; (ii) encouragement of the construction of new thermal power plants and transmission lines by the private sector on a Build-Own-Operate (BOO) basis; and (iii) establishment of a regulatory body, the National Electric Power Regulatory Authority. The Bank has supported Pakistan's efforts during this period through several operations.... The proposed project promotes private sector participation in the power sector, and helps alleviate electricity shortages through the efficient use of domestic resources. (World Bank Project Information Document, Pakistan-Uch Power Project Guarantee, Project ID PKPA40547, October 30, 1995)
Notes: This project involves the construction of three gas turbine units that can burn medium-Btu gas, distillate or high speed diesel for a combined capacity of 586-megawatts. A pipeline will carry fuel from the nearby Uch gas fields, which are controlled by Pakistan's
soon-to-be privatized Oil and Gas Development Corp. Construction on the plant began in late 1995. At a ground-breaking ceremony, Midland's chairman, Bryan Townsend, said Uch would help Pakistan achieve "energy independence." Prime Minister Benazir Bhutto proclaimed, "political and economic stability have attracted huge foreign investments." She earlier exclaimed, "Pakistan enjoys the confidence of the IMF, the World Bank and... the confidence of its own people." Baluchistan province is the homeland of traditionally-independent Baluch tribal peoples. The deal was brokered in part by Robert "Bud" McFarlane, a former national security advisor to then-President Ronald Reagan. McFarland attempted suicide in 1987 after he acknowledged withholding information from Congress about secret arms sales to Iran. (Asia Times, Jan. 12, 1996; Reuters, April 26, 1995, Nov. 20, 1995; Daily Telegraph (UK), Dec. 1, 1994; PR Newswire, June 26, 1996; UPI, May 21, 1996; Washington Post, July 23, 1995)

**Type of Industry**: 337-megawatt coal-fired power  
**Subsidized Project**: Lal Pir Power Plant  
**Location**: Muzaffargarh, Punjab Province, Pakistan  
**Owner of Project**: AES Lal Pir Limited  
**G-7 TNC Involvement**: AES (U.S., owner); Mitsubishi (supplier of furnaces)  
**World Bank Agency**: IFC  
**Amount of Financing** (estimated total cost): $40 million loan, $9.5 million equity of $343.7 million.  
**Date of Approval**: April 7, 1995 (FY1995)  
**World Bank Description**: "Build and operate a 362-megawatt thermal power plant to sell power to the national power utility under a 30-year contract." (IFC Annual Report FY1995)


**Type of Industry**: 337-megawatt fuel oil-fired power plant  
**Subsidized Project**: Pak Gen power plant  
**Location**: Muzaffargarh, Punjab Province, Pakistan  
**Owner of Project**: AES Pak Gen  
**G-7 TNC Involvement**: AES (U.S., ownership), Mitsubishi Heavy Industries and Nichimen Corp. (Japan, equipment supply)  
**World Bank Agency**: IFC  
**Amount of Financing** (estimated total cost): $20 million loan, $9.5 million equity, $50 million syndications of $349 million. Japan's Export-Import Bank is also providing financing (18.2 billion yen loan).  
**Year of Approval**: December 20, 1996 (FY1997)  
**World Bank Description**: "Build, own and operate a power plant with a capacity of 337 megawatts adjacent to the AES Lal Pir power project near Multan." (IFC Annual Report FY1996)

**Notes**: This is the second World Bank financing for the AES power plant complex in Muzaffargarh, Pakistan. Construction is due to be completed by the end of 1997. The plant will be powered by fuel oil from the Pakistan state oil company. According to AES's chief executive officer, Dennis Bakke, this will be AES' largest power project, and "close to the largest private investment in Pakistan, to date." (Washington Post, May 17, 1995 and Jan. 9, 1996; UPI, Dec. 21, 1995; Chattanooga Free Press, April 8, 1995; Asia Times, Jan. 8, 1996; Japan Economic Newswire, Jan. 5, 1996; Xinhua, Dec. 20, 1995)
Type of Industry: 125 megawatt oil-fired power plant
Subsidized Project: Saba Power Co. power plant
Location: Sheikhupura, Punjab province, Pakistan
Owner of Project: consortium of Coastal Corp. (U.S., 90% owner); Cogen (U.S.); McDermott (U.S.); and Nissho Iwai Corp. (Japan, 10%). Capco ReSources (Canada) has also been described as a partner in the project. Other
G-7 TNC Involvement: McDermott, via Babcock & Wilcox subsidiary, is supplying $90 million boilers made in Canada and is the engineering, procurement and construction contractor. Toshiba (Japan) is supplying the turbine-generator.
World Bank Agency: MIGA
Amount of Financing (estimated total cost): $5 million in coverage to Cogen for its investment. Total project cost estimated at $154 million. The U.S. Export-Import Bank is also providing $50 million in financing.
Year of Approval: FY1997
World Bank Description: "MIGA issued coverage to Cogen Technologies Saba Power, L.P., of the United States for its investment in the construction and operation of a 115 (sic)-megawatt power plant in Pakistan. Saba Power Company Limited, located near Farouqabad, will contribute to a much-needed increase in electricity generation and will diversify the country's power generating base by reducing the current dependence on hydropower."
(MIGA News)
Notes: The Saba Power Plant is scheduled to open in April 1999. According to Coastal Corp. and other Sources, the plant will produce 125-megawatts, not 115-megawatts as reported by MIGA. The plant will burn residual fuel oil. (Reuters, April 15, 1997; Jiji Press Ticker Service, March 13, 1997; Canada NewsWire Ltd., Jan. 24, 1996; PR Newswire, April 15, 1997; U.S. Export-Import Bank press release, Jan. 29, 1996)

Type of Industry: 125 megawatt diesel oil-burned power plant
Subsidized Project: Gul Ahmed power plant
Location: Karachi, Pakistan
Owner of Project: Gul Ahmed Energy Ltd.
G-7 TNC Involvement: (Investor) Tomen Corp (Japan)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $27 million loan, $4.1 million equity, $3 million risk management facility, and $35 million syndications of $138 million
Date of Approval: July 24, 1995 (FY1996)
World Bank Description: "Build own and operate a 125-megawatt oil-based diesel power plant." (IFC Annual Report FY1996)
Notes: The plant is scheduled to open by the end of 1997. Oil will be supplied by the Pakistan State Oil company and the state-run Karachi Electric Supply Corp. will buy the power. (UPI and Reuters, July 24, 1995)

Type of Industry: 120-megawatt diesel power plant
Subsidized Project: Kohinoor power plant
Location: Lahore, Punjab province, Pakistan
Owner of Project: Kohinoor Energy Ltd. (Joint venture of Tomen of Japan (20%); Wartsila (2%), IFC (15%) and Saigol business group of Pakistan (48%))
G-7 TNC Involvement: see ownership.
World Bank Agency: IFC
Amount of Financing (estimated total cost): $25 million loan, $6.3 million equity, and $36.6 million syndications of $138.6 million
Year of Approval: FY1995
World Bank Description: "Build, own and operate a 120-megawatt diesel power plant to sell power to the national electric utility under a 25-year contract." (IFC Annual Report FY1995) Notes: The plant was scheduled to open in March 1997. Wartsila Diesel of Finland will supply the diesel engine. "Since diesel plants can be built in less than two years, they present an economic solution to alleviate the present power shortage problem," said IFC Chief Executive Jannik Lindbaek. (Agence France Presse, Jan. 24, 1995; Nikkei Weekly, Nov. 14, 1994; AFX News, Nov. 7, 1994; Deutsche Presse-Agentur, Jan. 24, 1995)

PHILIPPINES

Type of Industry: new 1,200-megawatt coal-fired power plant
Subsidized Project: Sual Thermal Power Plant
Location: Pangasaman, Philippines
Owner of Project: Pangasinan Electric Corp., a subsidiary of Consolidated Electric Power Asia (CEPA is the former subsidiary of Hopewell Holdings of Hong Kong, now controlled by Southern Co. of U.S.)
G-7 TNC Involvement: GEC-Alsthom (UK/France, turbines and boilers supplier); Southern Co. (U.S., owner)
World Bank Agency: IFC
Amount of Financing (estimated total cost): $30 million loan, $17.5 million equity, and $200 million syndications of $1.4 billion. The U.S. Export-Import Bank has extended $220 million in financing for the plant. The Asian Development Bank has also provided loans for the project.
Year of Approval: FY1995
World Bank Description: "Build and operate a 1,200 megawatt coal-fired power plant north of Manila to sell power to the National Power Corporation under a 25-year agreement." (IFC Annual Report FY1995) Notes: 87 financial institutions have loaned money for this power plant, which is due to open in 1999. (Businessworld (Manila), Jan. 9, 1997; South China Morning Post, Dec. 3, 1996; Reuters, June 30, 1995; Monthly Report on Europe, April 25, 1995)

Type of Industry: 225-megawatt oil-fired thermal plant rehabilitation
Subsidized Project: Bataan power plant
Location: Philippines
Owner of Project: National Power Corp.
World Bank Agency: IBRD
Amount of Financing (estimated total cost): $110 million of $159.8 million. Cofinancing ($500,000) is being provided by Japan.
Year of Approval: FY1993
World Bank Description: "Power shortages in Luzon will be alleviated by expanding the transmission system in the Bataan/Batangas areas west of Manila to connect several private-sector build-operate-and-transfer projects and by rehabilitating two units of the Bataan oil-fired thermal power plant. Technical assistance to strengthen the capacity of the National Power Corp. is included." (World Bank Annual Report FY1993) Notes: (Reuters and Xinhua, June 24, 1993)

POLAND
**Type of Industry:** 1,600-megawatt coal power plant rehabilitation and life-span extension

**Subsidized Project:** Dolna Odra Power Generation Rehabilitation Project

**Location:** Poland, near German border

**Owner of Project:** (implementing agency) Dolna Odra Group of Power Plants

**G-7 TNC Involvement:** Westinghouse (U.S.). Westinghouse entered into a joint venture with seven Polish power stations in 1992 for modernization services. The company is called Modelpol. (PAP News Wire, March 5, 1992; PR Newswire, May 29, 1996)

**World Bank Agency:** IBRD

**Amount of Financing** (estimated total cost): According to the Bank, "the estimated cost of the proposed project is about US$215 million.... A preliminary financing plan for the project would consist of a combination of a direct Bank loan and a partial credit guarantee of US$110 million, the Borrower's internal cash generation of US$65 million and a concessional loan from the National Fund of US$40 million for the environmental component." (WB PID) Projected Board Date: May 1997

**World Bank Description:** "Specifically, the project would: (a) extend the life of existing coal-fired plant asset and improve its performance through rehabilitation and the introduction of modern technologies; (b) enhance energy conservation and efficiency through investments in energy-efficient equipment and systems, [etc.]... The project would focus on the Dolna Odra power plant, located about 30 km away from the city of Szczecin and about 2 km from Germany. The plant is part of the Dolna Odra Group of Power Plants which covers also CHP Szczecin and CHP Pomorzany, both located in Szczecin. Dolna Odra power plant ranks among the priority candidates for rehabilitation and environmental upgrade. It has an installed capacity of 1,600 MWe consisting of eight 200 MWe units, burns hard-coal and plays a major role in Poland's electricity exports to Germany." (World Bank Public Information Document, Project ID PLPA40816, March 19, 1996)

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**Type of Industry:** 1,600-megawatt coal power plant rehabilitation and life span extension

**Subsidized Project:** Rybnik Power Generation Rehabilitation Project

**Location:** Poland

**Owner of Project:** (Borrower) Rybnik Power Generating Company

**G-7 TNC Involvement:** Westinghouse (see Dolna Odra, Poland, above)

**World Bank Agency:** IBRD

**Amount of Financing** (estimated total cost): According to the World Bank, "the estimated cost of the proposed project is about US$300 million.... A preliminary financing plan for the project would consist of a combination of a direct Bank loan and a partial credit guarantee of US$140 million, the Borrower's internal cash generation of US$90 million and a concessional loan from the National Fund of US$70 million for the environmental component." Projected Board Date: May 1997

**World Bank Description:** "Specifically, the project would: (a) extend the life of existing coal-fired plant asset and improve its performance through rehabilitation and the introduction of modern technologies; (b) enhance energy conservation and efficiency. [etc.]... The project would focus on the Rybnik power plant, which is located in the city of Rybnik in Upper Silesia. Rybnik power plant ranks among the priority candidates for rehabilitation and environmental upgrade. It has an installed capacity of 1,600 MWe consisting of eight 200 MWe units and burns hard-coal." (World Bank Project Information Document, Project ID PLPA45201)
ROMANIA

**Type of Industry**: 1,445-megawatt coal-fired power plant rehabilitation

**Subsidized Project**:

**Location**: Romania

**Owner of Project**: Renel R.A. (Romania's electricity authority)

**G-7 TNC Involvement**: GEC/Alsthom (UK/France, upgrading thermal plants in Romania)

(Reuter, Sept. 6, 1995)

**World Bank Agency**: IBRD


**Date of Approval**: August 29, 1995 (FY1996)

**World Bank Description**: "The government's power sector-reform program will be supported, and about 1,445 mw of existing thermal generating capacity will be rehabilitated."

(World Bank Annual Report FY1996) The project includes power sector reform, corporate restructuring and "a thermal plant rehabilitation program which includes equipment, services and technical assistance to be provided to the Romanian Electricity Authority to a) rehabilitate part of its existing thermal generation capacity; b) convert part of its existing lignite-based thermal capacity to coal use; and c) reduce the pollution impact of thermal plants." (AID/WATCH)

**Notes**: GEC-Alsthom is rehabilitating 330-megawatt turbo-generators at the Turceni, Rovinari, Isainita, and Braila power plants through a joint venture with Romania's General Turbo. The joint venture is called GEC Alsthom General Turbo S.A. Under the power sector rehabilitation program, 16 thermal power stations in Romania will be rehabilitated and converted. ABB is competing with GEC-Alsthom for bids at the other plants. (Reuters, Aug. 30 and Sept. 6, 1995)

RUSSIA

(Pending) **Type of Industry**: new 900-megawatt natural gas fired power plant

**Subsidized Project**: Krasnador Power Generation Project

**Location**: Krasnador Krai, North Caucasus Region, Russia

**Owner of Project**: (implementing agency) Kuban GRES; According to the World Bank, "the founding shareholders and their (tentative) equity stakes would be: RAO EES Rossii (30%), Gazprom (20%), Kubanenergo (15%), Integrated Power Complex (8%) and Power Machine Building Complex (7%). The remaining equity participation [(20%)] is expected to be financed through foreign investment. The related gas pipeline would be financed by Gazprom and the transmission line by RAO EES Rossii."

**G-7 TNC Involvement**: not clear yet

**World Bank Agency**: IBRD

**Amount of Financing** (estimated total cost): $510 million of $818 million Projected Board Date: June 19, 1997

**World Bank Description**: "The need for new capacity [in the North Caucasus Region] was identified over 10 years ago, and construction was started on a nuclear plant at Rostov. While two 1,000 MW units were partially completed, the plant was not commissioned, due to public opposition.... The goal of the project would be to eliminate blackouts due to generation
The project would also support the initial steps toward establishing competition among generating plants, as the project would be independent, and privately owned. The proposed project would involve construction of a new power generating station in Krasnodar Krai, at a site near Mostovskoy, to meet current and projected electricity supply requirements of the region. The new plant is proposed to consist of two 450 MW blocks of combined cycle generating capacity that would be fueled by natural gas. Each block would consist of two 150 MW gas turbines, two heat recovery steam generators (HRSGs) and one 150 MW turbo-generator set. The project would also include construction of a 60 km gas pipeline to supply the plant, ancillary control systems, and switchyard and transmission facilities to connect the plant to the grid. ... The project would be implemented by Kuban GRES, a newly formed corporate entity whose sole responsibility would be the construction and operation of this project.... The proposed project technology represents one of the most efficient technologies available to convert fossil fuels to electrical energy. Compared with other conventional thermal technologies, it will minimize greenhouse gas (GHG) and particulate emissions associated with increased electricity production." (World Bank Project Information Document, Project ID RUPA40162, March 28, 1996; World Bank Environmental Assessment Report No. E142, March 1, 1996.)

TANZANIA

Type of Industry: 150-megawatt natural gas power plant; hydro power plant
Subsidized Project: Tanzania power sector
Location: Tanzania
Owner of Project: Ocelot/TransCanada Pipelines
G-7 TNC Involvement: Ocelot and TransCanada (Canada)
World Bank Agency: IDA
Amount of Financing (estimated total cost): $200 million of $440.4 million. Cofinancing is expected from the ODA ($3.1 million) and, possibly, others (Belgium, DANIDA, the EIB, and NORAD) in the amount of $128.8 million.
Year of Approval: FY1993
World Bank Description: "A sixth power project aims at meeting the growing demand for electricity at least cost through the construction of the Lower Kihansi hydroelectric scheme, helping the government restructure the power sector, improving energy efficiency, and promoting the development and operation of natural gas-fueled generation by private investors. Training and institution-building assistance are included." (World Bank Annual Report FY1993)
Notes: In 1996, the Canadian International Development Agency provided $2.1 million for training staff at the Ubongo Power Station, which received World Bank financing through the 1993 credit. The Ubongo plant, owned and operated by two Canadian companies, will burn natural gas from the nearby Songo Songo field. The Calgary-based firms, Ocelot and TransCanada, also own and operate the gas field. TransCanada sees developing countries as essential to its corporate growth. "In terms of the kind of growth you have to have to sustain the equity, you have to have growth beyond the (North American) share," said the Jake Epp, the company's vice president for international business, who is also the former Energy Minister of Canada. "We are looking at profitable growth and believe that profitable growth is there in the countries we have identified." The power plant is expected to open in 1998. Some of the plant's power may be exported to Kenya. (Xinhua, May 21, 1993 and Dec. 7, 1996; Financial Times, Nov. 5, 1996; Canada NewsWire, Oct. 20, 1995 and May 28, 1996;
TURKEY

Type of Industry: cogeneration power plant; wastewater plants  
Location: Turkey  
Owner of Project: Koc Group  
G-7 TNC Involvement: not clear  
World Bank Agency: IFC  
Amount of Financing (estimated total cost): $35 million loan, $55 million syndications of $152.4 million  
Year of Approval: FY1995  
World Bank Description: "Install co-generation and construct wastewater plants conforming to EU environmental standards to meet future demand for power and steam by the largest privately owned conglomerate." (IFC Annual Report FY1995)  
Note: The IFC-financed cogeneration unit to be built by Koc has an estimated cost of $40 million. (Financial Times, June 12, 1995)

UKRAINE

Type of Industry: 900-megawatt coal-fired power plant rehabilitation  
Subsidized Project: Krivoy Rog Power Plant Rehabilitation  
Location: Zelenodolsk, Ukraine  
Owner of Project: (borrower) Government of Ukraine (implementing agency) Joint Stock Company "Dniproenergo"  
G-7 TNC Involvement: not clear yet.  
World Bank Agency: IBRD  
Amount of Financing (estimated total cost): $166 million of $278.4 million  
Projected Board Date: March 13, 1997. No decision was announced.  
World Bank Description: "Krivoy Rog GRES is a coal-fired power station with 3,000 MW installed capacity (10x300MW), located in Zelenodolsk (Dnipropetrovsk region) and operated by Dniproenergo Joint Stock power company, based in Zaporozhye. Because of derating, the current operating capacity is only 2,600 MW. A number of Krivoy Rog units are nearing their design lives and vital components are at the end of their safe metallurgical life. The Station's environmental performance is inadequate. Serious deterioration in reliability of equipment has adversely affecting unit generating capacity, availability and efficiency. Rebuilding or replacement of some of these components is necessary for the continued economical, reliable and environmentally sustainable operation of this plant.... The main development objectives of the proposed project include support for... and (iv) rehabilitating a total of 900 MW generating capacity at Krivoy Rog GRES. Specific technical objectives include: (i) extending the life of three 300 MW power units by at least 15 years; (ii) increasing power output through improved unit availability and thermal efficiency [etc.].... Six thermal power plants have been identified by the Ministry of Power and Electrification (Minenergo) as possible investment targets. Of these six plants, detailed rehabilitation feasibility studies were carried out for Krivoy Rog GRES.... The proposed rehabilitation extends the life of three 300 MW units by at least 15 years. It is expected to increase: (i) generating capacity for the total plant from 2,600 MW in 1998 to 2,993 MW in 2001 and thereafter...." (World Bank Project Information Document, Project ID UAPA9109,
November 14, 1996)

Note: The power plant is located in the Krivoy Rog mining area which, according to the country's environment minister, poses "a constant threat of ecological emergencies." In early 1996, only two of ten units at the plant were operating. Bulgaria has some economic interests in the power plant. (Infobank news agency, Feb. 5, 1997; BBC, Dec. 1, 1996 and Feb. 15, 1996)

VIETNAM

Type of Industry: 80-megawatt gas-fired power plant expansion
Subsidized Project: Ba Ria Power Station
Location: Vietnam
G-7 TNC Involvement: British Gas (U.K, partner), Mitsui and Co. (Japan, partner).
World Bank Agency: IDA
Amount of Financing (estimated total cost): $165 million of $247.9 million
Year of Approval: FY1995
World Bank Description: "The government will be assisted in its efforts to rehabilitate and expand the country's power system." (World Bank Annual Report FY1995) This is a "project to expand the power generating capacity at Ba Ria Power Station in South Vietnam. The project has major environmental benefits in the provision of an extra 80 MW generation capacity without the consumption of extra fuel or additional emissions to the atmosphere...." (World Bank Environmental Assessment, Credit No. 2724, Report No. E78, March 1, 1995.)

Notes: Hyundai of South Korea has built a gas pipeline to the plant. Vietnam is poised to become the World Bank's second largest borrower after India. The plant opened in May 1995. (Agence France Presse, April 26, 1995 and May 9, 1996; Asia Times, Dec. 14, 1995)

Type of Industry: new 450-megawatt gas-fired power plant
Subsidized Project: Phu My Power Station (Power Sector Rehabilitation and Expansion Project)
Location: Vietnam
Owner of Project: Electricity of Vietnam (government-run)
G-7 TNC Involvement: Marubeni (Japan, construction); K&N Engineering (U.S., consultant). ABB of Switzerland supplied the gas turbines.
World Bank Agency: IDA
Amount of Financing (estimated total cost): $180 million of $242 million Date of Approval: February 23, 1996 (FY1996)
World Bank Description: "Help will be provided in meeting the rapid growth in electricity demand in the south of the country." (World Bank Annual Report FY1996)

Note: This is a soft loan for the first phase of a gas-fired power plant called the Phu My 2 project, which was completed in 1997. Eventually, the plant will have an output capacity of 900-megawatts. Gas for both the Phu My and Ba Ria power stations comes from the Bach Ho oil field. (Asia Pulse, Feb. 24, 1997 and May 5, 1997; Financial Times, July 23, 1996; Business Times, March 13, 1996; Xinhua, Feb. 27, 1996; Japan Economic Newswire, Dec. 25, 1995; Agence France Presse, Dec. 17, 1995)

ZIMBABWE

Type of Industry: coal-fired power plant rehabilitation and expansion
Subsidized Project: Hwange coal power plant
Location: Hwange, Zimbabwe
Owner of Project: Africa Power (51% stake granted to YTL of Malaysia in 1996)
G-7 TNC Involvement: none
World Bank Agency: IBRD
Amount of Financing (estimated total cost): $90 million of $200.3 million.
Year of Approval: FY1994
World Bank Description: "The performance and reliability of the Hwange coal-fired power station, the country's largest generating station, will be increased, thereby minimizing the severity of the power shortage -- caused by the recent drought -- and facilitating economic recovery. Technical assistance and training are included." (World Bank Annual Report FY1994)

Note: Recent developments at the Hwange coal-fired power station demonstrate the degree to which G-7 corporations and their host governments expect to benefit from World Bank-financed power projects. In late 1996, Zimbabwe President Robert Mugabe decided to award a contract to expand and privatize the Hwange power station to YTL Corporation of Malaysia. A U.S. company (Houston Energy Industries) and four European companies (National Power - UK, Electricite de France, Tractabel - Belgium, and Nordic Power Corp. - Sweden) lost their bids to own 51% of the plant and expand the plant's capacity from 920 to 1,590-megawatts.

The reaction by Western governments was furious. Zimbabwean ambassadors in Western capitals, according to President Mugabe, were summoned to explain the decision but he said, "I told them to go to hell, because Hwange thermal plant is ours and we do what we want with it."

In Washington, Under Secretary of State for Commerce and retired U.S. diplomat Chester Crocker said that "warped" contract awards would do "irreparable damage" to Zimbabwe's business relations with the U.S. "We are glad that the Zimbabwean government, despite the recriminations, has awarded us all that we've asked for," said Francis Yeoh Sock Ping, YTL's managing director. The Hwange power plant makes more than half of Zimbabwe's electricity.

Appendix One: G-7 corporate involvement in World Bank-financed fossil fuel projects

The following list details known G-7-based corporate involvement in Bank-financed fossil fuel projects included in the inventory sections of this report. This involvement ranges from supplying equipment or management services to Bank-financed fields and plants to total ownership of the financed project. The following should not be seen as being comprehensive: A more exhaustive search for information about individual projects and further examination of Bank procurement awards would certainly add to this list.

Canada

Acres International: Pakistan (gas field engineering services)

Bonus Petroleum: Kazakhstan (oil industry investor/supplier)

Bow Valley Energy: Indonesia (gas field holder)

Calgary Overseas: Russia (oil company investor)

Canadian Fracmaster: Russia (oil company investor, contractor)

Capco: Pakistan (oil power plant investor)

Carmanah: Indonesia (gas field holder)

Dreco Energy Services: Russia (oil field workover rigs and other equipment)

HBT Agra Ltd.: Tanzania (assessment of Songo Songo gas development)

Hurricane Hydrocarbons: Kazakhstan (50% oil field owner)

International Petroleum Corp.: Papua New Guinea (oil and gas field investor)

Jebsen & Co.: China (equipment for coal-fired power project)

Norcen - (possibly) Guatemala (may merge with Basic, oil field owner)

Nova: Argentina (gas pipeline owner, gas power plant investor)

Novus: Indonesia (gas field holder)

Ocelot: Tanzania (gas field and power plant owner/operator)

Petrus Well Service: Russia (oil company investor)

Snow Leopard Resources: Kazakhstan (oil industry investor/supplier)
Stone & Webster: Tanzania (gas power plant turbines)

Talisman: (possibly) Indonesia (pipeline construction)

TransCanada PipeLines: Tanzania (gas field, pipeline and power plant owner/operator)

V.C. Wilhelm: Tanzania (gas power project consultant)

Wascana: Venezuela (oil field operator)

**FRANCE**

Alsthom: Cote d'Ivoire (gas power plant builder); Philippines (coal power plant turbines and boilers); Romania (coal power plant rehab); Zimbabwe (coal power plant rehab)

Basic: Guatemala (oil field and pipeline owner)

Campenon Bernard SGE: Pakistan (oil power plant contractor)

Corex: Venezuela (oil field operator)

Electricite de France: Cote d'Ivoire (gas power plant owner); Kenya (power sector consultant)

Elf-Aquitaine: Cameroon (25% owner of oil field); Chad (20% owner of oil field); Congo (51% oil field owner); Russia (oil company investor)

European Gas Turbines: Oman (Gas power plant turbines)

Gaz de France: Kazakhstan (25% oil field owner)

Geoservices: China (gas development well equipment); Russia (oil field rehab equipment)

Groupe Norelec: Zimbabwe (coal power plant equipment)

Ipedex: Cote d'Ivoire (power sector consultant)

Le Materiel de Voie: China (coal power plant equipment)

Malbranque: Russia (oil rehabilitation equipment)

Saur: Cote d'Ivoire (gas power plant owner); (possibly) Chad (electricity company bid)

Societe d'Etudes: China (equipment for gas field development)
Stein Industrie: India (coal power plant boilers)

Total: Argentina (oil basin investor/explorer/producer); Thailand (gas field operator)

Trouvay & Cauvin: Russia (oil rehabilitation equipment)

**GERMANY**

Claudius Peters: Russia (oil rehabilitation project housing)

Deminex: Argentina (oil basin investor/explorer); Russia (oil company investor)

EMC Aushandels GmbH: Russia (oil rehab equipment)

Kat Oil: Russia (oil company investor)

Klockner: Russia (oil rehab equipment)

Mannesmann: (possibly) Chad (oil pipeline construction); Indonesia (gas pipeline construction)

Panalpina: Russia (oil rehab services)

RWE-DEA: Kazakhstan (25% oil field holder)

**ITALY**

Ansaldo Energia: Pakistan (oil power plant turbines); Zimbabwe (power station equipment)

Ctip/Fochi: Pakistan (gas field operator)

Eni (including Agip): Kazakhstan (oil field investor/supplier); Russia (oil company investor); possibly: Turkey (pipeline bid)

Lahmeyer International: Indonesia (coal power sector advisor)

Nuovo Pignone: Pakistan (gas processing equipment)

Saipem: Azerbaijan (oil field equipment supplier); (possibly) Chad (oil pipeline construction bid); Thailand (gas pipeline builder)

**JAPAN**

Ishikawajima-Harima Heavy Industries: Pakistan (oil power plant investor,
contractor)

Itochu: Azerbaijan (oil field investor, equipment); Indonesia (gas field holder)

Itoh: Russia (oil company investor)

JGC: Thailand (refinery equipment supply)

Japan Oil Engineering Co.: Bangladesh (gas infrastructure consultant)

Japan Petroleum Exploration Co.: Papua New Guinea (oil and gas field investor)

Marubeni: Vietnam (gas power plant construction)

Mitsubishi: Pakistan (equipment supplier, coal and oil power plants); Papua New Guinea (oil and gas field investor); Russia (oil rehab equipment); (possibly) Chad (power plant bid)

Mitsui: China (boilers and turbines for power plant); Indonesia (33% coal power plant owner); Pakistan (oil power plant investor, contractor; power plant builder); Thailand (20% gas field owner); Vietnam (gas power plant partner)

Nichimen Corp.: Pakistan (oil power plant equipment); Russia (oil field rehab equipment)

Nihon Cement: India (power plant partner)

Nippon Oil Co.: Papua New Guinea (oil and gas field investor)

Nissho Iwai Corp.: Pakistan (10% investor in oil power plant); Papua New Guinea (oil and gas field investor); Thailand (refinery equipment supply)

Tomen: Pakistan (oil and diesel power plants investor)

Toshiba: Pakistan (oil power plant turbine)

Toyo Engineering: Indonesia (coal power plant services)

Sumitomo: Bangladesh (gas pipeline equipment)

U.K.

Amec Power: Oman (gas power plant power lines, transformers)

BOC Holdings: Venezuela (oil refinery investor)

Baker Tools: Pakistan (gas field equipment); Russia (oil field equipment)
British Gas: Indonesia (gas field consumer); Kazakhstan (oil industry investor), Pakistan (gas field contractor); Vietnam (gas power plant partner)

British Petroleum: Azerbaijan (oil field producer/investor); Papua New Guinea (oil and gas field investor); Russia (oil company investor)

Burmah Castrol: Pakistan (64% gas field owner)

BW Mud Ltd.: Russia (oil field supplies)

Cairn Energy: Bangladesh (gas reserve holder)

Crown Agents: Russia (oil field services)

Dana Petroleum: Russia (oil field services)

Enterprise Oil: Romania (oil investor)

GEC: Philippines (coal power plant turbines and boilers); Romania (coal power plant rehab)

H & G Engineering: China (technical assistance to gas-related plant)

Halliburton: Bangladesh (gas reserve holder); China (gas field equipment); Mozambique (gas field contractor)

Hamilton Oil: Russia (oil company investor)

International Mining Consultants: India (coal sector technical assistance)

KCA: Mozambique (gas field appraisal)

Midlands Electricity: Pakistan (40% gas power plant owner)

National Power: Pakistan (26% owner of gas field customer; 40% owner of oil power plant)

Parsons Turbine Generators (Rolls Royce Power): India (coal power plant contractor)

Ramco: Azerbaijan (oil field investor)

Shell (also based in the Netherlands): Bolivia (25% owner of gas pipeline co.); Cameroon (owns oil company); Chad (40% oil field, pipeline owner); Romania (oil investor); possibly: Turkey (pipeline bid)

U.S.
AES: Pakistan (owns coal power plant and a oil power plant)

Amoco: Azerbaijan (oil field producer/investor); Bolivia (50% owner, oil production company); Guatemala (oil field customer); Poland (coal bed methane exploration); Romania (oil investor); Russia (oil company investor); possibly: Kazakhstan (oil field bidder)

Anglo-Suisse: Russia (oil company investor)

Arco (Atlantic Richfield): Russia (oil company investor)

Apache Oil: Egypt (75% oil and gas field owner, operator); Cote d'Ivoire (gas field operator)

Applied Industrial Materials: India (coal power plant investor)

Avanti Consulting: Russia (oil field services and support)

Baker Hughes: China (gas field equipment); Russia (oil company investor, equipment)

Bechtel: (possibly) Chad (oil pipeline construction bid)

Bethlehem Pipe: Russia (oil field equipment)

Benton Oil & Gas: Russia (oil company investor)

Cardwell International: Russia (oil field equipment)

Chevron: Azerbaijan (oil field equipment); Congo (30% oil field owner); Indonesia (gas field holder); Thailand (32% refinery owner); possibly Turkey (pipeline bid)

CMS Energy: Ghana (oil and gas power plant partner); India (19% gas power plant owner, operator; coal power plant investor); Jamaica (diesel power plant owner); Morocco (50% coal power plant owner)

Coastal: Pakistan (owner of oil power plant); Romania (oil investor)

Cogen: Pakistan (coal power plant investor)

Computer & Telecoms System (gas power project equipment)

De Golyer & MacNaughton: Bolivia (gas industry consultant)

Duke Power: Indonesia (coal power plant construction and engineering services)

DuPont (Conoco): Russia (oil company investor)
Edison International: Indonesia (40% coal power plant investor)

El Paso Energy: Argentina (investor in oil company)

Enron: Bolivia (25% gas pipeline owner); China (evaluating gas joint venture in Sichuan,); Colombia (39% gas pipeline owner); Dominican Republic (oil-fired power plant partner); Guatemala (diesel power plant 50% owner, operator); Indonesia (gas field consumer); Mozambique (gas field owner); (possibly) Croatia (gas power plant bid)

Entergy: Pakistan (oil power plant investor)

Exxon: Argentina (refinery operator); Azerbaijan (oil field producer/investor); Chad (40% oil field, pipeline owner); Indonesia (gas field holder); Russia (oil company investor, equipment for rehab project)

Fluor Daniel: Indonesia (coal power plant services)

Foster Wheeler: Argentina (investor in refinery equipment); Venezuela (investor in refinery equipment)

General Electric: Hungary (gas power plant turbine); Indonesia (12.5% coal power plant investor); Pakistan (gas power plant investor, construction and equipment contractor)

Gulf: Indonesia (gas field holder)

Hawkins Oil & Gas: Pakistan (gas power plant investor)

Hill International: Armenia (gas power plant construction manager)

Honeywell: Hungary (gas power plant equipment)

Houston Industries: India (20% owner coal power plant, technical services)

Hughes Christensen: Russia (oil field equipment)

Hunton & Williams: Tanzania (gas field legal services)

Illinova: Honduras (diesel power plant investor); Jamaica (diesel power plant investor)

IRI: Russia (oil field equipment)

LTV: Russia (oil field equipment)

K H International: Kazakhstan (oil industry investor/supplier)
K & M: Pakistan (oil power plant investor)

K & N Engineering: Vietnam (gas power plant consultant)

King Ranch Inc.: Guatemala (50% diesel power plant investor)

Maxus: Indonesia (gas field holder)

McDermott: China (equipment for coal power plant); Guatemala (diesel power plant barge builder); Pakistan (oil power plant boilers, investor); Zimbabwe (power plant parts and services)

McDonnell Douglas: Jamaica (diesel power plant investor)

MI Drilling: Romania (oil investor)

Mobil: Argentina (oil producer); Indonesia (gas field holder);

Morrison Knudson: Mongolia (coal sector assistance)

Nomenco: Venezuela (oil field operator)

Northern States Power: Czech Republic (coal power plant investor)

NRG Energy: Czech Republic (coal power plant investor)

Occidental: Bangladesh (gas field holder); (Possibly) Argentina (partner in oil field)

Oceaneering International: Cote d'Ivoire (oil and gas field engineering)

Oryx: Kazakhstan (oil industry investor/supplier)

Parsons Corp. Ethiopia (building gas processing plant)

Pennzoil: Azerbaijan (oil field investor)

Polyken Technologies: Russia (oil field equipment)

Public Service Electric and Gas Co. (Community Energy Alternatives): India (coal power plant partner)

Raytheon: Pakistan (gas power plant project manager)

Reed Tool: Russia (oil field equipment)

Santa Fe Energy ReSources: Indonesia (gas field holder)
Scudder: Honduras (diesel power plant investor); Jamaica (diesel power plant investor)

Seagull Energy: Cote d'Ivoire (10% oil and gas field owner); Egypt (25% oil and gas field owner)

Smith International: Russia (oil field equipment)

Solomon: Russia (oil company investor)

Southern Co.: Philippines (coal power plant owner)

Stewart & Stevenson: Tanzania (gas turbine supplier)

Tenaska: Pakistan (gas power plant investor)

Texaco: Indonesia (gas field holder); Russia (oil company investor); Thailand (32% refinery owner)

Thermo Ecotek: Dominican Republic (oil power plant investor)

Thermo Sentron: Indonesia (coal power plant equipment)

Triton Vuko: Kazakhstan (oil industry investor/supplier)

United Engineers: Philippines (coal power plant rehab consultants)

United Meridian Corp. (UMC): Bangladesh (gas field holder); Cote d'Ivoire (25% oil and gas field owner; gas processor)

Unocal: Azerbaijan (oil field investor); Bangladesh (gas field holder); Thailand (80% gas field owner); possibly: Kazakhstan (oil field bidder), Turkey (oil pipeline bid)

Varco International: Russia (oil field equipment)

Wackenhut: Chad (oil pipeline security)

Wai Atlas Wireline Services: China (gas field equipment)

Westinghouse: China (coal power plant turbine generator); Poland (coal power plant rehab partner)

Willbros: (possibly) Chad (pipeline construction bid)
Appendix Two: World Bank fossil fuel contracts awarded to G-7 corporations, 1994-95

Over a two year period (FY1994 to FY1995), the World Bank awarded G-7-based corporations well over $1.7 billion in contracts to provide equipment and other services for fossil fuel-related projects.

Fossil fuel procurement awards (FY1994-95)

<table>
<thead>
<tr>
<th>Country</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.A.</td>
<td>$499.3 million</td>
</tr>
<tr>
<td>Japan</td>
<td>$356.3 million</td>
</tr>
<tr>
<td>Italy</td>
<td>$245.6 million</td>
</tr>
<tr>
<td>France</td>
<td>$213.4 million</td>
</tr>
<tr>
<td>Canada</td>
<td>$174.8 million</td>
</tr>
<tr>
<td>U.K.</td>
<td>$123.4 million</td>
</tr>
<tr>
<td>Germany</td>
<td>$ 94.7 million</td>
</tr>
</tbody>
</table>

TOTAL G-7: $1.7075 billion

Note: The following information is excerpted from the reports "Prior Review Contracts Approved by the World Bank by Country of Supplier" reports by the Operations Policy Department/Procurement Policy and Coordination Unit, FY1994 and FY1995.

It includes projects that are not covered elsewhere in this report. Listings below include purchases for climate-change enhancing industries that we do not otherwise cover (such as steel and cement) and for projects for which the Bank extended commitments prior to FY1993. Listings in **BOLD** indicate awards for projects covered elsewhere in this study.

The Bank sorts its procurement contract listings by the country from which the goods are purchased, not by the country headquartering the corporation which gained the procurement contract. Thus, their listing, excerpted below, should not be seen as a comprehensive telling of the amount of contracts awarded to G-7 corporations. Numerous awards listed under developing countries' headings involve subsidiaries of G-7 corporations.

We would recommend that the World Bank provide reports that are sorted by transnational corporate headquarters of companies that are awarded procurement contracts. Such documentation would provide a much more revealing accounting of capital flows from Bank projects.

Another weakness in this list is that it does not include some 20 to 40% of all procurement contracts. According to the Bank, the data on contracts for which the Bank has issued no objection ideally includes "between 60 and 80 percent of the procurement under a project."

The following (and the above summary figures) thus should be seen as a representative but incomplete sample of the range of companies and the types of services involved in Bank fossil fuel-related procurements.
Partial list of World Bank fossil fuel-related procurement awards to G-7 corporations, FY1994 to FY1995

<table>
<thead>
<tr>
<th>Company</th>
<th>Country</th>
<th>Value of award</th>
<th>FY</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CANADA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acres International</td>
<td>Tanzania</td>
<td>$442,384</td>
<td>94</td>
<td>Engineering services for</td>
</tr>
<tr>
<td>Dreco Energy Services, Ltd.</td>
<td>Russia</td>
<td>$15,831,936</td>
<td>95</td>
<td>For mobile workover rigs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Rehabilitation II project.</td>
</tr>
<tr>
<td>HBT Agra Ltd.</td>
<td>Tanzania</td>
<td>$180,000</td>
<td>95</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>Jebsen &amp; Co. Ltd.</td>
<td>China</td>
<td>$472,830</td>
<td>94</td>
<td>500 kv current transformer for</td>
</tr>
<tr>
<td>Met-Chem Canada pipes</td>
<td>Mexico</td>
<td>$11,100,000</td>
<td>95</td>
<td>For purchase and installations of</td>
</tr>
<tr>
<td>Norwest Mine Services</td>
<td>India</td>
<td>$2,082,929</td>
<td>94</td>
<td>Jharia mine fire containment project</td>
</tr>
<tr>
<td>Stone &amp; Webster</td>
<td>Tanzania</td>
<td>$3,503,143</td>
<td>95</td>
<td>For supply and installation of</td>
</tr>
<tr>
<td>Stone &amp; Webster</td>
<td>Indonesia</td>
<td>$140,576,025</td>
<td>94</td>
<td>Mechanical and electrical works for the</td>
</tr>
<tr>
<td>V.C. Wilhelm</td>
<td>Tanzania</td>
<td>$577,000</td>
<td>94</td>
<td>Consultancy services as</td>
</tr>
<tr>
<td>William G. Matthews Assoc.</td>
<td>Eq. Guinea</td>
<td>$65,000</td>
<td>94</td>
<td>Assistance in obtaining method for</td>
</tr>
<tr>
<td><strong>FRANCE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alsthom (GEC/Alstom</td>
<td>India</td>
<td>$25,807,626</td>
<td>95</td>
<td>420 kv gas insulated switchgear package for Maharashtra power</td>
</tr>
<tr>
<td>France/UK joint venture)</td>
<td></td>
<td></td>
<td></td>
<td>project.</td>
</tr>
<tr>
<td>Alsthom (Cogelex Alsthom)</td>
<td>Indonesia</td>
<td>$8,293,287</td>
<td>94</td>
<td>500 kv compressed gas insulated recond of</td>
</tr>
<tr>
<td>Alsthom</td>
<td>Romania</td>
<td>$4,625,781</td>
<td>94</td>
<td>Relays and recondition of</td>
</tr>
<tr>
<td>Alsthom(GEC Alsthom/</td>
<td>Zimbabwe</td>
<td>$1,510,183</td>
<td>95</td>
<td>Overhaul of unit 3 turbine/alternator and feed heating</td>
</tr>
<tr>
<td>Alsthom/MAN Energie)</td>
<td>Guinea</td>
<td>$399,556</td>
<td>95</td>
<td>Technical assistance in the construction of 30</td>
</tr>
<tr>
<td>Beicip Franlab</td>
<td>Niger</td>
<td>$570,166</td>
<td>95</td>
<td>&quot;Petroleum promotion&quot; for energy</td>
</tr>
<tr>
<td>Beicip</td>
<td>Eq. Guinea</td>
<td>$1,106,086</td>
<td>94</td>
<td>Technical assistance, including audits of</td>
</tr>
<tr>
<td>Cegelec</td>
<td>India</td>
<td>$94,350,949</td>
<td>94</td>
<td>Turbines and generator package for</td>
</tr>
<tr>
<td>Electricite de France/Coyne</td>
<td>Guinea</td>
<td>$399,556</td>
<td>95</td>
<td>Technical assistance in the construction of 30</td>
</tr>
<tr>
<td>et Bellier</td>
<td></td>
<td></td>
<td></td>
<td>megawatt power</td>
</tr>
<tr>
<td>Electricite de France</td>
<td>Kenya</td>
<td>$912,694</td>
<td>95</td>
<td>Electric power sector organization</td>
</tr>
<tr>
<td>Company</td>
<td>Country</td>
<td>Amount</td>
<td>Year</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------</td>
<td>---------------</td>
<td>------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>Enterprise Jean Lefebvre</td>
<td>Cote d'Ivoire</td>
<td>$15,260,963</td>
<td>95</td>
<td>Petroleum for the agriculture sectoral</td>
</tr>
<tr>
<td>Geoservices S.A.</td>
<td>China</td>
<td>$5,984,608</td>
<td>95</td>
<td>3 sets of well test equipment</td>
</tr>
<tr>
<td>Sichuan Gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geoservices</td>
<td>Russia</td>
<td>$891,195</td>
<td>94</td>
<td>Mud logging devices for first oil</td>
</tr>
<tr>
<td>Groupe Norelec</td>
<td>Zimbabwe</td>
<td>$1,947,103</td>
<td>94</td>
<td>Electrical power plant and</td>
</tr>
<tr>
<td>Ipedex</td>
<td>Cote d'Ivoire</td>
<td>$113,634</td>
<td>94</td>
<td>Consultancy services on the project</td>
</tr>
<tr>
<td>Jeumont Schneider Transformate</td>
<td>China</td>
<td>$12,010,808</td>
<td>94</td>
<td>Generator step-up transformer and other</td>
</tr>
<tr>
<td>Le Materiel de Voie</td>
<td>China</td>
<td>$563,796</td>
<td>94</td>
<td>Switches for Beilungang coal-</td>
</tr>
<tr>
<td>Malbranque S.A.</td>
<td>Russia</td>
<td>$554,134</td>
<td>95</td>
<td>Valves and fittings (small)</td>
</tr>
<tr>
<td>New Sulzer Diesel</td>
<td>Guinea</td>
<td>$15,199,020</td>
<td>95</td>
<td>Construction of 30 megawatt power</td>
</tr>
<tr>
<td>Societe d'Etudes, Rech. (Sercel)</td>
<td>China</td>
<td>$3,660,378</td>
<td>95</td>
<td>2 sets of portable wireline telemetry seismic data</td>
</tr>
<tr>
<td>Socap</td>
<td>Cote d'Ivoire</td>
<td>$17,890,000</td>
<td>94</td>
<td>Petroleum for human resources</td>
</tr>
<tr>
<td>Sofregaz</td>
<td>Tunisia</td>
<td>$491,960</td>
<td>95</td>
<td>Gas development study for gas</td>
</tr>
<tr>
<td>Total Petroleum</td>
<td>Argentina</td>
<td>$824,158</td>
<td>94</td>
<td>Pilot project in hydrocarbon</td>
</tr>
<tr>
<td>Trouvay &amp; Cauvin</td>
<td>Russia</td>
<td>$392,730</td>
<td>94</td>
<td>Valves and fittings for first oil</td>
</tr>
<tr>
<td>GERMANY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ABB (actual headquarters</td>
<td>Pakistan</td>
<td>$3,920,106</td>
<td>94</td>
<td>Power grid stations and</td>
</tr>
<tr>
<td>extensions in Switzerland)</td>
<td></td>
<td></td>
<td></td>
<td>for energy sector loan.</td>
</tr>
<tr>
<td>AEG</td>
<td>Pakistan</td>
<td>$1,560,420</td>
<td>95</td>
<td>132 kv grid station equipment: circuit development project.</td>
</tr>
<tr>
<td>AEG</td>
<td>China</td>
<td>$741,936</td>
<td>94</td>
<td>Circuit breaker for Wujing power plant.</td>
</tr>
<tr>
<td>BASF</td>
<td>India</td>
<td>$117,525</td>
<td>95</td>
<td>License agreement for petrochemicals</td>
</tr>
<tr>
<td>Cement Plant Consultants A/S</td>
<td>Pakistan</td>
<td>$2,029,190</td>
<td>95</td>
<td>Post commissioning services for cement</td>
</tr>
<tr>
<td>Claudius Peters</td>
<td>Russia</td>
<td>$2,036,900</td>
<td>94</td>
<td>Portable housing facilities for</td>
</tr>
<tr>
<td>Dr. Horst Letz</td>
<td>Papua, N.G.</td>
<td>$490,000</td>
<td>95</td>
<td>Consultancy services for geophysical technical assistance program.</td>
</tr>
<tr>
<td>EMC Aushandels GmbH</td>
<td>Russia</td>
<td>$4,110,449</td>
<td>94</td>
<td>Electric welded pipe for first</td>
</tr>
<tr>
<td>Humboldt Wedag Inc.</td>
<td>China</td>
<td>$11,420,000</td>
<td>94</td>
<td>Clinker purning and coal grinding system</td>
</tr>
<tr>
<td>Company</td>
<td>Country</td>
<td>Amount</td>
<td>Year</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>---------------</td>
<td>---------------</td>
<td>------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Klockner</td>
<td>Russia</td>
<td>$3,880,800</td>
<td>94</td>
<td>Production tubing for first oil</td>
</tr>
<tr>
<td>Neuman und Esser</td>
<td>Hungary</td>
<td>$5,354,935</td>
<td>94</td>
<td>Natural gas compressors for Zsana development project.</td>
</tr>
<tr>
<td>Panalpina</td>
<td>Russia</td>
<td>$12,000,000</td>
<td>94</td>
<td>Provision of logistics management</td>
</tr>
<tr>
<td>Siemens</td>
<td>Pakistan</td>
<td>$25,885,388</td>
<td>94</td>
<td>Supply of self-generation power plant and</td>
</tr>
<tr>
<td>The Consortium Dywidag/Karya</td>
<td>Indonesia</td>
<td>$21,122,706</td>
<td>94</td>
<td>Stacks works package for units 5,6, and 7</td>
</tr>
<tr>
<td>ITALY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agip</td>
<td>Ghana</td>
<td>$2,939,687</td>
<td>94</td>
<td>Supply and installation of petroleum</td>
</tr>
<tr>
<td>Ansaldo</td>
<td>Zimbabwe</td>
<td>$1,182,397</td>
<td>95</td>
<td>Major overhaul turbine,</td>
</tr>
<tr>
<td>Ansaldo</td>
<td>Zimbabwe</td>
<td>$2,630,573</td>
<td>94</td>
<td>Power station and transmission spares.</td>
</tr>
<tr>
<td>Ctip/Fochi</td>
<td>Pakistan</td>
<td>$101,596,092</td>
<td>94</td>
<td>Turnkey contract for Qadirpur gas</td>
</tr>
<tr>
<td>Electroconsult</td>
<td>Indonesia</td>
<td>$1,397,625</td>
<td>95</td>
<td>Developing bid documents for geothermal</td>
</tr>
<tr>
<td>Grove Italia S.p.a.</td>
<td>Korea</td>
<td>$2,069,647</td>
<td>94</td>
<td>Through conduit gate valve sets for</td>
</tr>
<tr>
<td>Lahmeyer International</td>
<td>Indonesia</td>
<td>$1,515,302</td>
<td>95</td>
<td>Develop bid documents, negotiation</td>
</tr>
<tr>
<td>Nuova Magrini Galileo S.p.a.</td>
<td>China</td>
<td>$11,933,332</td>
<td>94</td>
<td>Auxilliary power sub-island for Zouxian</td>
</tr>
<tr>
<td>Nuova Pignone</td>
<td>Pakistan</td>
<td>$13,790,332</td>
<td>94</td>
<td>Supply of permeate gas recycle</td>
</tr>
<tr>
<td>Perar</td>
<td>Egypt</td>
<td>$386,668</td>
<td>94</td>
<td>Ball valves for natural gas pipelines.</td>
</tr>
<tr>
<td>Pietro/Fiorentinii/Spjati</td>
<td>Indonesia</td>
<td>$272,237</td>
<td>94</td>
<td>Customer metering and regulating stations</td>
</tr>
<tr>
<td>PLE Engineering GmbH</td>
<td>Egypt</td>
<td>$546,639</td>
<td>95</td>
<td>Scada consultancy services for gas</td>
</tr>
<tr>
<td>Saipem</td>
<td>Thailand</td>
<td>$89,763,277</td>
<td>95</td>
<td>Construction of offshore pipeline</td>
</tr>
<tr>
<td>Schlumberger</td>
<td>Jamaica</td>
<td>$243,272</td>
<td>95</td>
<td>Provision of meters and</td>
</tr>
<tr>
<td>Termokimik Corp.</td>
<td>China</td>
<td>$2,941,247</td>
<td>95</td>
<td>Condensate polishing plant for Zouxian</td>
</tr>
<tr>
<td>Tubi Dalmina</td>
<td>Egypt</td>
<td>$12,430,080</td>
<td>94</td>
<td>18 inch natural gas pipeline for Kureimat</td>
</tr>
<tr>
<td>JAPAN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choka Trading Co.</td>
<td>China</td>
<td>$5,095,702</td>
<td>95</td>
<td>Steamless steel pipe for Zouxian thermal</td>
</tr>
<tr>
<td>Itochu Corp.</td>
<td>China</td>
<td>$181,521</td>
<td>94</td>
<td>Turbine generator island for Yanshi thermal</td>
</tr>
<tr>
<td>Itochu Corp.</td>
<td>Egypt</td>
<td>$7,963,850</td>
<td>94</td>
<td>22 inch natural gas pipeline material for</td>
</tr>
<tr>
<td>Company</td>
<td>Country</td>
<td>Amount</td>
<td>Year</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>--------------</td>
<td>------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Japan Oil Engineering Co. Ltd.</td>
<td>Bangladesh</td>
<td>$2,571,557</td>
<td>95</td>
<td>Drilling management consultancy services for gas infrastructure project</td>
</tr>
<tr>
<td>Mitsui &amp; Co.</td>
<td>China</td>
<td>$278,778,454</td>
<td>95</td>
<td>3 x 60 megawatt boilers and</td>
</tr>
<tr>
<td>Mitsui &amp; Co.</td>
<td>Pakistan</td>
<td>$38,624,768</td>
<td>95</td>
<td>Engineering supply and erection thermal power plant.</td>
</tr>
<tr>
<td>Mitsui &amp; Co.</td>
<td>China</td>
<td>$3,253,230</td>
<td>95</td>
<td>6 kv switchgear for Yanshi thermal power</td>
</tr>
<tr>
<td>Mitsui &amp; Co.</td>
<td>Russia</td>
<td>$613,334</td>
<td>95</td>
<td>Valves, fittings and demulsifiers</td>
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<tr>
<td>Mitsubishi</td>
<td>Indonesia</td>
<td>$16,860</td>
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<td>Substation and transformers for Suralaya</td>
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<td>Mitsubishi</td>
<td>Russia</td>
<td>$144,574</td>
<td>94</td>
<td>Valves and fittings for first oil</td>
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<tr>
<td>Nichimen</td>
<td>Russia</td>
<td>$528,374</td>
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<td>Anti-corrosion materials for first</td>
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<td>Sumitomo</td>
<td>Mongolia</td>
<td>$1,655,685</td>
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<td>11,112 drums of lubricants</td>
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<td>BP</td>
<td>Romania</td>
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<td>BW Mud Ltd.</td>
<td>Russia</td>
<td>$17,070</td>
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<td>Mud chemicals for first oil sector</td>
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<td>Russia</td>
<td>$781,894</td>
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<td>Drilling muds for first oil sector</td>
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<td>Babcock Construction Ltd.</td>
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<td>$5,755,442</td>
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<td>Major overhaul of unit 6 boiler and provision of auxiliary water</td>
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<tr>
<td>Baker Oil Tools</td>
<td>Russia</td>
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<td>Downhole equipment, oilfield</td>
</tr>
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<td>Baker Tools</td>
<td>Pakistan</td>
<td>$894,004</td>
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<td>Baroid International</td>
<td>Russia</td>
<td>$824,924</td>
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<td>Bayoil</td>
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<td>Dawkul</td>
<td>Hungary</td>
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<td>Crude oil product pipeline measuring system.</td>
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<td>Filterall</td>
<td>Uganda</td>
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<td>$144,750</td>
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<td>Viability assessment of five coal mines for a rehabilitation project.</td>
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<td>Company</td>
<td>Country</td>
<td>Amount</td>
<td>Year</td>
<td>Description</td>
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<td>Kennedy and Donkin</td>
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<td>Development and investment</td>
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<td>Morgan Grenfel &amp; Co.</td>
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<td>Oil Tools (Europe)</td>
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<td>Rothschild-McKenna</td>
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<td>Shell</td>
<td>Cote d'Ivoire (also headquartered in the Netherlands)</td>
<td>$34,261,446</td>
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<td>Petroleum purchase (for human resources adjustment project).</td>
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<td>Stone and Webster</td>
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<td>Data processing hardware and software</td>
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<td>UNITED STATES</td>
<td></td>
<td></td>
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<td>Agroman Ltd.</td>
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<td>94</td>
<td>Supply of medium voltage switchgear for power</td>
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<td>Akin Gump &amp; Simon Petroleum (joint venture)</td>
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<td>Arthur D. Little</td>
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<td>Avanti Consulting Inc</td>
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<td>Babcock &amp; Wilcox (of McDermott)</td>
<td>China</td>
<td>$155,168,680</td>
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<td>Baker Hughes</td>
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<td>Year</td>
<td>Description</td>
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<td>Philippines</td>
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<td>Rockbits and mozzles for energy sector</td>
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<td>Cardwell Internl. Ltd.</td>
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<td>$7,747,304</td>
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<td>Workover rigs for first and second</td>
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<td>Chevron</td>
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<td>Computer &amp; Telecoms System</td>
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<td>Purchase of customer service software for gas power project.</td>
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<td>De Golyer &amp; MacNaughton</td>
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<td>Determination of oil, gas reserves and economic valuation for the</td>
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<td>Doyle Gallegos</td>
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<td>Exxon Chemicals</td>
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<td>Raw material preparation and cement grinding</td>
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<td>GAI-Metchem</td>
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<td>$2,452,734</td>
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<td>Preparation of mine fire study report (Jharia)</td>
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<td>General Electric</td>
<td>China</td>
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<td>500 kv relay protection for Beilungang coal</td>
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<td>Petroleum software - reservoir engineering for</td>
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<td>Halliburton (US)</td>
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<td>Hughes Christensen</td>
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<td>Hunton and Williams</td>
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<td>IBS Management Training Center</td>
<td>Russia</td>
<td>$169,131</td>
<td>95</td>
<td>English language training for Varyeganneftegaz personnel (oil rehabilitation project).</td>
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<td>IRI</td>
<td>Russia</td>
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<td>Two mobile workover rigs for first</td>
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<td>Joshi Technologies</td>
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<td>Beilun clinker grinding system for cement</td>
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<td>LTV</td>
<td>Russia</td>
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<td>Two 100-ton rigs for first oil</td>
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<td>Amount</td>
<td>Year</td>
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<td>Ormson</td>
<td>Morocco</td>
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<td>Parker Drilling</td>
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<td>Polyken Technologies Ltd.</td>
<td>Russia</td>
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<td>Reed Tool Co.</td>
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<td>Robert Boris Gaul</td>
<td>Russia</td>
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<td>Rodney Smith</td>
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<td>Petroleum advisor.</td>
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<td>Scientific Software Int.</td>
<td>Algeria</td>
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<td>Study &quot;Balayage de Zarzaitine&quot; for First</td>
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<td>Security DBS Dresser Industries</td>
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<td>Russia</td>
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<td>Varco International</td>
<td>Russia</td>
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<td>Blow out preventers and other</td>
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<td>Wai Atlas Wireline Services</td>
<td>China</td>
<td>$10,735,793</td>
<td>95</td>
<td>Truck-mounted production test and logging units for Sichuan gas</td>
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<td>Walter Scott</td>
<td>Tanzania</td>
<td>$74,300</td>
<td>95</td>
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<td>China</td>
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<td>China</td>
<td>$16,054,993</td>
<td>94</td>
<td>Instrumentation and control system for Zouxian</td>
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</table>

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Glossary of Common Terms

**Annex 1 countries**--Signatories to the Climate Convention, largely from the North, who will abide by the strictest standards of greenhouse gas emission reductions

**the Bank**: The World Bank Group

**carbon**: A key element in fossil fuels, whose molecular weight is equivalent to less than one-third that of carbon dioxide.

**carbon dioxide**: CO2, the number one greenhouse gas, whose molecular weight is 3.67 times greater than carbon.


**Earth Summit II**: The five-year assessment of progress made since the Earth Summit in 1992, held in New York the week of June 23, 1997.

**FCCC**: The United Nations Framework Convention on Climate Change, or the Climate Convention.

**G-7**: The Group of Seven wealthiest industrialized countries. Includes the U.S., Germany, Japan, Italy, France, the U.K., and Canada.

**GDP**: Gross Domestic Product

**gigaton**: One billion tons

**IBRD**: International Bank for Reconstraction and Development

**IDA**: International Development Association

**IFC**: International Finance Corporation

**IMF**: International Monetary Fund

**IPCC**: The Intergovernmental Panel on Climate Change

**MIGA**: Multilateral Investment Guarantee Agency

**Non-Annex 1 countries**--Signatories to the Climate Convention in developing countries who are given more leeway in reducing their greenhouse gas emissions.

**NGO**: non-governmental organization, or non-profit organization.

**The South or global South**: This refers, in shorthand, to the less industrialized countries, many of whom--but not all--are situated south of the richer, "Northern" countries of Europe and northern America.

**The North or global North**: This refers, in shorthand, to those wealthier, industrialized countries of Europe and North America (including all of the Group of Seven, or "G-7," countries), as well as other countries like Australia which, although south of the equator, nevertheless are grouped with the "North" in terms of their economic status.

**UN**: The United Nations

**World Bank Group**: Includes IBRD, IDA, IFC, and MIGA