

Briefing Paper
Greenpeace in Southeast Asia
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All Emission, No Solution: Energy Hypocrisy and the Asian Development Bank in Southeast Asia

This is the poverty of the Asian Development Bank - to be an institution so abundant in resources and rhetoric and yet having so little to show in terms of environmental protection and the protection of the Earth's climate.

Outrageous duplicity

The "ADB has long been helping its developing member countries," said the president of the ADB Haruhiko Kuroda, in February, "to develop their capacity to address the issue of sustainable growth and climate change through its programs on renewable energy, energy efficiency, sustainable agriculture, and forestry. We are one of the few institutions today that provide base financing to enable projects to reduce greenhouse gas emissions."¹

It is a strong statement that is, unfortunately, easily contradicted by reality. The total funding that went to renewable energy and energy efficiency amounts to only 1.82 percent of the ADB's entire Energy Portfolio Financing.² In addition, as a recent report demonstrated, "nowhere in ADB documentation" was there mention of "explicit targets for either renewable energy and energy efficiency financing . . . in Asia." More scandalous is the fact that the ADB even includes coal in its renewable energy program.

In the Philippines, a long-time member country of the ADB and just one among the many examples of the Bank's disgraceful energy lending practices, ADB financing for renewable energy amounts to only 0.09 percent of the ADB's entire funding support for the Philippine energy sector.³ Much of the ADB's financing was channelled in support of coal-fired power initiatives.

Weighed against the grave impacts of coal-based power generation, the ADB's performance in the region is simply hypocrisy bordering on the criminal.

Regional pollution

In Thailand, as the two annexes attached to this brief will demonstrate, the ADB continues to actively support dirty energy despite the deadly consequences of coal-fired power projects in the region.

The largest coal plant in Southeast Asia, the infamous 2,625-MW coal-fired behemoth in Mae Moh, Thailand was financed by the ADB. The Mae Moh coal plant has killed scores of Thai villagers and displaced and maimed the health of tens of thousands of Thais in the province. The coal plant also continues to inflict severe damage to the area's environment and economy.

In the Thai province of Rayong, despite the outcry of host communities and amidst charges by Thailand's National Human Rights Commission that the proponent subverted acceptable process designed to ensure genuine public

consultation and full public disclosure, the ADB has initiated financing for the construction of a 1,434-MW dirty coal plant in Map Ta Phut, which is already reeling from acute pollution.

Recent research conducted by Greenpeace with the University of Exeter Laboratories on coal plants in the Philippines and Thailand, such as the Mae Moh power plant and the notorious ADB-funded Masinloc-Zambales coal plant, show clearly how coal-fired power plants continue to release to the environment massive amounts of extremely hazardous substances such as the neurotoxin mercury and arsenic, a known carcinogen.⁴

The ADB knows it: impacts are already happening

There is a far greater peril that coal-fired plants pose to the region. The menace is called climate change. As the ADB well knows, climate change is already happening and millions are at risk. At stake is the very welfare of our environment and people. Climate change puts into question the very development goals not just of the ADB but of its developing member countries.

Since the industrial revolution, massive carbon dioxide (CO₂) emissions produced by burning fossil fuels such as coal and oil have altered the composition of the planet's atmosphere and trapped the sun's energy. The result: a global greenhouse effect that has caused temperatures to increase, sea levels to rise and created increasingly chaotic weather patterns.

The global scientific consensus is that the "effects of climate change are expected to be greatest in developing countries in terms of loss of life and relative effects on the economy." According to the Intergovernmental Panel on Climate Change (IPCC), the foremost global authority on the issue, "the projected distribution of economic impacts [of climate change] ... would increase [the] disparity in well-being between developed countries and developing countries."⁵

Rampaging climate

Currently, Thailand is caught in the grip of a deadly drought which has affected 63 of the country's 76 provinces, affecting an estimated 9.2 million Thais and destroying 809,000 hectares of farmland. According to the government, the catastrophe has cost \$193.2 million in damages. Thailand's rice crop this year "is expected to fall 11 percent to 14 percent from last year's harvests while sugarcane production is also expected to drop drastically."⁶

"One of the main causes of the current prolonged drought [in Thailand] is global warming," said the eminent Dr. Kansri Boonpragob, a member of the Faculty of Science of Thailand's Ramkhamhaeng University.⁷ According to Dr. Boonpragob, who is also the Vice-Chairperson of Working Group 1 of the IPCC, "Global warming has caused rainfall to decrease and the land to become hotter, which makes water evaporate more quickly."⁸

Studies show that if greenhouse gas emissions continue to increase unabated, maize yields could drop by five percent in Nakhon Sawan to as much as 44 percent in Nakhon Ratchasima, with rice yields in Roi-et province possibly dropping by as much as 57 percent.⁹ Interestingly, according to recent news reports, Nakhon Ratchasima was reportedly the province hardest hit by the drought.

In January 2005, the American National Atmosphere Research Centre released a study which determined that from the 1970s to the present, the global area affected by drought has doubled due to climate change. The study found widespread drying occurred over much of the world including Asia, and identified rising global temperatures as the major factor for increased drought.¹⁰

Research conducted last year by Thai and Laotian scientists also showed the impact of increasing CO₂ emissions on one of Thailand's best-loved crops, jasmine rice. According to the study, "The higher the concentration of carbon dioxide in the atmosphere, the lower the yield of jasmine rice," with reductions in yield projected to reach up to 20 percent. In the Philippines, studies have projected that crop yields can drop by 10 percent for every 1 degree °C temperature rise - a disturbing fact given that nights in the Philippines are now 2.5 °C warmer than they were 50 years ago.¹¹

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Over 27 percent of the Philippines is vulnerable to drought. According to scientists, seasonal aridity in the Philippines has been exacerbated by the increasing incidence of El Nino, a natural phenomenon. From a previous five-year interval, El Nino "is now occurring at a two to three year cycle."¹² This year, severe dry spells continue to be recorded in Southwestern Mindanao.¹³ In the province of South Cotabato, for instance, crop losses for the last three months alone have reached up to \$1.4 million. In Kidapawan City, residents of affected areas, most of them indigenous peoples, "have resorted to eating 'kayos' (wild yams) to survive."¹⁴

In Vietnam, eight central highlands continue to suffer from the country's worst drought in 28 years, "affecting about 1 million people and causing an estimated US\$80 million worth of crop losses." In Indonesia, "as many as 50,000 villagers are on the brink of starvation because of severe drought in the country's remote southeast." Poor harvests from a lack of rainfall threaten about 33,000 people in Lembata district in the province of East Nusatenggara while 17,000 others in the Solor district have run out of food."¹⁵

Consistent with earlier projections

The "observed upward trend in disaster losses over the past 50 years ... is linked to climatic factors such as the observed changes in precipitation and flooding events," wrote the IPCC in its Third Assessment Report in 2001.

According to the IPCC, "Climate change and anticipated changes in weather-related events perceived to be linked to climate change would increase actuarial uncertainty in risk assessment. Such developments would place upward pressure on insurance premiums and/or could lead to certain risks being reclassified as uninsurable with subsequent withdrawal of coverage. Such changes would trigger increased insurance costs, slow the expansion of financial services into developing countries, reduce the availability of insurance for spreading risk, and increase the demand for government-funded compensation following natural disasters."¹⁶

Leading reinsurance companies such as Munich Re and Swiss Re warn that climate-change related damages may cost \$150 billion annually within a decade. Unless action is taken today, the insurance industry believes climate change may force drastic changes in its operations, such as the withdrawal of premiums in some areas, in order to avoid bankruptcy as extreme weather events such as storms and droughts increase in severity and frequency.¹⁷

Push for solutions, not pollution

Great as the problem of climate change may be, most often neglected is the fact that solutions are readily available -- solutions that, sadly, are just not being used - solutions that can prevent climate change from taking a more dangerous and unpredictable trajectory and have immense economic potential as well.

The global wind industry alone, for instance, has been enjoying a growth rate of over 30 percent annually for the last five years with wind-power costs dropping by 50 percent in the last 15 years. Resources from the sun, the tides, the waves, geothermal power are waiting to be harnessed. Waiting, despite the enormity of the danger confronting us, because the resources that should be used to tap their regenerative power economically, such as those held by institutions like the ADB, remain dedicated to the fossil fuel industries. This is nothing less than a planetary betrayal.

If the world were a huge airplane about to crash, would it really matter that you were seated in first class? The task of taking back the pilot's cockpit from those who have hijacked our plane of a planet must be our number one priority.

It's time to make the switch. The European Renewable Energy Council has shown that with the right support policies from government, renewable energy from wind, geothermal, small hydro, modern biomass and solar power can provide 50 percent of global energy supply by 2040.

Traditional energy economists say that renewable energy is too expensive and that we can't afford to develop it.

The truth is we cannot afford not to.

Greenpeace believes that the ADB should:

- Commit to adopting a 20% target for power generation financing for renewable energy sources and energy efficiency annually.
- Overturn all existing approvals for fossil fuel power plants. In particular, the ADB must immediately rescind its financing of the 1,424-MW coal-fired power plant of BLCP at Map Ta Phut.
- Phase out all Bank subsidies - implicit and otherwise - for polluting fossil fuels by 2007 and ensure that the coal-fired power plants that it has supported, at the very least, fully internalize the costs of extracting coal and constructing and operating coal-fired power plants.
- Ensure that the demands expressed by affected communities of Mae Moh and Masinloc are implemented, which include just compensation, full environmental audit of the hazardous substances released by the ADB-financed coal plants and the threats these pose on the host communities and the local and national environment by providing trained doctors who can comprehensively investigate the causes of determined and suspected community illnesses related to coal plant releases.

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Coal Plant dossier: **An ADB skeleton in the closet: Mae Moh**

Secluded in the mountains of northern Thailand lies a massive lignite coal-fired power plant equipped with 13 generating units with a total capacity of 2,625 Megawatts. Mae Moh, Thailand's largest mine, began operating on a small scale in the 1960s and was significantly expanded in the 1980s. Every year approximately 1.6 million tons of sulfur gas is released into the air from this power plant, resulting in severe health problems for local people and irreversible damage to the natural environment.

It has been estimated that the Mae Moh power plant has annually contributed approximately 4,033,932 tons of carbon dioxide emission into the atmosphere, making the biggest regional contributor to climate change.¹

Owned and operated by the Electricity Generating Authority of Thailand (EGAT), the Mae Moh Power Plant is Southeast Asia's largest coal-fired power plant. The fuel of the power station is supplied by an open-pit lignite mine covering an area of 135 square kilometers, the largest of its kind in Thailand. The current production from the mine is 40,000 tons per day.

The mine and power plant has received financing from a diverse source of funders, including the Asian Development Bank. Over the last 20 years, the ADB has approved a series of loans totaling more than US\$352 million.

Impacts of the project

Since the inception of the Mae Moh coal-fired power plant, more than 30,000 people have been displaced from their homes, thousands have experienced severe respiratory problems and four law suits have been filed against the Electricity Generating Authority of Thailand (EGAT). More than 600 villagers continue to suffer from acute respiratory problems caused by the inhalation and exposure to sulfur dioxide emitted from the mine. Coal dust consisting of toxic chemicals has been carried by winds into rivers, reservoirs and nearby communities in the Mae Moh valley, including the reservoir that supplies drinking water for the local people.

The lignite burnt at Mae Moh continues to release massive amounts of sulfur gas which has blackened streams, burnt rice fields and resulted in severe health problems for local communities.

On 3 October 1992, EGAT switched on all 11 units at Mae Moh (units 12 and 13 commenced operations in 1995) and within days more than a thousand village people residing within seven kilometers of the plant fell ill with breathing difficulties, nausea, dizziness and inflammation of eyes and nasal cavities caused by the inhalation of the sulphur dioxide gas. Within two months more than 50 per cent of the rice fields near the plant were damaged by acid rain and at least 42,000 local people were found to be suffering from breathing ailments. Yet at the peak of the crisis, EGAT insisted that, "The [Mae Moh] emissions are lower than the standard set by the National Environment Board (NEB) . . . the emissions are safe for human beings and the environment."

Pollution problems recurred in April and May 1996 when six village people in the Mae Moh valley died of blood poisoning. Severe air pollution in mid-1999 left hundreds sick and in December 1999 more than 600 local people suffered respiratory problems caused by sulfur dioxide emissions.

Study conducted by Greenpeace Research Laboratories in 2002, showed how the Mae Moh Power Plant produces

¹ Sameer Shrestha & Thierry Lefebvre, "Examination of external cost associated with electricity generating options in Thailand using simplified methodologies," Presentation at Eighth APEC Clean Fossil Energy Technical Seminar and the Seventh APEC Coal Flow Seminar, 2000.

Engineering and Environment Division, "APPENDIX C" "CO2 Emissions of Ex-Im bank Financed Power Plants (FY1988-2001)" as reported in "Ex-Im Bank's Role in Greenhouse Gas Emissions and Climate Change," Export-Import Bank of the United States, rev. August 31, 1999.

4,380,000 tons of fly ash along with 39 tons of the neurotoxin mercury annually. Fly ash sample contained arsenic and mercury at concentrations above concentrations typically found in uncontaminated soils by three and fourteen times respectively.¹⁸

The presence of mercury at these concentrations is of particular concern. The substance is extremely toxic. Inorganic mercury, as present in the fly ashes, can be converted into organic forms, including methylmercury, by microorganism indigenous to soils and fresh water and marine sediments. Methylmercury is more toxic to both humans and animals. It is quick to enter the food chain and is thus one of the most important sources of exposure to the neurotoxin.

Despite the impacts of the Mae Moh mine and power plant project, the ADB has not accepted responsibility or recognized that the project has been an environmental disaster.

Justice for Mae Moh people

As a result of the pollution from the power plant, villagers have come together to form the Network of Occupational Health Sufferers of Thailand, which is dedicated to organizing those who have been adversely affected by the mine.¹⁹ The Network is an inspiration, exemplifying how the power of law and the power of people are defending human rights and the environment.

In 1998 the first lawsuit against a government entity over hardship caused by a major infrastructure project was launched by victims from the Mae Moh district. An occupational health doctor has confirmed that the villagers' respiratory problems developed from inhaling hazardous gas emissions from the nearby mine. Three additional lawsuits have been filed by the same affected communities claiming damage for health deterioration, physical and mental grievances, compensation for medical expenses, and for damage to farmers' crops and useable land.

In May 2004, the Thai Provincial court awarded 5.7 million Baht (US\$142,500) to the villagers for crop damage caused by the power plant - a small victory considering the scores of people, many of whom are unable to afford medical treatment, who continue to suffer from serious respiratory complications. Today, nearly 300 people have lost their lives as a result of ingesting deadly substances from the power plant.

Coal Plant dossier:

The ADB-funded BLCP Coal Plant: A Pollution Factory Masquerading as a Power Station

The BLCP project involves the construction of a 1,434 MW coal-fired power plant (717 MW x 2) in Map Ta Phut Industrial Estate, Rayong province, Thailand. The power produced will be sold to the Electricity Generation Authority of Thailand (EGAT) under a 25-year power purchase agreement. BLCP Power is an Independent Power Producer (IPP) jointly owned by the Thai company Banpu Power Limited and the HK-headquartered CLP Power Asia Limited, 50 percent each.

When completed, the BLCP Coal Plant will be one of the largest coal-fired power generation facilities in Thailand. The plant will be fuelled with imported bituminous coal wholly from Australia through an exclusive supply contract with the Australian company Rio Tinto.

The construction of the coal plant commenced in August 2003. Mitsubishi Heavy Industries, Ltd. (MHI), jointly with Mitsubishi Corporation, was awarded construction contracts by BLCP Power. The construction area is on reclaimed land three kilometers from the coastline and four kilometers from major residential and institutional areas. BLCP expects the first unit to come on line in October 2006, and the second in February 2007. Supported by Greenpeace in Southeast Asia, villagers from communities suffering from the impacts of coal and climate change continue to oppose to the project.

Financing

The \$1.37 billion project has received financing from various sources including;

- Up to \$140 million from the Asian Development Bank (ADB) and a political risk guarantee of up to \$70 million for co-financing with a number of overseas commercial banks, and
- \$620 million from twelve Thai commercial banks in local currency.
- \$245 million direct loan from Japan Bank for International Cooperation (JBIC) co-financing with private banks. Nippon Export and Import Insurance (NEXI) provided \$163 insurance for the portion financed by private banks.

Impacts are already happening

Of all fossil fuels, coal is the dirtiest, emitting the highest carbon dioxide (CO₂) per unit of energy into the atmosphere. CO₂ represents the major portion of greenhouse gases. Greenhouse gas accumulation in the atmosphere is responsible for global warming and dangerous climate change impacts including the increase in frequency and severity of extreme weather events such as drought and storms, rising sea levels, melting polar ice caps, the spread of diseases such as malaria borne by insects that thrive in warmer temperatures, flooding, salinization of fresh water systems and massive coral bleaching. According to the foremost global authority on the issue, the IPCC, to be hit hardest by climate change are coastal countries, island nations, and developing regions such as Southeast Asia.²⁰

The BLCP project is expected to emit 229.4 million tons of CO₂ emissions over the next 20 years, contributing significantly to global warming.²¹

Immediate impacts

Coal plants also produce toxic substances such as the neurotoxin mercury, and gases such as sulfur dioxide and nitrogen oxide both of which can create acid rain as well as respiratory problems for residents in nearby communities. Since the establishment of the industrial estate the nearby communities have reportedly been suffering from toxic air pollution in the Industrial Estate. The pollution has been so bad that a local school had to be relocated while some community members have been hospitalized. There are concerns about the effects of an

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additional polluting power plant of the size that BLCP is constructing.

A recent study on fly ash samples taken from the neighboring 108-MW Thai Petrochemical Industry (TPI) coal-fired power plant, which uses the same bituminous coal as BLCP, determined that the fly ash samples contained several toxic elements especially arsenic and mercury. To reduce the quantities of these elements in the fly ashes would simply result in the production of additional contaminated waste streams.²²

Public concern

At least eight local communities are currently facing problems resulting from land reclamation as part of the plant construction including coastal erosion through changes in currents, sediments leached from construction contaminating the water, and the adverse impacts on fishing which is severely affecting the livelihoods of local communities.²³ Several large rocks are also being placed on nearby beaches to prevent further coastal erosion; these have obscured the once beautiful beaches and as a result the local tourism industry has been largely affected.

Upon knowing about the proposed coal-fired power plant, the communities gathered to protest against the project several times. The protests include letter-writing, petitions to the Government, the Industrial Estate Authority of Thailand (IEAT), the Law Association Council and the National Human Rights Commission (NHRC). These efforts, however, have been progressively worn down by a concerted public relation effort by the project proponents which focused on downplaying or hiding key risks associated with coal burning, such as CO₂ releases, climate change impacts and the release of hazardous substances such as mercury. BLCP officials have admitted their lack of awareness of these issues and the fact that they have intentionally withheld discussion on these issues in their engagement with the potential host communities.

The BLCP has resorted to individual visits to community members opposed to the plant armed with promises of funding to assist the community and particularly children. Similar to the experience of other communities that were forced to host coal plants, the company's PR efforts have instead caused social disintegration and many conflicts within the communities.

Instead of conducting public hearings, the project owners have opted to conduct limited tripartite committee meetings, where substantive information regarding the impacts of the project were withheld, according to community leaders. In addition, much of the information provided was biased towards BLCP.²⁴ This process contradicts with JBIC environmental guidelines which require sufficient consultations with stakeholders, such as local residents, with the outcome of these consultations incorporated into the project plan²⁵. This means project owners must ensure that local residents have enough relevant information before such consultations take place. NHRC is now undertaking investigations on this issue.

Recently, local residents have filed a lawsuit with the Law Association Council against the project proponents regarding additional land reclamation in relation to the electricity line transmission for the BLCP project. The case is currently under investigation.

Alternatives to BLCP

Instead of investing in dirty fossil fuel energy, the proponent companies, the Thai Government, Export Credit Agencies (ECA), and International Financial Institutions (IFI) should seriously look at funding clean renewable energy projects especially. Thailand has enormous potential for renewable energy. Data from Thai Ministry of Energy suggests that Thailand has more than 14000-MW renewable energy potential: 7000-MW from modern biomass, more than 5000-MW from solar PV, 1600-MW from Wind, and 700-MW powered by small hydro.²⁶

A study by the International Institute for Energy Conservation shows that Thailand's potential for running a Demand-Side Management (DSM) Program can be as high as 2,000-3,000 MW²⁷. With this program alone, BLCP is not needed.

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- ¹ Statement delivered in the Philippines by Haruhiko Kuroda, President of the Asian Development Bank, February 16, 2005.
- ² Figure excludes cogeneration; total funding for cogeneration: 0.95 percent. From the World Alliance for Decentralized Energy report, *Banking on Decentralized Energy: International Financial Institutions and Cogeneration*, March 2005.
- ³ The figure excludes support provided to hydro power projects, which comprises 9.45 percent of the ADB's energy-related lending to the Philippines. In addition to the size of the hydro projects it has supported - all large and environmentally destructive - the hydro-generation financing took place in the 1970s, the greater portion of which was negotiated and concluded during the Marcos dictatorship. The ADB also provided funding support for a curious geothermal initiative in the 1980s - a geothermal steam pricing study amounting to \$275,000.
- ⁴ For more details, refer to the section in the his brief discussing the BLCP and Mae Moh coal plants. See also Brigden, K., Santillo, D., Stringer, R. "Hazardous Emission from Thai Coal-fired Power Plants : Toxic and Potentially Toxic Elements in Fly Ashes collected from Mae Moh and Thai Petrochemicals Industry Coal-fired Power Plants, 2002," and "Hazardous Emission from Philippine Coal-fired Power Plants : Toxic and Potentially Toxic Elements in Fly Ashes collected from Sual,-Pangasinan, Mauban-Quezon, and Masinloc-Zambales, 2002," Greenpeace Research Laboratories, Department of Biological Sciences, University of Exeter, UK.
- ⁵ *Impacts of Climate Change: Third Assessment Report, IPCC Working Group II*.
- ⁶ From reports by the Agence France Presse based on releases from the Thai Ministry of Agriculture. See also Manila Times-Philippines, March 15, 2005.
- ⁷ Interview by Kittikhun Kitiaram with Dr. Kansri Boonpragob, March 17, 2005.
- ⁸ The Standard-Hong Kong, March 14, 2005.
- ⁹ Thailand's Initial National Communication under the United Nations Framework Convention on Climate Change, Ministry of Science, Technology and Environment.
- ¹⁰ National Centre for Atmospheric Research, University of Colorado AR, Boulder, Colorado, 2005 - Jan 10th. See press notice at - http://www.ucar.edu/news/releases/2005/drought_research.shtml
- ¹¹ "Is the UN wrong about climate change leaving billions to starve?" *New Scientist*, Nicola Jones, November 17, 2001.
- ¹² National Action Plan to combat Desertification, Land Degradation, Drought, and Poverty FY2004-2010, by the Philippine Department of Agriculture, Department of Environment and Natural Resources, Department of Science and Technology and the Department of Agrarian Reform, August 2004.
- ¹³ "DA-12 chief says budget vs El Niño insufficient," *MindaNews*, March 21, 2005.
- ¹⁴ "Some families in Pres. Roxas now starting to eat kayos," *Mindanews*, April 11, 2005.
- ¹⁵ Associated Press, March 13, 2005.
- ¹⁶ Summary for Policymakers, *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Working Group II of the IPCC.
- ¹⁷ "With nature there are no special effects," Renato Redentor Constantino, www.tomdispatch.com, June 3, 2004
- ¹⁸ Brigden, K., Santillo, D., Stringer, R. "Hazardous Emission from Thai Coal-fired Power Plants : Toxic and Potentially Toxic Elements in Fly Ashes collected from Mae Moh and Thai Petrochemicals Industry Coal-fired Power Plants, 2002," and "Hazardous Emission from Philippine Coal-fired Power Plants : Toxic and Potentially Toxic Elements in Fly Ashes collected from Sual,-Pangasinan, Mauban-Quezon, and Masinloc-Zambales, 2002," Greenpeace Research Laboratories, Department of Biological Sciences, University of Exeter, UK.
- ¹⁹ For more background and updated stories of Mae Moh, see the organization's website (in Thai) at www.peoplemaemoh.org
- ²⁰ Intergovernmental Panel on Climate Change (IPCC).
- ²¹ Based on the Sustainable Energy & Economy Network (SEEN) calculations. According to BLCP officials, the maximum CO2 that the BLCP coal plant will emit in 20 years is 180 million tons, a figure which remains humongous. See recording/transcript of meeting between Greenpeace and BLCP officials on April 19, 2005.
- ²² Brigden, K., Santillo, D., Stringer, R., *Hazardous Emission from Thai Coal-fired Power Plants*, Greenpeace Research Laboratories, Department of Biological Sciences, University of Exeter, UK, 2002.
- ²³ From meeting with Map Ta Phut community leaders on 8 September 2004.
- ²⁴ From meeting with community leaders on 8 September 2004.
- ²⁵ Japan Bank for International Cooperation Guidelines for Confirmation of Environmental and Social Considerations.
- ²⁶ Thai Ministry of Energy, *Energy Strategy for Competitiveness*, <http://www.eppo.go.th/admin/moe-workshop1/index.html>. 2003
- ²⁷ IIEC (International Institute for Energy Conservation). *Demand Side Management for Thailand's Electric Power System: Five-Year Master Plan*. Submitted to Electricity Generating Authority of Thailand, Metropolitan Electricity Authority and Provincial Electricity Authority, Bangkok, Thailand. Bangkok, Thailand. November 1991.