BURNING OUR FUTURE

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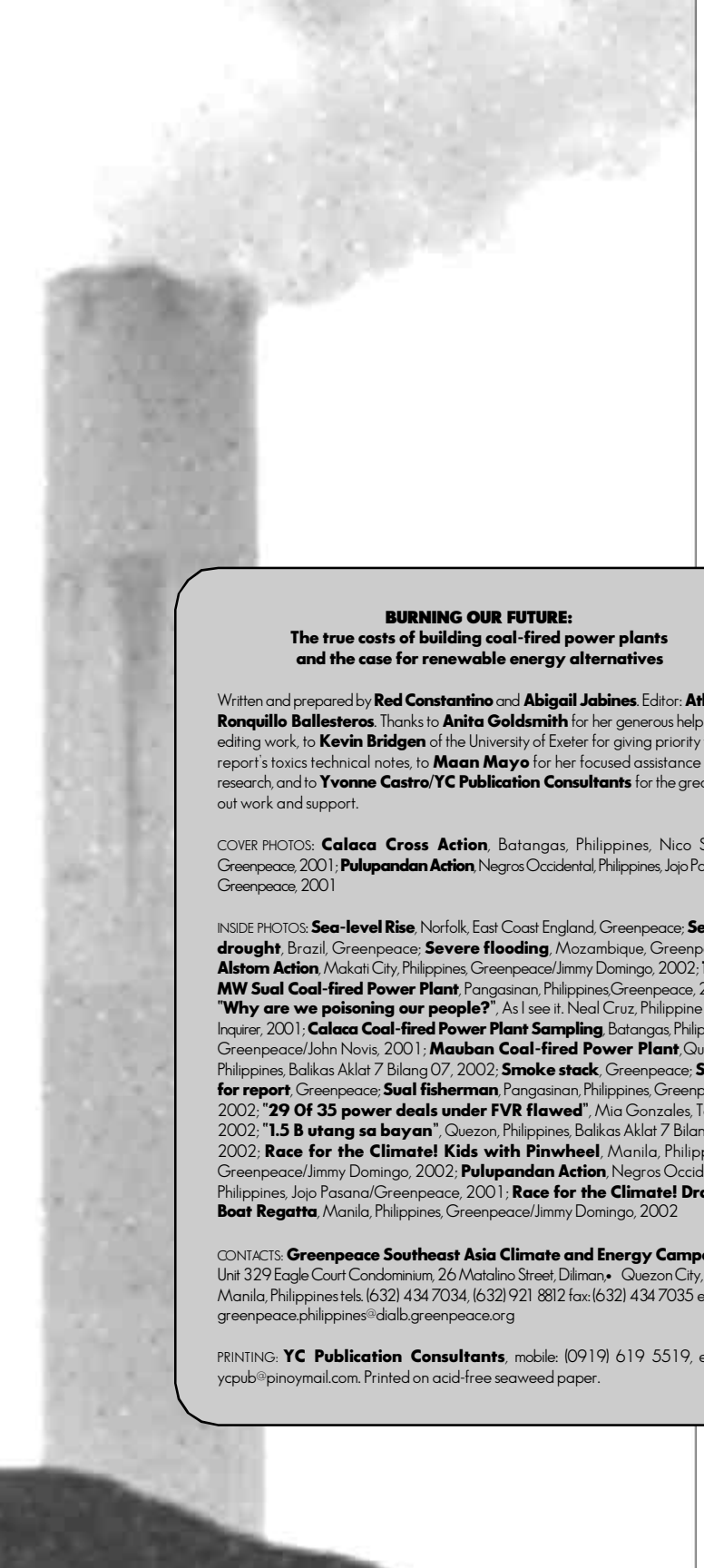

BURNING OUR FUTURE:
The true costs of building coal-fired power plants and the case for renewable energy alternatives

Written and prepared by **Red Constantino** and **Abigail Jabines**. Editor: **Athena Ronquillo Ballesteros**. Thanks to **Anita Goldsmith** for her generous help in the editing work, to **Kevin Bridgen** of the University of Exeter for giving priority to this report's toxics technical notes, to **Maan Mayo** for her focused assistance in the research, and to **Yvonne Castro/YC Publication Consultants** for the great lay-out work and support.

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Executive Summary

The world's climate is changing. The burning of fossil fuels like coal, oil and gas are creating a world where floods, droughts and extreme weather events are becoming more frequent and severe. The impacts for humans and the environment will be devastating unless we act to halt climate change now. This means ending our dependence for energy from dirty fossil fuels and switching to a clean renewable energy future.

However, even though the evidence shows that climate change is happening now and will only get worse if we do not switch energy paths, large multinationals and governments from the rich, developed countries continue to push their dirty fossil fuel technologies on developing countries like the Philippines. This is despite the abundance of clean, renewable sources of energy in these areas.

By continuing to build new coal plants, the future for the Philippines looks bad. The effects of climate change are further compounded by the production of toxins released by the burning of coal. Communities living near existing coal plants are already experiencing the effects of this waste.

However, all of this could be avoided if we were to move to a clean energy future. The Philippines has a massive renewable energy resource. It is high time we use it.

For a country so vulnerable to the grave impacts of climate change, why is it that we seem to be so intent on building more coal-fired power plants? Despite the viable alternatives available in the Philippines, we continue to favor forms of energy generation that will mean future devastation for us all.

The Philippines is a country with abundant natural energy resources. This energy – from the sun, wind, and waves – can be harnessed to produce clean, renewable energy. Despite this resource and the fact that climate change is threatening the country at an alarming rate, the Government is intent on building new coal power plants. Such a policy will be a disaster for Filipinos.

When fossil fuels – coal, oil and gas - are burnt, it releases carbon dioxide (CO2) - the main human-made 'greenhouse gas'. CO2 and other greenhouse gases create an artificial 'greenhouse effect', thickening the natural canopy of gases in the atmosphere and causing more heat to become trapped. As a result, the global temperature is increasing, throwing the world's climate out of its natural balance and into chaos.

UN scientists have predicted that climate change is set to have massive impacts on the world, including more frequent and severe extreme weather events, increased flooding and droughts and rising seas.

Coal is the most carbon intensive of all fossil fuels. A coal-fired power plant like the 1200-MW of Sual, Pangasinan will, for the duration of its 25-year contract, produce 238.4 million metric tons of carbon, equivalent to more than 575.6 billion jeepneys simultaneously starting and traveling for a kilometer.[1] Burning coal for energy also produces tremendous amounts of toxic wastes that, over time, decimate the communities where these coal plants are built.

Despite this, and the well-documented potential impacts of climate change on the Philippines, the government continues to pursue an energy policy that favors coal. The Philippine government is planning to increase the country's coal capacity from 3,825 MW to 4,025 MW by 2010.[2]

In contrast, the share of power derived from new and renewable climate-friendly energy is projected to diminish from its current 30.03 percent share in the country's energy mix to 21.69 percent by 2011.[3]

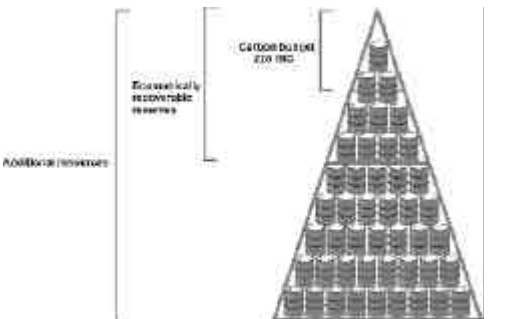
The Carbon Logic

Climate scientists project that a temperature rise of 1°C above pre-industrial levels is likely to lead to extensive ecosystem damage. Using estimates of fossil fuel reserves produced by the IPCC, the world's foremost authority on global warming, Greenpeace has calculated a budget of how much carbon the world can extract and burn while limiting the temperature increase to 1°C.

To prevent extensive ecosystem damage, we can burn only around 225 *gigatonnes* of carbon – less than a quarter of known reserves. This means that the remaining reserves can never be burned. At our current rate of energy use, we will have to phase out fossil fuels in the next 30 to 40 years and replace them with clean, renewable energy supplies.

The issue is not whether we will run out of fossil fuels, but how we constrain further exploration and use. Every new license given for oil exploration and every new permit given for coal plants to operate potentially expands the amount of fossil fuels available and makes the task of staying within the ecological limits of climate change more difficult.[4]

The Carbon Budget



Fuel reserves and resources vs. carbon budget

1 The IMPACTS of Climate Change

There is 30% more CO2 in the atmosphere today than before the industrial revolution. The last ten years has been the hottest in history with 1998 being the hottest, and 2001 the second hottest.

Climate change impacts on the Philippines

The rich, industrialized counties in the North produce the majority of the world's dangerous carbon emissions, yet the worst impacts of climate change will be felt by the developing world, including countries in South East Asia. The developed world must cut its emissions now, but the developing world must also choose a clean energy pathway for future energy development.

According to the UN-assembled Intergovernmental Panel on Climate Change (IPCC), the impacts of global warming "are expected to be greatest in developing countries in terms of loss of life and relative effects on investment and the economy." The IPCC also states that climate change will greatly exacerbate the disparity between industrialized and developing economies.

Sea rises are expected to occur as a result of climate change, making the Philippines, with 32,000 kilometers in discontinuous coastlines, extremely vulnerable.[5] Scientists predict that total increases in sea levels in the 21st century may go as high as 89 cm, a figure which seems small until one learns that increases of as little as 30 cm can normally cause a retreat of shoreline by 30 meters.[6]

Philippine agriculture is also considered to be especially vulnerable to global warming. Recent studies indicate that crop yields can drop by as much as 10 percent for every 1 degree °C temperature rise (a disturbing fact given that even nights in the Philippines are now 2.5 °C warmer than they were 50 years ago).[7] Some studies also indicate that El Niño events - a natural phenomenon not caused by climate change - have tended to become more frequent and severe in the last few decades because of global warming, thus placing local agricultural production at possibly even greater risk.[8]

Sea-level rise

Human health too, will suffer. Diseases like malaria and dengue, already serious health problems here, will become more widespread even as government spending for health services are deteriorating. According to health experts, "[f]orty-five percent of the world's population live in areas where malaria is transmitted. With climate change, this area is expected to enlarge to include 60 percent of the world's population and bring an expected 50 to 80 million new cases of malaria each year."

Coral bleaching is another grave cause for concern. In 1998 a massive bleaching event linked to the severe El Niño event of 1997/98 was reported to have killed up to 30 to 70 percent of hard corals among major reefs in the Philippines.[9] Studies indicate that a one-degree change can cause corals to bleach. Prolonged warm temperatures or short but higher temperatures will likely lead "to significant degradation of coral health and consequent mortality."[10] Blessed with one of the highest levels of coral diversity in the world, Philippine reefs contribute at least 15 percent to the total fishery production annually. Many coastal communities also obtain their income from coral reef-associated tourism activities. The impacts of coral bleaching in the Philippines due to rising global temperatures would therefore translate to significant economic losses.[11]

Severe flooding

And yet the investment in dirty fossil fuels continues.

Climate change "isn't just a question of coral bleaching for a few marine ecologists, nor just a question of malaria for a few health officials - the number of similar increases in disease incidence is astonishing. We don't want to be alarmist, but we are alarmed."

- Dr. Richard Ostfeld, Institute of Ecosystem Studies, New York.[12]

2

Investing in GLOBAL Warming

Coal-fired power plants are lucrative multinational and multimillion dollar businesses. Plants are funded by private capital and through a mix of public money leveraged from national Export Credit Agencies (ECAs) and International Financing Institutions (IFIs).

ECAs and other IFIs play a key role in funding the expansion of large-scale fossil-fuel power sector development plans in developing countries, despite the fact that many OECD countries claim they take environmental considerations, such as climate change, into consideration when investing in, and lending to, developing countries.

ECAs are the largest group of IFIs in the world. They are based in OECD countries and provide insurance and financial security to companies in these countries that want to invest abroad in areas deemed as high risk – primarily the developing world.

Investors in fossil fuel generating plants from abroad have targeted South East Asia, and the Philippines is no exception. Rather than treating the country like an opportunity for profit making by OECD based businesses, Greenpeace believes large IFIs and ECAs should instead actively support the transfer of renewable energy technologies above that of harmful fossil fuelled technologies.

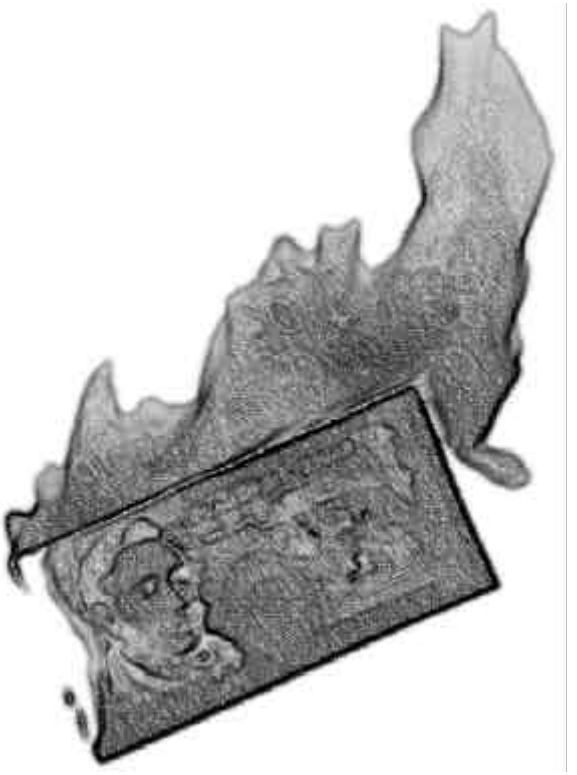
Billions for dirty energy

From 1993-1998, the World Bank's $4 billion investment in coal-fired power plants contributed 7 billion metric tons of CO2 emissions to the global climate. Its $2 billion of coal extraction investment added another

6 billion tons of CO2 to the Earth's atmosphere.[13]

Between 1992-1998, the Export-Import Bank of the US (EX-IM)/Overseas Private Investment Corporation (OPIC) supported $5.698 billion in coal-fired power.[14] The estimated carbon dioxide emissions from these projects are 3.3 billion tons.

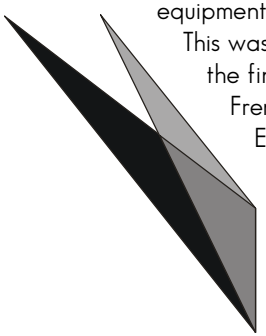
The Japan Bank for International Cooperation (JBIC), the biggest overseas supporter of the energy and industry sectors of developing countries has an annual budget of over US$ 26 billion, with roughly 12 percent devoted to coal-based technologies in Indonesia, Thailand, and the Philippines.[15] Its lending added 3,922 MW in new coal-fired power, producing 623,367 tons of CO2 emissions or 158,941 CO2 unit emissions.[16]



Carbon hypocrisy

Similarly, the UK ECA, the Export Credit Guarantee Department (ECGD), is active in facilitating the building of new dirty coal plants in the developing world, despite the UK Government actively tackling carbon emissions at home and pushing for reductions in the rest of Europe.

For example, the ECGD provided financial backing amounting to £433,575,590 to GEC-Alstom for its role in supplying equipment for the Sual coal plant. This was further backed up by the financing activities of the French ECA, COFACE, the Export-Import Bank of the US (US Ex-Im Bank), the International Finance Corporation (IFC) of the World Bank group and the Asian Development Bank (ADB).



MIRANT

Power generating plants like Sual represent big business opportunities for investors abroad, with little benefit going directly to the Filipino people. The 1200-MW coal-fired power plant of Sual, Pangasinan is presently owned by the US energy giant Mirant. Mirant is the largest foreign investor in the Philippines. Mirant's CEO has been appointed by President Gloria Macapagal-Arroyo as a member of her "International Advisory Board."

Greenpeace activists protesting at Philippine headquarters of Alstom, a major global provider of fossil fuel and polluting coal plant equipment.

The Sual power station is a Build-Operate-Transfer project with a total cost of $1.2 billion. Sual is under a 25-year contract to sell power to the National Power Corporation and is the largest operating power plant in the Philippines. It commenced operations in 1999. Coal used at Sual is supplied by Australia, Indonesia and China.

Dirty technology dumping

Given this financial backdrop, foreign energy investments in the developing world are thus heavily biased towards fossil fuels. It is also important to note that these investors – IFIs, ECAs and Transnational Corporations – dictate the terms of the construction, operation and maintenance of energy projects. This means that local communities have no ownership over the projects that often would not even be built in the countries supplying the financing. For example, although the UK Government continues to fund the export of dirty coal technologies in developing countries, there has not been a coal plant built in the UK since 1972.

A further example of foreign investment in dirty energy investments in developing countries is the Mauban coal plant, built with US support.

The Philippine corporate vehicle Quezon Power Limited (QPL) owns the 440-MW plant at Mauban. QPL is a mix of American and European corporations including power generation firm and major owner Intergen, which is composed of Shell and the U.S.-based Bechtel Enterprises. Mauban is operated by the controversial Covanta Energy, which in April of this year filed for bankruptcy protection.

The 1200-MW Sual coal-fired power plant in Pangasinan.

The US Ex-Im Bank, which funds dirty fossil fuel power projects throughout the developing world, provided crucial loans for the coal plant, amounting to $455.89 million, more than half of the total project cost. The US Ex-Im Bank also provided political risk guarantees and the Overseas Private Investment Corporation (OPIC) of the US provided loans for construction and insurance.

Mauban is a Build-Own-Operate (BOO) independent power producer project with a total cost of $828 million. QPL sells power to the distribution firm MERALCO under a 25-year power purchase agreement (PPA) contract. Construction began in 1997 and the plant began operating in May 30, 2000. The Mauban coal plant uses coal sourced from the Indonesian-based, Australian-owned firm, PT Adaro.

Climate change is a reality but if we act to significantly cut emissions today; we can limit the degree of change and its effects. Greenpeace believes that governments in rich, developed countries must act now to curb their emissions, but also apply principles in their lending and investment support for energy developments abroad that promote climate change mitigation measures. The impacts of climate change look set to be devastating for countries in the developing world and our governments must also take a lead and ensure that we continue our development down a clean sustainable energy pathway.

AUSTRALIA

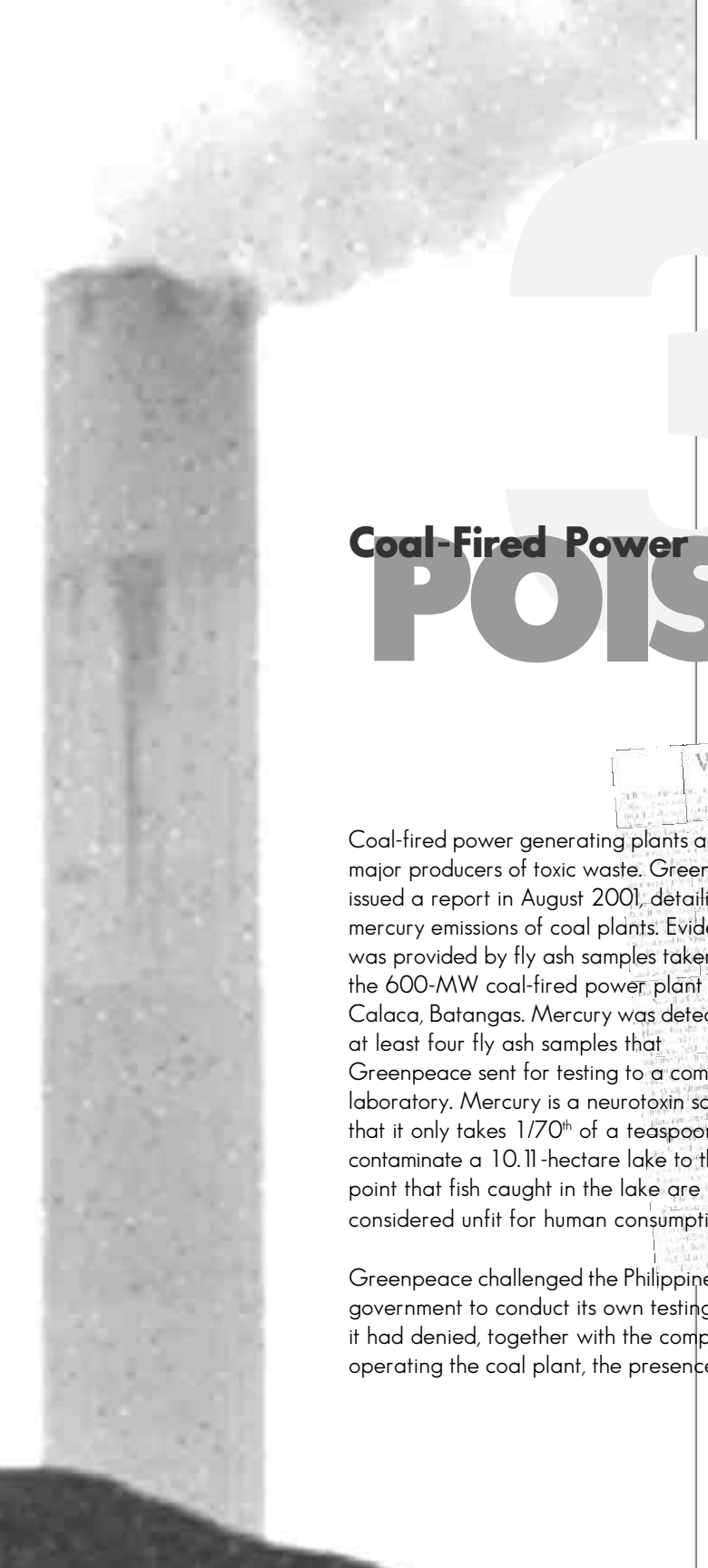
Propagating the myths of clean coal

According to a forthcoming report by the Institute for Policy Studies in Washington, Australia is the largest exporter of coal in the world. Coal is Australia's biggest export-earning commodity,[17] with annual sales yielding AUD$8.6 billion in 1997-98,[18] $9.3 billion in 1999-2000[19], and $10.8 billion in 2000-01. Coal accounts for up to eleven percent of Australia's total export earnings,[20] and in 1998-99, formed thirty-three percent of Australian mining commodity exports. Since 1970, Australia's production has increased 400 percent, making the country the fifth largest coal producer with 6 percent of total world output.[21] The vast majority of its coal exports have gone to fuel the economies of Asia. According to the Australian Coal Association 1999 figures, exports of Australian coal are expected to double by 2010, with a significant rise in the new markets of Korea, Taiwan, Malaysia, Thailand, the Philippines and China.[22]

The Export Finance & Insurance Corporation (EFIC-Australia) continues to play a leading role in promoting the so-called "clean coal" technology to many Asian countries notably China and the Philippines. Twelve percent of EFIC's investment in 1997/98 were devoted to coal technologies, amounting to close to A$1 billion.[23]

The Philippines has been as a reliable market for Australian coal since 1995, as has Malaysia. From an initial purchase of 499 thousand tonnes in 1995, the Philippines purchased a total of 2252 thousand tonnes in 1999.[24] This amount has fluctuated in recent years,[25] but may rise with the planned increase to coal-fired power stations. Until recently, the Philippines has used relatively small amounts of steaming coal for power generation and industry needs. In 1992, 2.3 million tonnes of steaming coal was used, with 0.9 million tonnes for power generation. About two-thirds of coal was imported.[26] The recent growth in coal imports was based on the commissioning of a number of new coal-fired generating units in 1999, which included 2040 megawatts in the Philippines.[27] The Philippines are expected to increase coal use for energy production by more than 20 percent by 2003,[28] with possible coal imports of more than 50 million tonnes of coal by 2020.[29]

From a forthcoming report on the global coal industry tentatively titled *King Coal* by the Sustainable Energy and Economy Network-Institute for Policy Studies in Washington. Image on page from a recent issue of The Economist.



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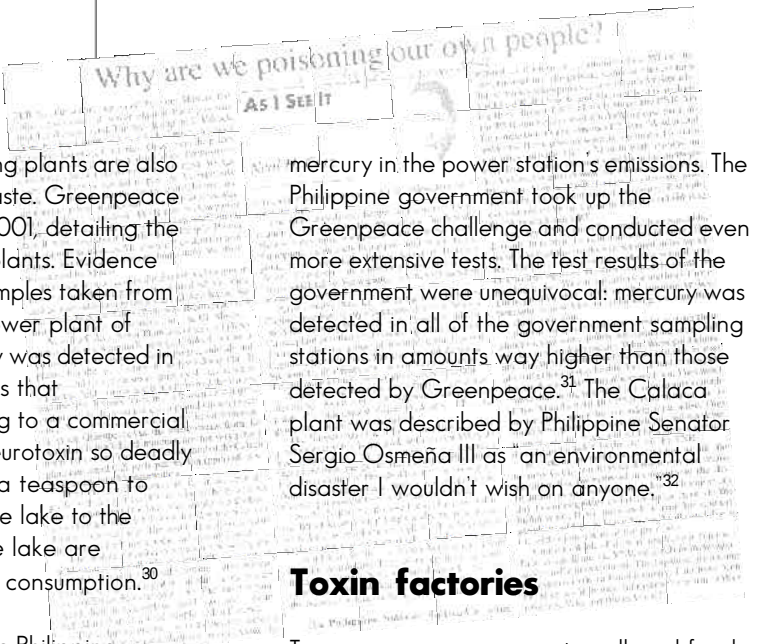
Coal-Fired Power Plants: POISONING the People



Coal-fired power generating plants are also major producers of toxic waste. Greenpeace issued a report in August 2001, detailing the mercury emissions of coal plants. Evidence was provided by fly ash samples taken from the 600-MW coal-fired power plant of Calaca, Batangas. Mercury was detected in at least four fly ash samples that Greenpeace sent for testing to a commercial laboratory. Mercury is a neurotoxin so deadly that it only takes 1/70th of a teaspoon to contaminate a 10.11-hectare lake to the point that fish caught in the lake are considered unfit for human consumption.[30]

Greenpeace challenged the Philippine government to conduct its own testing after it had denied, together with the company operating the coal plant, the presence of mercury in the power station's emissions. The Philippine government took up the Greenpeace challenge and conducted even more extensive tests. The test results of the government were unequivocal: mercury was detected in all of the government sampling stations in amounts way higher than those detected by Greenpeace.[31] The Calaca plant was described by Philippine Senator Sergio Osmeña III as "an environmental disaster I wouldn't wish on anyone."[32]

Toxin factories

Toxic emissions are present in all coal-fired generating activities, and are harmful to human health and the environment.

FAILED PROMISES

The following testimonies were gathered from Greenpeace research trips in February, March and April 2002 to the towns of Mauban in Quezon, Masinloc in Zambales, and Sual in Pangasinan. Some testimonies come from the Greenpeace research trip organized in February-March last year in the same towns and including Pagbilao, Quezon and Calaca, Batangas.

DASHED HOPES

Photo by Gil Nartea/Greenpeace

Communities after communities lament the hosting of coal-fired power plants. Often ignored due to the government's ill-advised preference for gargantuan polluting power plants, the voices of the people whose lives have been adversely altered should serve as stark reminders of the great costs that come with coal-fired power projects.

Here are some of their stories, in their own words.

"Sometimes the eyes become really itchy. On other times they feel like they're on fire. We go to the hospital regularly whenever the wind blows the ash in our direction. We have difficulty breathing."

- Nanay Marcela, housewife, Sual

Photo by Alan Grieg

"Does the coal plant company listen to us? The operator of that power plant think they're gods. They probably think that they're from heaven and they can kick the saints around. And we here are just mortals. We're tired of complaining."

- Isidro Sartin, fisherman, Pagbilao.

"Wind carrying ash from the coal plant settles on our crops and severely stunts their growth … We are slowly being ruined. The string beans from our vegetable patch no longer grow to their usual size … It's because of the ash from the coal plant carried by the wind."

- Mang Virgilio Alonso, farmer, Sual

"Adeng, don't you notice something common with all of us? Look at our eyes. Children, men, women. We all look like drunkards. Its because of the ash from the coal plant's ash pond."

- Cirilo Gakad, farmer, Sual

Photo by Abi Jabines/Grrenpeace

Photo by Truls Gulowsen/ Greenpeace

"The children are used to studying under an oil lamp. It could be better, I know, but we're so used to living without electricity."

- Annalyn, housewife, Sual.

An interviewer chanced upon Annalyn and her children who had just graduated from school. Medals were hung over Nanay Annalyn's children, proof of their good performance in class during the last school year, Annalyn says. The medals are evidence of their mother's affections. After all, despite the poverty of their family's condition, like other households in their village in Sual, Nanay Annalyn's home in the village Baybay Norte has no electricity, and it has only been through her perseverance to guide her children that they have received meritorious marks in school.

Photo by Abi Jabines/Grrenpeace

"They promised before that they would not do any dredging, but look at the place. It's destroyed. The coal plant has brought us nothing but hardship. Life here was better before the coal plant was built."

- Tio Freddy, fisherman at Masinloc, referring to tracts of dark debris underwater that used to be a coral reef.

"Since the plant was built, I've experienced pulling up my crab-nets and finding all my crabs black and strange-looking. When coal spills out from their stockyard, which is often, the villagers go to the coast to sweep the carbon off the beach. Some give the carbon back to the coal plant while others just try to bury them under the sand. Its sad. Initially, I thought someone was just cleaning squid. Then I noticed the water getting darker and darker… when I go out of the house, I see black water overflowing from the plant site."

- Mang Nanding Manuba, boat-maker from Mauban.

Photo by Alan Grieg

"It is a painful, bitter situation to be in."

- Vivian Balicoco.

Vivian lives by the coast in the village and wakes up each day peering in silence at the immense coal plant of Mauban. An interviewer recounts the exchange that took place between him and Vivian. *"Till today, households in her community have no electricity whatsoever. Vivian hears the rumblings of the coal plant everyday, sees the smoke blooming from the smokestack and smells the squalor of her un-energized community. At night, her children read and play with the shadows from the flame of a candle or a small flickering gas lamp while on their right, a glowing coal plant looms. The light bathes the power station stations grounds. Would I be surprised if bitterness smoulders in Vivian's gut? No, I wouldn't be surprised."*

"Before, in one hour we would already have a catch; nowadays, the whole afternoon will pass by without a single catch,"

- Ernani Lauron, resident, Pagbilao

Photo by Greenpeace international

Photo by Gil Nartea/Grrenpeace

"In one village alone, the village right beside the coal plant, more than 90 carabaos and horses have died since the year 2000. For the poor families in the village, these livestock represent their sole source of livelihood. All the animals that died used the Cagsiay I river for feeding and drinking. This river is right beside the coal plant. We want to know why these deaths are taking place in such alarming ways. Why did the animals die? The power plant will not tell us why. We want to know if the coal plant's operations or emissions are connected to these deaths. Instead of providing answers, the coal plant officials have merely laughed at us."

- Beth Mossman, NGO and community leader, Mauban

"One needs to buy rice and food. If lucky, we can catch a few pieces of fish and shellfish from the sea. It's really better to spend our meager income on food rather than on electricity from the plant, which is so expensive."

- Nanay Anastacia, housewife, Sual

These are just a few of the testimonies from local villagers whose communities have chosen to host large-scale fossil-fuel power plants. The toll from the burning of coal is great and the devastation of displaced and disintegrated communities due to coal plant operations is immense. It is time for the government to conduct a full-scale environmental and health audit of all the communities hosting coal-fired power plants. It is high time for the government to act with dispatch in determining the accountability of officials, corporations and financing institutions responsible for peddling, building and ultimately operating the dirty coal plants of the Philippines.

Photo by alan Grieg

A Greenpeace activist takes a sample from the ash disposal area of the notorious 600-MW Calaca coal-fired power plant in Batangas. Laboratory analysis of the samples revealed the presence of the deadly neurotoxin mercury.

Based on results from the Greenpeace Research Laboratories in the University of Exeter of the United Kingdom, fly ash samples taken in March and April this year from the coal plants of Sual in Pangasinan, Mauban in Quezon and Masinloc in Zambales, reveal alarming levels of mercury even higher than those detected in Calaca. The carcinogen arsenic was also detected along with other heavy metals such as lead and chromium, reaffirming the long-held contention of environmentalists all over the world that there is no such thing as clean coal. According to the Exeter laboratory analysis, "other than mercury, which almost exclusively escapes pollution control devices, the quantities of [the] toxic elements produced in the fly ash are in the order of tons or tens of tons per year from each plant."

The National Power Corporation (NPC) states that 99.5 percent of mercury in coal is released through the smokestack during combustion.[33] Mercury has the ability to travel over 600 miles. Mercury not released to the atmosphere ends up in ash landfills. The Mauban coal plant produces 252,000 tons of ash per year.

Exposure to mercury is capable of causing severe brain damage in developing fetuses, tremors, mental disorders and even death. Mercury is extremely toxic. Once released to the environment, mercury in coastal sediments or absorbed by fish can be converted into the more toxic methylmercury. Mercury, in methylmercury form, is the only known to biomagnify, meaning, it progressively accumulates as it goes higher up the food chain.[34] According to the US National Academy of Sciences, methylmercury exposure is a "widespread and persistent problem ... and may cause neurological problems in 60,000 children born in the US each year. Coal plants are the largest source of mercury emissions in the US, discharging an average of 43 tons annually.[35]

Mercury detected in samples per coal plant[36]

Power facility	Mercury (Hg) concentrations in fly ash samples mg/kg dry weight
Masinloc	1.2
Sual	1.2
Mauban	1.9
Calaca	0.699

As well as mercury, samples taken at Masinloc, Sual and Mauban all contained alarming levels of lead. Lead is a hazardous metal considered to be toxic to most living things. Effects range from nervous system disorders, anemia, cardiovascular disease, disorders in bone metabolism, renal function and reproduction. Of special concern is the impact of relatively low lead exposure on the cognitive and behavioral development in children.

Total element quantities produced in fly ash per year (kg/year)[40]

	Mauban	Masinloc
Arsenic (As)	9000	3400
Chromium (Cr)	10000	5900
Lead (Pb)	3200	7200
Mercury (Hg)	410	390

Coal plants are also a recognized source of chromium, as samples confirmed. One form of this metal, hexavalent chromium (VI), has been classified by The International Agency for Research on Cancer (IARC) as a known carcinogen.[37] Significant amounts of chromium in coal plant fly ash have been found to be present in the hexavalent form. [38] Arsenic is also a trace contaminant of coal. The burning of coal produces the largest quantity of arsenic waste of any industry. The US Department of Health and Human Services notes that arsenic compounds as "known to be human carcinogens." Liver, lung and skin cancer are among the possible effects of exposure to arsenic.[39]

No coal, no toxins

A resolution was filed last year in the Philippine Senate to investigate the dangers posed to communities and environments hosting coal-fired power plants in response to the toxic alarm raised by Greenpeace.[41] Action has yet to be taken, but if carried out objectively, government investigations will inevitably reveal the fact that the only way to decisively address the toxic and carbon emissions of coal-fuelled power stations is to phase-out coal plants.

Despite all the propaganda pushing the term 'clean coal', the fact is that there is no such thing as clean coal. A consultant for the Clean Coal Technology program sponsored by the US Department of Energy (US DOE) acknowledged that, "To my knowledge, there is no commercially available method to remove mercury or carbon dioxide [from the waste streams]."[42] American congressman Paul Ryan stated that, "There is nothing new being developed in the clean coal technology program except for new ways to squander taxpayers money."[43]

Summary of Detected Substances in Selected Coal Plants

Analysis Method: Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES)[44]

Sample Number		MI02012	MI02013	MI02014
Description		fly ash	fly ash	fly ash
Power Facility		Sual	Mauban	Masinloc
Element		mg/kg dry weight	mg/kg dry weight	mg/kg dry weight
Arsenic	(As)	8.4	4.8	10.4
Cadmium	(Cd)	<1	<1	<1
Calcium	(Ca)	6090	17195	22434
Chromium	(Cr)	6	49	18
Cobalt	(Co)	6	25	12
Copper	(Cu)	22	34	34
Lead	(Pb)	8	15	22
Manganese	(Mn)	122	215	308
Mercury	(Hg)	1.2	1.9	1.2
Nickel	(Ni)	6	50	16
Zinc	(Zn)	23	138	51

4 Disintegrating Communities

"Coal plants bring health problems everywhere, not just in Mauban. At the Pagbilao coal plant [owned by Mirant], the smoke descending on the community from the power station's chimney is like a giant bull's black tongue."

- Mang Ramon.

Potential investors and developers of new coal-fired plants typically promise widespread employment for local residents, increased incomes for local governments, and a generally improved state of well being for the host communities. Despite the rhetoric, the opposite generally holds true.

In contrast, complaints tend to run high among local residents. Communities complain regularly about the scarcity of work, the rapid decline of traditional livelihoods, the fact that a large number of households surrounding coal plants remain un-energized, the disappearance of income previously derived from local tourism, and the non-payment of taxes by coal plant companies to town and provincial treasuries. For example, in May 2002, more than 2,000 protesters paralyzed the operations of the Masinloc coal plant demanding the immediate payment of their land compensation claims totaling Php92 million.

Health issues and disappearing livelihoods are the most common sources of contention. Residents close to the Sual power plant complain of itching skin and rashes, as well as sore, red eyes. This experience is echoed by residents living near the Mauban plant, which has been issued with numerous notices of violations including a cease-and-desist order from the government. Residents believe their symptoms stem from the presence of the nearby ash pit, which regularly clouds the village when the wind is blowing.

Traditional sources of livelihoods also suffer. Coal plants in the Philippines are located along coastal areas where significant numbers of people once earned their living. One local government official of Masinloc

stressed that fish and mango harvests had both decreased since the plant began operating. Esrom Elbancol, a councilor in Bani, Masinloc, expressed anger at the plant, saying, "[N]ot only were they unable to provide jobs, they also damaged our sea. We no longer have income from seaweeds because they are gradually killed by the hot water. There are no more *bangus* fry and mangoes."

Elbancol firmly believes that residents in areas where new coal plants are proposed should organize to prevent them from being built, saying, "Do not accept their technology, they only cause damage."[45]

Fishing is one area where local people feel strongly that the operation of coal plants has had a negative impact. Canisio Sofa, for example, believes that the noise and vibrations of the plant, and the continuous outflow of warmer water produced from the cooling process, have all conspired to decrease the fish populations he has fished all his life, saying, "A single casting of the net would yield 40 kilos of fish before…Today, I'd be lucky to get 2 kilos when I cast my net. I recall the times when fishermen would scour the seas near the coast and bring home a bounty of shrimp fry. This is no longer the situation today".

Residents also believe the ash from the plant to be responsible for continually poor crops.

The damage that the plants do to local livelihoods could possibly be offset by the swathe of new employment opportunities typically promised to local communities by plant owners. In reality however, the small number of jobs available are concentrated in menial labor and pay poorly, if at all.

In April 2002, for instance, almost 1,500 former workers of the Pagbilao power plant staged a protest to demand the payment of back wages amounting to Php75 million owed to them by the corporation operating the plant. According to the president of the Pagbilao Union, "The average worker is entitled to at least Php22,000 each. But Mirant is giving us the merry-go-round."[46]

Coal Contracts

Contracts made with the operators of these plants have also proved to be particularly problematic. On July 4, 2002, the Philippine government announced that it had completed its technical, financial and legal review of the power contracts of 35 independent power producers (IPPs) widely blamed for the country's astronomic electricity costs. It found that consumers were paying for 6,459-MW in excess and virtually idle power, which represented a scandalous 48 percent of total installed power capacity. Sual was named as one of the five worst perpetrators.

Public outrage followed the government's announcement: "It is disgusting how these economic leeches have raked it in and lived off the toil of Filipinos," said an indignant Senator Manuel Villar.[47] Senator Blas Ople denounced the IPP contracts as "an act of swindling and grand larceny of the greatest magnitude."[48]

Furthermore, despite living close to the coal plants, many local residents remain off-grid and have no access to electricity services at all. Even at Sual where many in the communities scattered around the plant do have electricity services, more than 16,000 people do not [49]. Despite bearing the brunt of the negative effects of the plant operations, they receive little of the benefits.


29 of 35 power deals under FVR 'flawed'

Robbing local governments

Despite touting their supposed involvement in the development and improvement of local communities, coal plant owners are failing to pay much needed taxes to local governments.

QPL, the operator of the Mauban plant, for example, gives its visitors a folder listing each single trophy, medal, bottle of medicine, fiesta streamer, cash award and basketball it has given to the host town and villages However, the realty tax liability to Quezon Province owed by QPL stands at a whopping Php1.5 billion. Mirant, the owner and operator of the Pagbilao coal plant, owes Quezon province another Php1.5 billion.[50]

Quezon province parish priest and director of the Social Action Center of the Diocese of Lucena, Fr.Raul Enriquez sums up the situation best - "The owners of the coal plants have destroyed the environment and the livelihood of communities in the province. What they owe the local governments in taxes is actually a pittance compared to the devastation they have left in their wake, a perverse annual consolation prize that is almost legalized bribery. Yet even this vulgar arrangement they cannot live up to. Shame on them."

Mang Diong works at the Masinloc coal plant as a security guard and earns only Php208 per day (at Php49 = $1). His contract is typical of the little employment offered to other residents, covering periods of three to six months with no assurance of renewal.

5

Promoting WIN–WIN Solutions

The energy overcapacity that exists in the Philippines actually presents the government with a unique window of opportunity to radically and aggressively expand renewable energy development beyond the token support that past administrations have so far given to the task. It means that the Government would have time to bring the necessary renewable capacity online.

Actual excess power capacity today stands at 6,194-MW, with six more IPP plants in pre-construction and construction stage, scheduled to be operational by 2004, 2005 and 2006.[51] Included in the six is a 200-MW coal plant pushed by the German power firm Steag AG and State Power Development Corporation (SPDC).

The desirability of renewables become even more pronounced when we consider that fossil fuels have received massive subsidies that have distorted the energy market and rendered fuels such as coal tremendously artificially cheap. External costs of coal burning – job loss, livelihood eradication and health hazards posed by toxic emissions, to name a few – remain unaccounted for in the peddled price of coal-fired power stations. A US study found that if most of the external social and environmental costs of burning coal were included in the market price, electricity generated from coal would cost US$0.30/kWh, rather than the current $0.08/kWh.[52]

The Philippines is ideally placed in that it has abundant sources of renewable energy. The potential power of wind in the Philippines is

estimated to be 70,000-MW, which represents seven times the country's present total energy demand.[54] Solar power is available almost everywhere in the country. Using modern high efficiency systems, the total energy potential that can be derived from biomass resources such as rice hulls, coconut husks and sugar cane bagasse can potentially provide over 10,000-MW, as increasing population and food consumption per capita require higher agricultural crop production.[55]

The global wind industry today is recording phenomenal growth rates of close to 40 percent per year. The global solar power industry is booming and is today considered one of the fastest growing industries generating business worth more than $1 billion. Solar energy is projected as being able to provide 26 percent of global electricity demand by 2040.[56] While the price of fossil fuels around the world, such as oil, continues to rise the price of renewable energy continues to fall.

The development of power and energy resources, the most capital intensive sectors, comprise 70 percent of the Philippines' financial requirements for the National Energy Program (NEP) for the plan period 2002-2011. Fossil fuels account for 63.8 percent of the financing needs of the Energy Resources Development Sector. Financing for new and renewable energy development, however, is projected to receive only 2.3 percent of investments for the whole plan period while energy efficiency receives an equally dismal 5.8 percent share of total investments. Of the total investment requirements of the NEP, 85.1 percent is expected to be provided by the private sector most of which will borne by foreign corporate and financing sources.

Comparison of atmospheric emissions of energy plants [53]

Power generation plants	CO2 (million metric tons per year)	SO2 (thousand metric tons per year)	Nox (thousand metric tons per year)	Particulates (thousand metric tons per year)
Coal-fired power plant	1.188	0.593	1.793	0.00346
Wind	0	0	0	0
Biomass	0.0238	0.158	0.360	0.022
Small Hydro	0	0	0	0
Solar PV	0	0	0	0
Solar Thermal	0	0	0	0
Avoided Emissions	1.164	0.435	1.433	+0.217

The financial requirements just for the power development side of the NEP, shows that new and renewable energy sources are projected to acquire only 0.04 percent of the expected investments while 67 percent of investments are projected to go to fossil fuel power plant development. [57] Based on the Philippine Energy Plan, the share of new and renewable energy development is slated to decrease drastically from 30.03 percent today to 21.69 by 2011. Given the projected impacts of climate change on the Philippines (as previously detailed), this represents a regressive energy policy. The government is literally burning up our future.

Renewable energy is a win-win solution for the Philippines. It can generate the power needed by the country to develop even as it protects the environment. A government strategy that accords preferential policy, financial and political treatment for renewable energy, coupled with a sustained and more aggressive energy efficiency drive, will send the strongest possible signal to the local and foreign business community that clean energy is an investment favoured over fossil fuels as far as the country is concerned. These steps must go hand-in-glove with enacting and implementing measures that accurately account for the social, environmental and health impacts of coal-fuelled power plants.

The total amount of energy irradiated from the sun to the earth's surface is enough to provide more than 10,000 times the annual global energy consumption.

A long-standing demand from host communities is the initiation of a full-scale social, health and environmental audit of communities hosting coal plants. Such an audit will also aid in legislating laws that will require greater, not token, public and community participation in power project proposals and discussions. In addition, Greenpeace recommends the government to:

1. Adopt national new and renewable portfolio targets and programs that will increase by 10% the share of new and renewable energy in the energy mix by 2011 in order to mainstream the implementation of renewable systems. Simultaneous with this, adopt national targets that reduce the total volume of coal-fired power generation in the Philippine energy plan.

2. Remove policy, institutional and market barriers to level the playing field and allow new and renewable energy projects and initiatives to compete in the market. An example of this is giving preferential tax incentives to renewable energy technology, encouraging domestic production of solar panels and say micro-hydro systems.

3. Institute regulatory mechanisms (especially to address tariff concerns) in order for the true costs of electricity from fossils to be reflected in the final price and for the green pricing renewable-generated electricity to be reflected equally.

4. Push for a purely renewable energy-and-energy efficiency-based rural electrification program and scrap the diesel-based energization and grid-extension program to rural villages.

5. Enact local and national legislation that will give preferential treatment to the development and implementation of renewable energy technologies and programs.

Concrete steps

The government can begin its reinvigorated renewable energy development program in areas firmly in a position to realize the administration's sustainable development aspirations. Negros Occidental, for example, is among those that carry this potential. Boasting of 1,987-MW in potential wind and 118-MW in potential biomass power, government can show the way by ensuring that the development of provinces such as Negros, with its widespread renewable resources many of which are organic to the province's economy, is renewable energy-led.[58]

Greenpeace supports the campaigns of local communities, like that of Pulupandan, Negros Occidental, whose people have been demanding clean renewable energy since 1998.

At present, controversy is raging in the Negros province, which the French-UK fossil fuel equipment contractor Alstom Power is pushing to be built. Locals have opposed the project for six years, and have instead been calling for a clean energy agenda for Negros. On-grid and off-grid commercially viable alternatives are available for implementation, but the political will is needed to carry this through[59].

6

The Way FORWARD

The Government must change its energy framework now. Rather than focus on all-too generalized macroeconomic indices, the energy needs of each region, province and community should serve as the determinant for realistic energy generation projections. Such a framework will help establish the necessary energy mix as well as the size and location of supply-side power initiatives. Equity in the utilization of energy and natural resources should be paramount in such considerations. The dominance of massive power projects, especially coal, in the country's energy agenda, has long been considered inherently flawed and hostile to the interests of the environment and those of future Filipino generations.

The Philippines has always occupied a prominently progressive place in the international negotiations for protecting the climate. Such standing should serve as the cornerstone of the country's energy development program.

Scientists today are not in the middle of fierce discussions over whether climate change is happening or not. They are talking about how bad its effects will be. We already know the impacts of coal-fired power plants to provinces, towns and host communities. We already know the tremendous economic and environmental benefits that can be derived from using sustainable energy technologies. It is time for the Philippines to embrace the solutions to its current energy, environmental and economic predicament. It is time to choose positive energy now.

Race for the Climate! A Greenpeace organized dragon boat regatta in April 2002 to raise support for the Choose Positive Energy campaign.

Endnotes

[1] According to studies by PLC Inc. and the U.S. Department of Energy, a new coal-fired power plant will release between 1.96 (PLC) and 2.09 (DOE) pounds of CO_2 per kilowatt-hour of operation. For this report, the assumption is that any given coal-fired power plant will emit two pounds of CO_2 per kilowatt-hour. Reference was made to the distinguished Sustainable Energy and Economy Network for the methodology. Please see [http://www.seen.org/pages/db/method.shtml]. For other fossil fuel carbon emission estimates, see also Gemma Narisma, "Counting Greenhouse Gases in Local Communities," *Disturbing Climate*, ed. Jose T. Villarin SJ, Manila Observatory, Ateneo de Manila University Campus, Quezon City.

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[3] Ibid. The PEP 2002-2011's New and Renewable Energy figures exclude geothermal and large hydro.

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