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THE FOCUS OF THIS ISSUE: WATER, FORESTS AND CLIMATE

Life on Earth found its origin in water. And water continues to sustain all forms of life. This precious natural element has been respected and valued by all cultures except for the present dominant market-based culture which is increasingly converting water into a mere resource to be used and abused. Forests are a key component of the global water cycle. Forest degradation and destruction affects water reservoirs which together influence the earth's climate. In turn, climate change is impacting on forests, water and people. The main drivers of deforestation --transnational corporations-- by appropriating and destroying water and forests are putting at stake our common future on Earth. We intend this month's bulletin serves as a tool to highlight these connections and raise local communities' denounces.

OUR VIEWPOINT

WATER: A VITAL SOURCE OF LIFE

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OUR VIEWPOINT

- Struggles for water and for the climate: everybody's business

In this increasingly privatized world, to talk about water is almost synonymous with talking about its appropriation by some company to turn it into merchandise and source of profit. The seriousness of the situation has been understood by many people and has led to major struggles – sometimes pacific, sometimes violent – to avoid it passing into the hands of transnational corporations.

However, the role of transnational corporations goes far beyond the drinking water business and extends from pollution to the destruction of ecosystems that ensure the functioning of the water cycle.

Water does not become polluted on its own and the origin of its pollution is, in most cases, linked to large transnational corporations that either directly pollute or produce and sell contaminating substances that end up by poisoning the water.

In the first place, oil and mining companies stand out, dumping enormous quantities of contaminating substances in the areas where they settle. Secondly, come the companies that produce and sell toxic substances which have water as their final destination. Of course these are not the only companies involved, but they undoubtedly occupy an outstanding place on the long list of contaminating companies.

A different but equally serious case is that of the companies involved in the construction of major hydroelectric dams that destroy entire ecosystems – both aquatic and forest – affecting the innumerable species – including humans – that depend on them.

Shrimp farming companies are in a similar situation. Not only do they pollute water resources but also destroy mangrove ecosystems that are so important for the defence of coastal systems and related life.

Another case is that of companies involved in pulp production that install enormous fast-growing monoculture tree plantations to supply their factories with raw material. These trees consume – at no expense to the company – vast amounts of water, drying out wetlands, lagoons and water courses. Meanwhile, their enormous factories use water for their industrial processing for free, and return it polluted to the same water course they took it from.

The list is too long to compress it in an article, but it may generally be said that in all this process of destruction of water and of the ecosystems necessary to ensure the functioning of the water cycle, there is always at least one, and in most cases several, transnational corporations that have actually appropriated the resource.

In all cases, those most adversely affected are the local inhabitants, whose lives depend on the ecosystems and on the water resources polluted or degraded by these companies. Among urban inhabitants, the poorest are the most adversely affected as they find themselves obliged to buy bottled water because tap water is polluted. In turn, among the local inhabitants, those most adversely affected are usually women who are differentially hit by the changes on a local level.

On a more macro level, the greatest danger to water is related to climate change. On the one hand because one of its main causes – deforestation – has a negative impact on the water cycle. In fact the destruction of vast areas of forests affects the occurrence of rain and groundwater infiltration. On the other hand because climate change in itself entirely changes the hydrological regime, with the outcome of extreme phenomena such as droughts and floods.

Needless to say, behind the climate change phenomenon it is possible to identify major transnational corporations that are profiting either from deforestation processes or from exploitation and sale of fossil fuels and, more recently from carbon trading which they invented to obtain even greater profits from climate change, converted into a business.

For the overwhelming majority of the inhabitants of the planet, water cannot be equated to a business and even less can climate change be thus considered. Water contamination and scarcity, as well as, climate change are disasters to be avoided and not goods to be negotiated. Struggles – local, national and international – against the different processes and actors affecting water and the climate are not struggles of “opposition” but of affirmation: for the lives of this generation and future ones.

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WATER: A VITAL SOURCE OF LIFE

- Water: For some a sacred element, for others a common property, and yet for others a mere commodity

"The surface of the earth had not appeared. There was only the calm sea and the great expanse of the sky. There was nothing brought together, nothing which could make a noise, nor anything which might move, or tremble, or could make noise in the sky. There was nothing standing; only the calm water, the placid sea, alone and tranquil. … Only the Creator, the Maker, Tepeu, Gucumatz, the Forefathers, existed in the water surrounded by clarity." (Fragments from Popol Vuh, the sacred book of the Maya, explaining the origin of the world).

In chemistry water, with the formula H_2O, is explained as a substance that comes from the reaction of hydrogen and oxygen. It has a molecular weight of 18 gr/mol and serves as a basis to measure the density of substances. Heat transforms it from a liquid to a gaseous state and cold changes it from liquid to solid. Water is vapour, cloud, ice, hailstone, snow, liquid, rain, brook, river, sea. It is also an acid, a hydroxide, a salt, and an oxide.

Only a small 2.5% of the total amount of water existing on the planet is fresh and therefore fit for human consumption. For the western and modern urban concept, water is a renewable resource and the growing trend is to consider it as yet another consumer element, a good that can be purchased and sold, appropriated, wasted and polluted.

But for ancient cultures and even for those that have not yet lost all links with nature, water is a sacred element, inspiring myths and legends. In some cases, because it was so hard to obtain and conserve it, it was given an almost divine value. The fluidity of water is birth and in sprouting is eternity (1). For this reason it appears as an element of origin, associated with what is sacred in most religions: in the texts of the Jewish Torah, in the Christian Old Testament, in the Muslim Koran, in the codex of Pre-Colonial religions, in Hindu practices with the River Ganges as their centre, in Egyptian mythology marked by the annual floods of the River Nile, in Greek, Roman and Chinese traditions.

In the present, the Indigenous Peoples at the 3rd World Forum on Water, held in Kyoto, Japan in March 2003, declared that they commit themselves to "... honour and respect water as a sacred being which sustains all life. Our knowledge, laws and traditional ways of life have taught us to be responsible, caring for this sacred gift that connects all life." When water is conceived of as something sacred, it is priceless and its value transcends the human species.

Beyond the belief in the sacredness of water, another line of thought holds access to drinking water as a basic human right. The first United Nations Conference on Water, held in 1977 in Mar del Plata, Argentina marked the starting point for a world reflection on a global water policy. There, for the first time, the international community agreed that all people have an equal right of access to drinking water in sufficient quantity and quality to cover their needs.

Today, 1,400 million people -1 out of 4 of the planet's inhabitants- lack access to drinking water. Differences and tensions increase unceasingly. While the inhabitants of California, USA have an average consumption of 500 litres per day, in Sudan this figure drops to 19 litres.

In 1992, Agenda XXI of the Earth Summit held in Rio de Janeiro, Brazil, took up this idea once again. In 2000, the Special meeting of the United Nations General Assembly established the goal of reducing by half the number of people who do not have access to drinking water by 2015. The First World Alternative Forum on Water (2), held in Florence (Italy) in 2003, inspired by the Water Manifest (3) and by the reflections of the World Social Forum held in Porto Alegre (Brazil), made a proclamation in favour of «another world and local water policy» seeking to ensure «the right to water for all the 8 billion people who will be living on the Planet in 2020 ».

But all these are proclamations have not been upheld for lack of political will on the part those entrusted to enforce them. On the contrary, all over the world pressure is increasing to privatize water services, like many other items and services. The transnational water companies, such as Bechtel, Veolia, Suez, Saur Bouygues, Nestlé, Vivendi Environnement, Danone, RWE, Thames Water, Southern Water, Coca-Cola, Aguas de Barcelona, just to name a

few—rely on multilateral funding bodies that impose privatizing recipes on the countries of the South to achieve this.

Appropriation of water and generally its pollution by the industrial sector, also occurs through the – generally unpaid - use and abuse by enterprises such as pulp mills (which require vast amounts of water), mining, shrimp farming. Some of these activities also involve forest deterioration and destruction which in turn also has a direct and negative impact on the water cycle insofar as the forest is one of its key elements.

Large scale monoculture tree plantations are also a way of appropriating water, as fast-growing species act as siphons on the groundwater level, to the detriment of other activities in the surroundings of the plantation.

At the First People's Workshop in Defence of Water held in Mexico in 2005, "some of the modalities of water privatization" were identified (4). Among them:

* Privatization of territories and bioregions. The companies that trade and/or need bulk water for their activities seek the privatization of territories and entire bioregions to guarantee monopoly control over the resource, protected by changes in law.

* Privatization through diverting existing sources. Abundant water is provided to industrial users and agribusinesses through canals that divert whole rivers from their natural courses, and through the construction of infrastructure megaprojects like waterways and dams.

* Privatization by contamination. When major corporate users pollute the resource through use and abuse (for example mining, oil drilling, paper pulp, electricity companies, and agrochemical-intensive industrial monocultures) as a "collateral effect" they in fact appropriate a resource belonging to all and make it impossible for less-privileged sectors to use it.

Nigerian communities affected by oil companies, such as Shell, can testify to this. These companies pollute the waters of the Niger Delta which, according to a European Community study, contains hazardous oil levels both for aquatic and human life.

Industrial oil palm plantations, in addition to altering the water cycle through the deforestation they usually cause, additionally involve the scourge of agrochemicals used for pest, weed or plant disease control. These agrochemicals end up in surface and groundwater. In places where there is abundant rainfall, weed-killers such as glyphosate or paraquat are swept by the rain into streams and rivers, the only source of water for entire communities around the plantations, with the consequent effects on their health.

Finally it is all a question of politics. As appropriately explained by the Swiss ecologist, Rosmarie Bär, "when talking about water you have to talk about politics. Water policy goes hand in hand with soil policy and agricultural policy, with trade and economic policies, with environmental, social and sanitary policies and with equality policy."

Policies currently imposed all over the world are far from taking into account that we are part of a greater system that in turn belongs to other systems and others and others: from atoms to galaxies. What is done in one part of the system has repercussions on the others. As humanity, the urgent and enormous task before us is to reverse this deviation in order to recover the future and, with it, the marvel of life flowing, like water.

(1) "El agua", Comfama, http://www.comfama.com/contenidos/bdd/6358/AGUA.pdf;
(2) "Florence Declaration for another Water Policy. Alternative World Water Forum Declaration" (21-22 March,2003), http://paginadigital.org/articulos/2003/2003terc/noticias5/agua25-4.asp;
(3) "El manifiesto del agua", Ricardo Petrella, Barcelona, Meeting Icaria Editorial-Intermón Oxfam, 2002 ;
(4) "Las caras de la privatización del agua", Silvia Ribeiro, La Jornada, April 2005,

http://www.jornada.unam.mx/2005/04/30/027a1eco.php

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- Forests and water

The relationship between forests and water has long pre-existed the appearance of humans on the planet. Wherever water comes down from the skies with certain frequency, there is a forest. For scientists, forests are ecosystems hosting much biological diversity, both regarding different species and also regarding genes within the same species. They are places dominated by trees, but nevertheless composed also of plants of different species, sizes, ages and forms of life. We find lianas, creepers, ferns, shrubs, young trees and old trees that could tell us of history one thousand years before Christ. This gives rise to the great biodiversity these ecosystems host, as so many different plants provide food to many different animals.

And wherever there is a forest there is water. To start off with this is due to the fact that water is an essential requisite for plants as the process of photosynthesis needs three things: light, carbon dioxide and water. Additionally, forests develop and evolve in equilibrium with the quantity of water available to them –it is perhaps for this reason that once they have developed, they protect it.

Forests provide various factors that generate conditions to conserve water. Firstly: they lower the temperature by providing shade, preventing water from evaporating and migrating to the sky. Secondly: forests capture the clouds making them pass slower over them, leaving more humidity behind them. Thirdly: they improve the soil by making it more absorbent through the incorporation of organic matter, enabling water to filter through and not runoff over the soil. Fourthly: they make water reach the soil more slowly, trapping it in the tree canopy and letting it fall along the trunk, thus giving the soil more time to absorb it, preventing the water from eroding the soil by falling rapidly.

Indigenous cultures are well aware of the relationship between water and the forest. The Mapuche people, who inhabit southern Chile, find spirits-forces that protect water in the native forest. The Gñen-ko, inhabit a sacred place within the forest, the meno-ko, the site where water is born. The Gñen-ko punish those who enter the meno-ko without asking permission, or those who enter without a valid reason, like for instance to extract medicinal plants to cure a sick person.

Lucinda Pichicona, a Mapuche woman, tells us that: "*sometimes, out of need, they have taken plants, trees to sell for firewood, for heating, to make fences, they have taken out and destroyed their small forests. ...and many people have cleared, for example there are institutions that come and (say) that the water must be cleaned, that everything has to be very clean and many Mapuche have cleared the springs where they got their water, clearing and cutting down the trees so the leaves don't fall into the water because previously the leaves fell into the water but they used to push them away and take out the water. Because they were told that the water was dirty the people cut the trees to prevent the leaves from falling in. And what happened, the water dried up. And then they understood that by taking away the plants the water is no longer there and they do not have any Gñen that produce water*" (1).

When a forest that had developed in equilibrium with local environmental conditions disappears, this equilibrium is seriously altered. The soils and slopes are exposed to erosion agents, of which water is the strongest. It is precisely what best demonstrates the relationship between these three factors. Without the forest, water and soil almost mutually repel each other in lands where the topography is not flat. However with the presence of the forest a natural web is generated, enabling water and soil to maintain a closer relationship, coming nearer and staying together much longer.

When the native forest is replaced by plantations of foreign trees, the water-soil relationship is destroyed, this is so because the only trees able to establish a balance between them are those developed according to the characteristics

that both factors exhibit in a given location.

A Mapuche man from the Lumaco region, explained:" *Now there is not much menoko because the forestation companies entered everywhere, they surrounded the community; the water decreased...very specially the menoko, the springs. And now as they have planted pine trees and the pine trees are now growing this water has dried up. And the community is rather sad. It is not like the life we had before" (1).*

We know that three-quarters of the planet are cover by water, but for this water to be available to humans there must be sufficient forests to place it at our disposal. If not, we will only see it passing by.

By Alejandra Parra, RADA (Network for Environmental Rights Action - Red de Acción por los Derechos Ambientales), e-mail: sinurgirse@yahoo.es

(1) Excerpt from interviews carried out with K*imche* ("people with wisdom") from the Pantano community, Lumaco commune, Province of Malleco, Araucania Region, Chile, for the thesis on "Strategies for restoration of degraded native forest communities in an inter-cultural context." Parra, A. 2004.

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- The water-forest-climate connection

In the symbiosis between water and forest referred to in the previous article, another component should also be considered: climate change. Climate is a determining factor of the forest, of its flora and fauna. Climate makes a forest boreal or humid-tropical and consequently its diversity will be of one type or another. In turn, forests have been crucial in the development of the world climate because of their role in trapping carbon dioxide and releasing oxygen.

This water-forest-climate connection has implications that go beyond local and directly verifiable facts. An Oxford University study (1) throws light on the relationship between rainfall and the atmospheric movement of the Congo Basin and the Amazon Basin, quoting satellite studies that show a natural see-saw oscillation across the whole Atlantic Ocean: floods in the Amazon basin tend to coincide with droughts over the Congo Basin and vice-versa. In turn, the major variations in rain patterns in the Amazon and the Congo have repercussions on the hydrology and climate of other regions.

The study, giving figures and scenarios, provides data on a legacy of apparently forgotten ancient knowledge: that life is inter-dependent so what is done in one part of the world invariably has effects on other parts. For example, deforestation in the Congo Basin – with an approximate rate of destruction of a million and a half hectares of forest per year – has caused decreased rainfall in the United States Great Lake region by approximately 5-15 % and also affects Ukraine and Russia (north of the Black Sea). For its part, the changes in land cover in the major basins in Africa and Asia have effects on the Asian monsoon.

The industrial and extractive activities --including converting forests over to farming, logging, highway construction, oil exploitation and mining-- that sustain the globalized economy based on the brutal assault on nature, continue to advance. But not without consequences.

The delicate balances that have been upset, such as the forest-water-climate connection, make the planet face the threat of Climate Change. We now learn that mass industrialization so voraciously swallowing up nature, has a very poor digestion. Excessive emanation of the so-called "greenhouse effect gases" (carbon dioxide among them), is not related to natural emission mechanisms but to the above-mentioned industrial activities.

According to United Nations Intergovernmental Panel of experts on Climate Change (IPCC) eleven of the last twelve

years (1995 – 2006) are among the warmest years in the record of global surface temperature since 1850. Increase in temperature during the twentieth century has probably been the highest in any century over the past thousand years and more extreme phenomena, such as heavy rainfall, dry summer weather and subsequent droughts in some areas, are foreseen.

IPCC forecasts that for the twenty-first century there will be an increase in both the concentrations of carbon dioxide and of the mean temperature of the planet's surface (2). Deforestation is one of the processes responsible for increased greenhouse effect gases – contributing 18% as acknowledged by a former World Bank senior economist, Nicholas Stern, in a report on the impact of climate change and global warming on world economy – and for altering the local, regional and global climate

Climate change will particularly affect tropical forests where precipitation declines, and also mangroves subject to pressure from changes in temperature. In turn, ecosystem resilience (the capacity to recover and adapt) may be vastly exceeded during this century because of an unprecedented combination of climate change, its associated alterations, (for example, floods, droughts, fires, spread of insects, ocean acidification) and other factors such as changes in land use, contamination, fragmentation of natural systems, over-exploitation of resources. This implies, among other things, irreversible effects on biological diversity.

Furthermore, climate change also affects water, not only because its impact on forests has a bearing on the water cycle, but also because of the alterations caused by increased melting of snow and ice. Additionally, higher temperatures can also compromise water quality (for example, due to a proliferation of algae). According to data gathered by IPCC (3), during the twentieth century, a generalized withdrawal of non-polar glaciers took place. This has a two-sided effect: in the long run it implies less water availability and it also implies the entry of a great mass of water into the sea that will directly affect coastal areas. This effect of climate change also generates more climate change as flooding of land, both grasslands and forests causes release of methane gas, one of the most potent greenhouse gases, with negative impacts on global warming and therefore, on climate change.

The impacts of climate change in turn have direct effects on humankind, and not just on the local communities more immediately affected by forest disappearance, shortage or loss of water courses and numerous derivations on their sustenance and health, but also on urban centres.

In the long run, the taps that forgot the origin of water, the sky-scrapers that lost the memory of the role played by forests, the governments that distractedly toy with atmospheric contamination, will also feel the effects.

(1) "Ecosystem services of the Congo Basin forests", Danae S. M. Maniatis, Oxford University, 2007, http://globalcanopy.org/themedia/Ecosystem%20Services%20CB.pdf;
(2) Climate Change 2001: Synthesis Report, http://www.ipcc.ch/pdf/climate-changes-2001/synthesis-spm/synthesis-spm-es.pdf;
(3) Climate Change 2007: Synthesis Report, http://www.ipcc.ch/ipccreports/ar4-syr.htm

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DIFFERENT FORMS OF WATER APPROPRIATION

Bottled Tears
Or Water Poem

Yesterday I could cry and shed watery tears
I could labour and freely shoot watery sweat
But today

Not so, not so
Riverbeds turned dustbowls
Rivers diverted into private throats
Creeks turned into rivers of salt
I sweat blood
And weep dry-eyed

Our fathers and forefathers and mothers and grandmothers say waters from
Streams and rivers, creeks and lagoons
In their days
Were clear, odourless, tasteless, healthy
In their days

When we talked of process none guessed we
Were in the process of privatising our throats
Choking our taste buds on caustic soda as
Process waters from drill pits and fluid effluents
From eucalyptus paper mills attempt to paper
Over the pains and deceits of reckless tycoons
Draped in dark cocoons of international finance plans
To subjugate and to squeeze and commodify
Our sweat and tear drops

Our fathers and forefathers and mothers and grandmothers say waters from
Streams and rivers, creeks and lagoons
In their days
Were clear, odourless, tasteless, healthy
In their days

Dreams of sparkling streams evoke surrealistic brushes
Fishes dancing past steel hooks and reedy traps
Pebbles and sand dragging divers' plunge for hidden treasure
Throve centuries saved from prying eyes
I look deep into your heart and see
Fossils of forgotten dreams
Calcified
Histories like far removed tales
Crabs long eaten, turtles hurtled
Into distant lands

Our fathers and forefathers and mothers and grandmothers say waters from
Streams and rivers, creeks and lagoons
In their days
Were clear, odourless, tasteless, healthy
In their days

Last night kids danced in acid rain
Doubly warmed by infernal dragon tongues
From gas flares
Empty shells, lifeless sockets, death everywhere

Forlorn men, backs broken, homes long gone
Sit on benches of plastic bamboos
Whistling for fishes from acid lakes
Craving for mudskippers from tar ponds

Our fathers and forefathers and mothers and grandmothers say waters from
Streams and rivers, creeks and lagoons
In their days
Were clear, odourless, tasteless, healthy
In their days

Once I could cup you in my palms
Now captive in plastics
These logos are they your makers?
Spring waters spring from ubiquitous boreholes
Polluted waters marketed as life giving fluids
You spring surprises don't you?
Who made the robots that rob?
We demand
Free our waters
Jail the water crooks
Polluters and thieves!

Our fathers and forefathers and mothers and grandmothers say waters from
Streams and rivers, creeks and lagoons
In their days
Were clear, odourless, tasteless, healthy
In their days

By Nnimmo Bassey, Environmental Rights Action, e-mail: nnimmo@eraction.org

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- Bangladesh: Phulbari coal mine - "losses beyond compensation"

The proposed Phulbari open pit coal mine in Bangladesh would divert a river, suck an aquifer dry for 30 years and evict thousands of people from their homes. Vast machines would dig a series of holes 300 metres deep over a total area of 59 square kilometres. The coal would be largely exported via a railway and port in the Sundarbans, the world's largest mangrove forest.

The company behind the US$1.4 billion scheme, Asia Energy Corporation (Bangladesh), is a wholly owned subsidiary of a UK company, Global Coal Management Resources. The largest shareholder in GCM Resources is RAB Capital, a London-based hedge fund manager. Other shareholders include UBS, Credit Suisse and Barclays. In June 2008, the ADB's board is scheduled to decide whether or not to provide a US$100 million loan and US$200 million political risk guarantee for the project.

During an ADB mission to Bangladesh in October 2007, mission leader Kunio Senga told journalists that "coal mining is going to give huge potential benefit for power generation." Senga added, "Coal mining is very effective."

The mine would displace 40,000 people according to Asia Energy. Activists state that the number of people affected

could be more than ten times this figure. "No matter wherever we are put, if we get evicted from our homes, we will lose our traditions, social organisation and businesses. These losses are beyond compensation," Nima Banik, a lecturer at Phulbari Women's Degree College told the Bangladesh NGO, Society for Environment and Human Development (SEHD).

The mine would cause noise and dust pollution through dynamite explosion. More noise and dust will come from the trucks and trains that would haul the coal away from the mine. Coal dust will pollute the air. Water will be polluted from washing the coal, risking pollution of surrounding water bodies. Bangladesh has networks of hundreds of small rivers, meaning that water pollution in one area can spread over a large area.

To prevent the mine from flooding, huge pumps would run 24 hours a day for the 30 years of the mining project, pumping up to 800 million litres of water a day out of the mine. Groundwater in an area covering about 500 square kilometres would be lowered. Wells would no longer provide enough water for farmers. Asia Energy's solution is to distribute the water pumped out to farmers. "It is an open question if the water distribution would be even-handed," notes SEHD's Philip Gain. Once the mining is finished, Asia Energy plans to create a huge lake, providing fresh water, fisheries and recreation, according to the company. But after 30 years of digging, the water will be toxic.

Local opposition against the project is strong. In August 2006, about 80,000 people took part in protests against the mine. The paramilitary Bangladesh Rifles opened fire on the demonstration, killing five people and injuring hundreds. On 30 August 2006, the Rajshahi mayor, Mizanur Rahman, signed an agreement with the protesters on behalf of the government to kick Asia Energy out of the country and to ban open-pit mining in Bangladesh. Well over a year later, the government has yet to scrap the deal with Asia Energy. Meanwhile the government is working on a coal policy which in its current draft form would allow open pit mining.

Under the military government which declared emergency rule in January 2007, public protest is banned. Nevertheless, in December 2007, representatives of the sub-districts of Phulbari and neighbouring Birampur, Nababganj and Parbatipur wrote to the president and executive directors of the ADB. The project will "increase the poverty of the local population as well as cause environmental disaster," they wrote.

The Bangladesh government's Department of the Environment has set up a Climate Change Cell. "Rapid global warming has caused fundamental changes to our climate. No country and people know this better than Bangladesh, where millions of people are already suffering," states the one of the Climate Change Cell's documents. "Development must ensure reducing the risks posed by climate change to people's lives and livelihoods," it adds.

The Climate Change Cell gets more than 90 per cent of its funding from the UK's Department for International Development (DfID). Nowhere in any of the documents on its website does Climate Change Cell mention Phulbari. Yet the coal from the Phulbari coal mine, if it is extracted and burnt, will add a total of more than 1.2 billion tons of carbon dioxide to the atmosphere.

Gordon Brown, the UK prime minister, claims to be concerned about climate change. At a recent meeting with Bangladesh's interim head of government, Fakhruddin Ahmed, Brown promised that "Britain would continue to work closely with Bangladesh bilaterally and internationally to secure an effective response to combat climate change." The Phulbari coal mine makes a mockery of this statement.

By Chris Lang, http://chrislang.org

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- Burma: Dams in the Irrawaddy River Basin to displace thousands of people in rural areas

In a country already suffering severe economic hardship and repression under its military rulers, thousands of people mainly in rural areas face losing their homes and lands to seven large dam projects planned for the Irrawaddy (Ayeyarwaddy) River Basin in Northern Burma's Kachin State.

The dam projects are being built under a joint agreement between the Burma's military regime and the China Power Investment Corporation (CPI).

The electricity generated from the dams would be sent via China's Yunnan power network to feed the western region and eastern coastal areas of China. The electricity revenue to the Burmese junta from China is estimated at about US$500 million per year.

The Ayeyarwady or Irrawaddy River – Burma's largest river (about 1350 miles or 2,170 km long) and its most important commercial waterway, with a drainage area of about 158,700 square miles (411,000 km^2) – flows through Burma starting in Kachin state, at the confluence of the Mali Hka and N'Mai Hka rivers. The headwaters of these two rivers originate in the southeastern Himalayas.

After coming together as the Irrawaddy, the river flows south through Burma's central heartlands and the country's second largest city of Mandalay, down to the delta – comprising a fertile plain as well as an intricate system of mangroves that is 290 km long and 240 km wide. The Irrawaddy delta supports a population of more than 3 million people and provides nearly 60% of Burma's rice production.

At the confluence where the Irrawaddy begins, inspection work and dynamiting of the riverbeds is underway for the largest of the 7 dam projects – the Myitsone dam. Located 26 miles north of Myitkyina, the capital of Kachin state, the Myitsone project will generate 3,600 megawatts of electricity.

In addition to the Myitsone on the mainstream of the Irrawaddy River, another six dams are planned on the N'Mai and Mali Rivers north of the confluence, including: 2,000 MW project in Chibwe, 1,600 MW project in Phizaw, 1,700 MW project in Khaunglanphu, and 1,560 MW project in Laiza in Kachin state. Upon completion, the Irrawaddy dam projects would generate about 13,360 MW making it the biggest hydropower venture in Burma, far more than the controversial 7,100 MW Tasang dam in Shan state planned with Thailand.

Work has also started on the Chibwe hydropower project on the N'Mai Hka River near Chibwe town. The villages in Washapa and upper Nyawngmawpa valley near the Chibwe project site are being pressured by the military and the project contractor, Asia World Company, to relocate their homes near the project site. So far villagers have held out from moving – a grim standoff that may not last long under the fierce armed might of the Burmese military.

True to the highly secretive nature of Burma's military regime, little information is known about these dam projects or their potential impacts on people, livelihoods and ecosystems. No economic assessment or environmental study has been done; the people of Kachin state have no idea of the scale of these project reservoirs and inundation areas.

Eyewitness reports from the area say that currently Chinese engineers and the Asia World Company have begun geological inspection activities at three different places along the N'Mai Hka watercourse between Chibwe and Sawlaw towns; Asia World is also constructing roads using several bulldozers and excavators and has hired local villagers in the construction site. A worker is paid Kyat 5,000 (US$4) per day as the minimum wage.

Meanwhile downstream at the Myitsone project, over 1,000 Asia World construction workers are settled at the project site, according to local villagers near Myitsone, and dynamite explosions occur regularly underneath the riverbed at the project site since the last two months. Soldiers from the Burmese Army's No. 121 Infantry Battalion are stationed to provide security for the company work camps near Myitsone.

The scale of the displacement from the dams is not fully known, but estimated at more than 10,000 people presently living in the Washapa and Nyawngmawpa valleys situated west of the N'Mai Hka River. At least 47 villages would be fully submerged under the dam waters. Apart from people in Kachin State, another 3 million in the Irrawaddy delta – Burma's rice bowl – could also feel the impacts of the dams due to changes in seasonal water flows and flood levels in the delta.

The ecological impacts though even less understood promise to be severe as the large-scale dams will inundate huge areas of forests and affect plant and riverine biodiversity. The Irrawaddy River Basin is located between two of the most biodiverse and threatened ecological regions – the Indo-Burma and South Central China regions – which contain at least 1,500 species of vascular plants as endemic species. The confluence of the Mali and N'Mai Rivers falls within the Mizoram-Manipur-Kachin rainforests. Logging is already going on in areas between the Irrawaddy River and Mogaung Town with hardwood species called Tarmalan and teak felled and sent to China.

Endemic bird areas follow the Irrawaddy's watercourse; there are at least 4 known endemic bird areas in the basin. The central Irrawaddy is an important wintering and staging area for waterfowl from Tibet and other areas north of the Himalayas. Changes to water quality and fish species will impact bird life.

The Irrawaddy dolphin (*Orcaella brevirostris*), one of the 4 species of river dolphins in the world and listed as critically endangered species by the World Conservation Union (IUCN), is also under threat by loss of prey from disturbances in fish migration patterns, degraded water quality and changes to river hydrology by the dams.

The Irrawaddy dolphins are found to range around 300 km south of the dam site from Myitkina. Local people venerate the dolphins and fishermen have a cooperative fishing method with them. The dolphins respond to signals from the fishers by swimming in ever-tightening semi-circles to help herd fish schools. But the dolphin's habitat in the Irrawaddy has already declined nearly 60% in the last century and the best estimate of the current population is just 59 individuals.

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A full version of this article will appear in the upcoming issue of Watershed magazine. More information on the Irrawaddy dams is available from "Damming the Irrawaddy," published by the Kachin Development Networking Group (available at www.salweenwatch.org).

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- Argentina: Scientists confirm that plantations dry up streams and salinise groundwater

The Pampas of Argentina and Uruguay is one of the largest uncultivated grasslands in the world. Grasses have dominated the Pampas for at least three thousand years. Starting in the 19th Century eucalyptus trees were planted on small areas, for shade on cattle ranches and for construction materials. Today, the pulp and paper industry and the carbon offsets industry are expanding their operations in South America. Increasingly, they are targeting grasslands for conversion to large-scale industrial tree plantations.

Robert Jackson, Professor of biology at Duke University, has spent many years researching the impacts of plantations on water. "Extensive tree establishment could compromise groundwater replenishment at the landscape scale, making its use transient and producing a widespread depression of groundwater", he wrote in a 2004 paper published in Global Change Biology. Written with his colleague Esteban Jobbágy the paper is based on a comparison of grassland and adjacent plantations in the Pampas in Argentina. As well as lowering ground water, they found that "The conversion of grasslands to plantations in the Pampas triggered intense soil and groundwater salinization in areas with intermediate texture sediments, the most common soil type in the region."

In the Pampas, shallow freshwater lenses are used to provide drinking water, but below these lenses is brackish groundwater below plantations. Tree plantations suck up the deeper groundwater bringing salts to the surface. Plantations also affect soil nutrients, depleting calcium, magnesium and potassium but enriching sodium, leading to more salty soil.

"A landscape with deep and salty groundwater would be a likely outcome of a massive tree establishment in the Pampas," Jackson and Jobbágy warn.

In December 2005, Jackson was the lead author of a report published in Science magazine, titled "Trading Water for Carbon with Biological Carbon Sequestration". Jackson and his colleagues looked at data comparing the chemistry of soils in grasslands or shrublands with those in adjacent plantations in 16 countries. They studied stream flow data from 26 long-term catchment studies (with more than 500 annual observations) comparing grassland, shrubland or agricultural catchments with plantations. They also conducted their own research in Argentina.

"Carbon sequestration strategies highlight tree plantations without considering their full environmental consequences," Jackson and his co-authors wrote. Their report documents that replacing grassland and shrubland with plantations results in "substantial losses in stream flow, increased soil salinization and acidification".

"Within a decade," Jackson said in a 2005 interview with National Public Radio, "tree plantations reduce stream flow by about one-half compared to the shrublands or grasslands they replaced and about one out of every eight streams dried up completely for a full year or more." More than one-fifth of the catchments experienced reductions in runoff of 75 per cent or more for at least one year.

"Plantations not only have greater water demands than grasslands, shrublands, or croplands," note Jackson and the international team of scientists in Science, "they typically have increased nutrient demands as well. These demands change soil chemistry in ways that affect fertility and sustainability."

In another report published in 2005, Jackson and his colleagues found that "Eucalypts had a larger impact than other tree species in afforested grasslands, reducing runoff by 75 per cent, compared with a 40 per cent average decrease with pines."

Particularly important is the impact of tree plantation on dry season water flows: "Changes in low flow may be even more important than changes in annual flow, as the dry season is when reduced water supply will have the most severe effects for users, particularly in arid and semiarid regions."

In a report published last year, Jobbágy and Jackson looked at the impact of eucalyptus plantations on soil chemistry in the Argentinian Pampas. Their findings upheld what they'd previously found. Tree plantations "showed a widespread and homogeneous salinization of groundwater and soils at all study sites". Jobbágy and Jackson report that "Compared to their surrounding grasslands, tree plantations . . . had shallow ground waters that were 15 to 30 times saltier."

To farmers and villagers living near industrial tree plantations, all these statements from peer reviewed scientific journals are statements of the obvious. But farmers and villagers tend not to dig boreholes and collect samples of soil and ground water to be send off for analysis in laboratories. Neither do they produce reports for publication in scientific journals. Instead, they notice when their crops won't grow or when their wells dry up. The best way of preventing these problems is to stop the further expansion of the industrial tree plantations - before Jackson and Jobbágy's warning of "A landscape with deep and salty groundwater" becomes a reality in the Pampas.

By Chris Lang, http://chrislang.org

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- Water contamination with pesticides in oil palm plantations

Lake Chini is dying. The beautiful lake in the state of Pahang is one of the only two large natural freshwater bodies in Malaysia --and is dying. It used to teem with fish and other aquatic animals and plants and has been the home of indigenous communities, the Jakuns. Various human activities have contributed to the pollution of Lake Chini especially the establishment of a dam. However one contributing factor has been the pesticides and fertilisers used in the oil palm plantations fringing the lake and in many places next to the water.

The pesticides used in plantations are known to cause a litany of health problems both chronic and acute and some of them are known to be harmful to soil and aquatic organisms and are environmental pollutants. This water contamination affects the health and well being of the Jakuns who depend on the water for drinking and other purposes.

Increased demand for agrofuels and vegetable oil means rapid expansion of palm oil plantations and demand is expected to double by 2020. To meet this demand thousands of square kilometers of mainly rainforest and agricultural lands will be cleared to plant new oil palm plantations in Indonesia, Malaysia, PNG and many other countries in Asia and Africa and Latin America.

The use of pesticides will increase tremendously as the plantations expand. The invasion of these oil palm plantations into rainforest have and continue to destroy livelihoods and lives of indigenous communities, erode biodiversity, destroy rainforest habitat and wild life, and pollute the soil and water with pesticides and untreated palm-oil effluent causing environmental contamination of air, soil and water, soil erosion, and sedimentation of rivers.

Pesticides continue to negatively impact the health and lives of millions of agricultural pesticide users, their communities and consumers worldwide, also causing great damage to biodiversity and the environment. The pesticides used in oil plantations have adverse impacts on human health – and particularly on oil palm workers- and the environment.

Innumerous pesticides are used on oil palm plantations, and many of them are posing great threats to water reservoirs, which in turn spread contamination to other life forms. For example, Paraquat poses a risk to non-target terrestrial and aquatic plants. Diuron and Metsulfuron are potential groundwater contaminants and diuron also has adverse effects in aquatic environments. In addition, insecticides such as monocrotophos, methamidophos, carbofuran and fungicides such as chlorothalonil and maneb are groundwater contaminants. Glyphosate, cypermethrin, carbofuran, and maneb are possible endocrine disrupting pesticides. Glufosinate ammonium another pesticide used in oil palm plantations is also a groundwater contaminant.

The use of highly hazardous pesticides combined with the uncontrolled application, the methods of application as well as the conditions of use in these countries suggest that the likelihood of pesticides entering waterways and groundwater is high. Also many of the pesticides used are inherently poisonous to the aquatic ecosystems. Groundwater, wells and water drinking would be impacted.

Pesticide production is a multinational industry exerting undue influence on international standard setting bodies, national governments and local communities. The enormous influence these chemical corporations wield, because of their economic power, is a major factor in the persistence of pesticides in agriculture despite the mounting evidence of environmental contamination, human poisonings, and greater yields achieved when the chemical is replaced by agroecological practices.

Community groups, people's organizations and NGOs have been organizing into networks and movements to confront the industry and challenge the expansion of oil palm plantations because of all the adverse effects to the health, environment and to the livelihoods and lives of indigenous communities, peasants, agricultural workers and women. Many of these groups are also promoting biodiversity based ecological agriculture that builds on indigenous and local knowledge, based on appropriate technology, biodiversity conservation and respecting ecological integrity as well as advocating farmer's including rural women's control over land, water, seeds and forests, protection of workers' rights and of rural communities.

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WOMEN AND WATER

- Women speak out about the water taken away from them

Together with the arrival of large-scale monoculture tree plantations is the departure of water. This affects the whole village community, but for women, the effects are particularly differentiated. They tell us about with their own words.

In Brazil the Mata Atlântica - an ecosystem which contained some of the planet's greatest biological diversity - has given way to a uniform and sad landscape of large-scale monoculture eucalyptus plantations. (1) "… it seems as if the climate changed, inside the village. It changed because even the rain… these are the changes that the eucalyptus brought. The rivers used to have a strong current, and now there's just a trickle of water left. How are we going to be able to plant? There are times when you have to be watering the garden all the time, because the soil is dry and cracked. The problem today is that to have healthy food you have to plant and spread manure. …" (Cláudia, Tupinikim and Guaraní Indigenous Women's Commission, Tupinikim village of Pau-Brasil)

"I always tell about what my mother told me: that there used to be lots of hunting, lots of fish. Now the São Domingos river has no more water, and there are no more animals to hunt. Just armadillos and capybaras… The fish are gone forever, too. If you want fish, you have to buy it in the city, because it's all gone. My kids don't even know what it is." (Domingas, Quilombola community of São Domingos)

In the municipality of Aracruz alone, 430 km² of native tropical rainforest were deforested to make way for eucalyptus plantations. Rivers that played an essential part in the lives of indigenous peoples like the Guaxindiba and Sahy and flowed past the village of Pau-Brasil practically disappeared. "It was so wonderful to have the river open to us. We washed clothes, we collected water for drinking, for cooking… You could catch fish, you could scoop them up with a sieve. All those women… there would be so many there together! It was the place to wash clothes. You would finish washing clothes, then take a swim and leave, you know?" (Maridéia, Tupinikim village of Pau- Brasil)

This drama has also affected the region where the Quilombola communities live. "Today the river is polluted. We don't use the water to drink, we don't use the water to bathe, we don't use the water to wash clothes, we don't use it for anything, you know? That means that the difference is a big difference, because we used to have our good river, our river was clean, the water was like glass, you could look into it and see your own shadow, you could see the little fish swimming along the bottom, and today, you can't see anything ..." (Nilza, Indigenous Women's Commission, Tupinikim village of Comboios)

"[...] Our concern was the lack of river water, and now it's much worse. It's just like you said, bathing, washing clothes, having water in the house. … And when there was a river here, the women would grab their bundles of clothes… and it was like a party on the riverbank, all of them washing clothes. It was mostly on Saturdays, and for

those who had time, during the week. It was one less chore, because there was all of that water in the river, and everything was easier. [...] When we had to get water from the well, and go down the slope to where the well is today… So this isn't really something men worry about, it's more of a women's concern, and when there's no water in the tanks or there's a problem with the pump, then men aren't going to pick up a pail… there are very few men who will pick up a pail and go down the slope, right? And when there was only a little bit of water, people started changing. But it's really a woman's concern, right? To go down and get water from the well to have water in the house. Until… what I mean is, when there was a river, it was less of a concern, because at least for washing clothes, you had a way to solve the problem. The problems got worse when this whole process started, when the eucalyptus came and started sucking all the water from the river until it reached the point that it's reached today." (Maria Helena, Tupinikim village of Pau-Brasil)

"We washed a lot of clothes together. That was the place. When the women laid the clothes out in the sun to dry, they would all get to talking. People leave clothes to soak in powdered detergent, right? But not them. The bleach they used there was papaya leaves, right? (laughter) And they would lay out… on those big grass fields on the riverbank, they grew those plants and they got the sheets so white, the clothes so white, it really bleached them. Sometimes some of that bit of water would splash onto something and it would bleach it, it really would." (ENI, Quilombola community of São Domingos)

In Ecuador, in the mangrove area, the typical "Concheras"* traditionally obtained their livelihood and that of their families from the artisanal gathering of shrimps that nest in the wetlands among the roots of mangroves. Now both the mangroves and the "Concheras" have suffered a ferocious devastation in the hands of industrial shrimp farming.

"Our lives have been completely destroyed with the arrival of the shrimp farms. They have even taken our dignity away. We can no longer fish; we can no longer gather cockles because they prevent us from entering the places where we always worked. They have even taken over the water, sometimes they give us a little to cook, but that is when they have some left over." (An inhabitant of Puerto Hondo, in Puna Island, Province of Guayas) (2)

In the Ecuadorian sierra – the Paramos – the planting of pine-trees started in the eighties, promoted by institutions such as the Ecuadorian Populorum Progressio Fund, telling the communities how and where to plant the trees. The negative impacts make themselves felt, particularly among the women, as can been seen from the following testimonials: (3)

"Now we have no water and the rivers are dry, we have no vegetable plot, we don't plant onions or anything. Summer is very hard, the plants, the animals die; the fresh water holes have dried up. The land is no longer fertile, it no longer produces anything." (A woman from Bolivar Simiátug)

"Before we used to use this water to wash with, now we can no longer do so and have to use drinking water." (A woman from Tungurahua)

"For example, we are obliged to prepare food, to bath the children. The sacrifice is to carry water for two or three hours in bottles, that is the way it is done. We women have to give the animals water at mid-day and also in the evening. We have to take the cow looking for water because there is none in the watering hole and the big river is sometimes 40 – 50 minutes away. We women call in the cows. When we prepare food we have to carry the water. There we go, taking the kids. Looking for water we find it where native plants grew or if not we dig deeply with the hoe where there are no pines growing."

"In the pine plantations, all the native plants died off and as nothing will grow everything dried up in there and fires started." (A woman from Guaranda)

The lack of water caused by the pine plantations has also spread to agricultural areas.

“Before we used to plant short cycle crops, blackberries and other types of plants, but we have had to change our crops. We have also had to change our animals, and now we only have guinea-pigs.” (A woman from Tungurahua)

“This mainly affects our economy: we no longer produce; now we have to buy everything. Many women have left to work in the city, as maids or seamstresses. Before our grandmothers used to stay at home, the children stayed with the older people.” (A woman from Tungurahua)

These women are persevering and flow like the water that has been taken away from them. Their voices must be listened to and validated because they are speaking of truths that have the weight and simplicity of life itself.

(1) Excerpted from “*Women and Eucalyptus*” – *Stories of life and resistance,* Gilsa Helena Barcillos and Simone Batista Ferreira
(2) Testimonial provided by Marianeli Torres, C-CONDEM, e-mail: marianeli@ccondem.org.ec
(3) Testimonials gathered during on-going research entrusted by WRM.

*Translator’s note: “Concheras” women cockle-gatherers in Ecuador

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