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## The massive loot of water

*Each year, fleets of aircraft, ships, trucks and trains, as well as thousands of kilometers of pipelines and ducts are used to transport tens of thousands of tons of ore, timber, oil, gas, agro-industrial products, agro-fuels and many other “commodities” extracted, mostly from the territories of the Global South for consumption in the North. To extract and transport these “products”, more and more land must be grabbed and polluted, causing water – in constant movement and deeply-rooted in territories – to be increasingly cornered, uprooted, overexploited and polluted. Those same “products” also require large amounts of water at almost all levels of production. Thus, the economic model of over-production and consumption directly affects the access of local populations to drinking water as well as their livelihoods. Water, essential to life and considered “sacred” by many traditional peoples, is seized from the territories.*

### **Forests and water**

Wherever we are, in the city or the countryside, we are always within a watershed. A watershed is the land onto which all rainwater and snow drains to form streams, rivers, lakes or wetlands. Watersheds or basins are an essential part of the water cycle. This cycle allows seawater to become fresh water through evaporation and condensation in order to flow into valleys and mountains, and flowing down through the basins on the surface or underground. A healthy watershed protects water supplies, feeds communities, forests, plants and animals and keeps soils fertile (1).

By destroying the forests, their ability to balance the water cycle is also destroyed since their living soils are damaged and lose much of their capacity to retain water and support streams. Many scientists claim that deforestation has a direct effect on water shortages in urban centres. According to Antonio Nobre, a Brazilian scientist who collaborates with the Intergovernmental Panel on Climate Change that advises the UN, destruction of forests also destroys local climate systems (2). That means that the perspiration of a large tree in the Amazon, with a ten-meter radius crown, releases vapour amounting to over a thousand litres of water in a day. Now, let's imagine the entire Amazon. The vapour from trees is a great source of rain and humidity for other places and is greater than the flow of water in the Amazon River, the largest river on earth. With the history of deforestation in the Brazilian “Atlantic Forest” (coastal forests) and the growing deforestation of the Amazon, urban centres like Sao Paulo face a serious water crisis.

### **Cultivating drought: agricultural and tree plantation industries**

*“The river that the villagers used cannot be used during rainy season; since it collects all agrotoxics used by the company in the plantation (...) we are slaves on our own land.” - Sunny Ajele, Makilolo community, Nigeria, on the expansion of oil palm plantations from Okomu Oil Palm Company. (See [Bulletin February 2014](#))*

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The agro-industrial and monoculture plantations model depends on a continuous water supply. Investors interested in acquiring large tracts of lands often seek to grab available sources of water as part of the same purchase agreements. Thus, in Mali and Sudan for example, some investors have unlimited access to all the water they need in their projects (3).

Nevertheless, the scale of water plundering can extend far beyond land grabbing. In the Ica Valley, in the south-central Peruvian coast, for example, agribusiness companies have used various strategies to collect water outside their land concessions. Two companies have managed to channel water to their crops with pipes from more than 40 wells located outside their concession areas. Likewise, in the valley of Piura, on Peru's northern coast, agribusiness have installed a huge water pumping station, near canals and artificial lakes, on a strategic point of the river, which is "protected" with barbed wire and patrolled by armed guards (4).

Likewise, monoculture tree plantations on a large scale are also thirsty crops which are devouring forests, eroding soils and leaving them without life. After seventy years of hydrological research in the Jonkershoek Valley, South Africa, a study revealed in 2010 the impact of monoculture tree plantations on groundwater and watercourses (5). Pine plantations use the equivalent of 400 mm of rainwater, which means that there are 400 million litres of water per year per square km which do not return to watercourses. Eucalyptus trees consume more: 600 mm of rainwater. According to the study, every pine tree absorbs an average of 50 litres of water when they are aged between 5-7 years. In the case of Eucalyptus, the average can vary from 100 to 1000 litres, depending on where the plantation is located. However, a eucalyptus plantation, due to its rapid growth, impacts water flows strongly in its early years; when its consumption starts to decrease, it is usually time to cut and plant new trees. Trees planted close to a stream or river can use twice as much water because they have more access to it.

Even worse, monocultures exhaust soil nutrients and as a result chemical fertilizers must be used which, in turn, contaminate remaining soil and water sources (6).

A study focused on Indonesia, the country that produces nearly half of the world's palm oil, warns about the intensity of oil palm plantation impacts on freshwater streams, which directly affect the availability of drinking water, food production and livelihood activities of local communities (7). The study highlighted that during the process of deforestation, plantation management - including the application of agrotoxics and chemical fertilizers - and fruit processing to produce oil, many sediments and other harmful substances seep into streams crossing plantations, concentrating up to 550 times more sediment than those crossing forests.

Stream temperatures, where new and old palm plantations drain, are almost 4 degrees Celsius higher than in forest streams, which negatively affects the life cycle of many species that live in watercourses. The study also showed that during dry seasons, there is an increase in the stream metabolism - its oxygen consumption rate, an important way to measure stream health. The impacts on fisheries, coastal areas, and coral reefs - potentially located many kilometres downstream - remain unknown. But what we do know is that, as stated by one of the study's authors, "This [palm plantations] can cause the collapse of freshwater ecosystems and can create social and economic hardships in the region" (8).

The severe consequences of violating the water cycle, poisoning and looting water, are felt by the communities and life systems that depend on watershed streams and territories. From the point of view of water, in constant motion and transformation, plantation impacts affect much larger areas than those of the occupied territories and, therefore, more communities are also affected.

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Governments, as stewards of water use within their national boundaries, commonly support big business and provide abusive licenses - often illegal - to corporations that pollute and deplete water supplies needed by the people. Moreover, governments also commonly ignore the traditional management, protection and use of water that many communities have preserved for generations. Even worse, when water shortages become acute, people will generally suffer from restrictions, not the industries.

### **Fossil fuels and their insatiable thirst**

*“The oil flows, the rainforest bleeds”* – graffiti in the city of Quito, Ecuador (9).

All fossil fuel extractive projects (i.e. oil, gas and ore) bring about an abrupt change in streams, pollution and, in most cases, corporate and/or government control of available sources. Oil and gas activities have caused disasters in all areas where they are found: air, water and soil pollution, and together with an accelerated process of interventions and impositions are jeopardizing forests and indigenous territories.

Mining requires large amounts of water for ore extraction and processing and produces lots of wastes that pollute the available sources. To get an idea, 24 bathtubs full of water are needed to extract and wash a ton of coal! (10). Coal plants consume about 8% of the total water demand around the globe. A typical 500MW coal plant extracts every 3.5 minutes the amount of water to fill in an Olympic swimming pool. This water is used for cooling the plant and is returned to its original sources, but at very high temperatures, which kills aquatic life and ecosystems sensitive to changes in temperature (11).

Similarly, the toxic mix run-off of acid mine drainage, i.e. water and air react with the sulfur in deep soil (sulphides) and create acids to dissolve heavy metals, goes into the soil, penetrates groundwater and ends up in rivers and lakes. Poisons in water slowly sicken people, plants and animals, and also destroy the lives downstream up to hundreds of years (12). As a result, mining projects almost always generate opposition from local communities who seek to defend their territories, and with them, their water sources. A recent report of EJOLT, a network of environmental justice organizations, documented 346 cases of social conflicts over mining and shows its main impacts. Among the most frequently impacts are surface and groundwater pollution, as well as reduction in water level (13).

But the theft does not end there. Once the ore is extracted, it must be transported - and not only through an extensive network of roads and highways which also cause deforestation, but also through pipelines for ore (or oil or gas) to the ports. In Brazil, for example, where there is currently serious shortage of water to supply the population, slurry pipelines - pipelines to transport ground iron ore mixed with water – carry the ore to the port. The four mining projects in the state of Minas Gerais with pipelines for iron transportation use enough water to supply a city of 1.6 million inhabitants. Pipelines operate 24 hours a day, every day (14).

### **Hydropower stations: imprisoning rivers, streams and communities**

*“The river gives us everything. Fish, with which we can make oil, which we eat and sell, it even pays for my studies. On the riverbanks we can grow crops, and we know what to do here, actually it is all we know, if we are to be moved far from the river we will suffer”* – the son of a fisherman affected by Mphanda Nkuwa dam on the Zambezi river in Mozambique (15)

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Hydropower generation, strongly promoted by climate policies and financial institutions like the World Bank, also has adverse effects on the water cycle and, therefore, on forests and communities that depend on these territories. The construction of large dams paralyzed water circulation in basin systems and imprisons its streams, fauna and flora. The dams also cause floods in fertile land and surrounding territories. The consequences are devastating. The wall of the dam blocks migrating fish and can even separate spawning from breeding habitats. The dam also traps sediments necessary for the maintenance of physical processes and habitats downstream. The river upstream of the dam is transformed into an artificial water reservoir. Altering or interrupting the flow of water can be as severe as draining a whole river, its reaches and life within it (16).

Rivers, lakes and lagoons are the basis of many cultures and livelihoods, and the backbone of local economies. By the end of the twentieth century, the hydropower industry had blocked more than half of the largest rivers of the Earth with about 50,000 large-scale dams, and displaced millions of people (17). In some of the remaining basins with free-flowing rivers in the world, such as the Amazon, the Mekong, the Congo, and rivers of Patagonia, governments and industry are pushing large-scale dam projects; all on the grounds of “clean” energy.

### **The water cycle for sale**

On top of this capitalist abuse, the water cycle has entered the process called financialization. This presupposes the separation and quantification of the cycles and functions of nature such as the carbon cycle, the water cycle, biodiversity or landscapes - to turn them into “units” or “titles” so that they can be sold in financial or speculation markets (18).

But water is a symbol of life, and therefore, water unites and mobilizes. Deforestation, pollution and construction of large-scale infrastructure damage watersheds and water sources, by altering the ability of the territories to sustain living organisms, including human communities. It is essential to support the struggles in defence of the territories. Territories that are more than land, rivers, trees or villages; but a whole, where an element depends on the other, and where life is sustained.

(1) [http://es.hesperian.org/hhg/A\\_Community\\_Guide\\_to\\_Environmental\\_Health:Cap%C3%ADtulo\\_9:\\_Protecci%C3%B3n\\_de\\_las\\_cuencas\\_hidrogr%C3%A1ficas](http://es.hesperian.org/hhg/A_Community_Guide_to_Environmental_Health:Cap%C3%ADtulo_9:_Protecci%C3%B3n_de_las_cuencas_hidrogr%C3%A1ficas)

(2) <http://xandemilazzo.jusbrasil.com.br/noticias/155175596/estamos-indo-direto-para-o-matadouro-diz-o-cientista-antonio-nobre>

(3) <http://pubs.iied.org/pdfs/17102IIED.pdf>

(4) <http://www.tni.org/es/primer/el-acaparamiento-mundial-de-aguas-guia-basica>

(5) <http://wrm.org.uy/es/articulos-del-boletin-wrm/seccion3/sudafrica-resultados-concluyentes-de-investigacion-sobre-los-impactos-de-los-monocultivos-de-arboles-en-el-agua/>

(6) <http://abrasco.org.br/dossieagrotoxicos/>

(7) [www.natureworldnews.com/articles/7846/20140701/oil-palm-plantations-threaten-water-quality.htm](http://www.natureworldnews.com/articles/7846/20140701/oil-palm-plantations-threaten-water-quality.htm)

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- (8) <http://news.stanford.edu/pr/2014/pr-palm-oil-water-062614.html>
  - (9) <http://www.accionecologica.org/petroleo>
  - (10) <http://chinawaterrisk.org/big-picture/metals-mining/>
  - (11) [www.criticalcollective.org/wp-content/uploads/EndCoalWaterFactsheet2014.WEB-1.pdf](http://www.criticalcollective.org/wp-content/uploads/EndCoalWaterFactsheet2014.WEB-1.pdf)
  - (12) [http://es.hesperian.org/hhg/A\\_Community\\_Guide\\_to\\_Environmental\\_Health:Agua\\_contaminada](http://es.hesperian.org/hhg/A_Community_Guide_to_Environmental_Health:Agua_contaminada)
  - (13) [http://www.ejolt.org/wordpress/wp-content/uploads/2015/04/EJOLT\\_14\\_Towards-EJ-success-mining-low.pdf](http://www.ejolt.org/wordpress/wp-content/uploads/2015/04/EJOLT_14_Towards-EJ-success-mining-low.pdf)
  - (14) <http://www.ihu.unisinos.br/noticias/539446-em-meio-a-crise-hidrica-minerodutos-utilizam-agua-dos-rios-para-levar-polpa-de-ferro-ao-porto>
  - (15) <http://www.foei.org/wp-content/uploads/2013/12/Economic-drivers-of-water-financialization.pdf>
  - (16) <http://www.internationalrivers.org/environmental-impacts-of-dams>
  - (17) <http://www.worldwatch.org/node/6344>
  - (18) <http://www.foei.org/wp-content/uploads/2014/05/Libro-Agua-ATI-espan%CC%83ol-web.pdf>