
[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-scrappers 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/themedata/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>