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Environment

Megafires in Australia: a climate tipping point, live

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The expression "tipping point" refers to the point when a system passes from one system of equilibrium to another, the point where it is no longer possible to prevent accumulated quantitative changes from causing a qualitative change. It is used in many different fields, from population studies to climate change, as well as social sciences.

The spectre of a "hothouse planet"

The evolution of the Greenland ice cap provides an important example of a tipping point in the climate field. We know that the disappearance of the entire island's ice cap will raise ocean levels by approximately seven meters. Specialists have observed that the melt has speeded up to a disturbing extent [1], but the ice cap does not seem to have entered an irreversible break-up process yet. According to IPCC, its tipping point would be located between 1.5°C and 2°C heating. At current emissions rates, we would enter the danger zone towards 2040!

Recently, scientists have insisted on the fact that tipping points can link up via positive feedback (heating effects that increase heating). [2] According to their studies, the disappearance of the Greenland ice cap would release so much fresh water into the sea that the oceanic currents within the Atlantic Ocean would be disrupted. As some of these currents determine the climate in the Amazon basin, the forest in this region would rapidly become a savannah. This change would amount to a second tipping point.

Obviously, a savannah absorbs far less CO₂ than a forest. In consequence, the CO₂ concentration in the atmosphere would greatly increase. This would result in a new increase in heating, so a third tipping point could be crossed. According to researchers, this could mean the breakup of two glacier masses, the Thwaites on the west coast and the Totten on the east coast of Antarctica. We know that they have been compromised (according to some scientists, the Thwaites has already crossed the point of no-return). [3]

We also know that their disappearance would raise the sea level by around seven metres " as much as the disappearance of Greenland's icefields.

Seven metres + seven metres: in three tipping points we would have reached a fourteen metre rise in sea levels.

And that is not all: permafrost melt, qualitative intensification of the *El Niño* phenomenon, collapse of other parts of the Antarctic ice cap, etc: tipping points could follow one another. What would happen then? According to these researchers, this little climatic domino game would fairly quickly push the Earth to a "hothouse planet" regime with an average surface temperature 4 to 5°C hotter than today. Our globe has not experienced such conditions since the Pliocene, 1.5 million years ago (well before the emergence of *Homo sapiens*). At the time, the ocean level was 20 to 30 metres higher than nowadays.

The "hothouse planet" expression sounds like science fiction, but the scientific community takes this scenario in which "positive feedback" leads to a chain of tipping points. The process would fairly quickly lead to an extremely different world than the one we know today and which our ancestors have known. A world that would certainly be very impoverished in terms of its biological bounty. *Homo sapiens* might survive, but two things are certain: 1) there would be no room for 7 to 8 billion human beings; 2) the poorest would foot the bill, although they bear the least responsibility for ecological destruction.

A "live" tipping point

The relationship between all the above and the megafires devastating Australia? Very simple: on the one hand, there is no doubt that this catastrophe is an outcome of climate change (as early as 1986, Australian specialists sounded the alarm bell in the face of this danger, but in vain). What is happening today, alas, confirms their projections) [4]; Moreover, these terrible fires probably constitute a tipping point themselves "a moment speeding up the global ecological crisis.

In terms of biodiversity, the question is already settled. More than one billion animals have perished in the flames. The survivors will struggle to keep on living in deeply changed habitats, the fire has already wiped out several species of plants and animals, and certain unique ecosystems will not regenerate (such as the vestiges of the primary forest that covered Gondwana 250 million years ago! [5]) This is the very definition of a tipping point.

In climate terms, the issue is more complex, as certain phenomena play out in opposite directions, as we shall see.

Before that, it is worth repeating: we must not forget that fossil fuel combustion is and remains by far the main cause of climate tip. CO2 emissions caused by fires have been estimated at 6,73 Gt between 1 January and 30 November 2019. In comparison, emissions due to burning fossil fuels stood at 37.1 Gt in 2018 (33.1 Gt in 2010).

And yet, emissions caused by fires are far from negligible. For example, they are higher than those of the United States, which emits slightly over 5Gt of CO2/year by burning fossil fuels. [6] As the climate system is close to the Greenland tipping point, the fact that gigantic Australian megafires reduce the leeway separating us from the domino effect described above is not a detail.

Fires release large quantities of CO2, black carbon and aerosols. Sent into the atmosphere at a high altitude, these different elements do not have the same impact on the climate. CO2 and black carbon contribute to heating, while aerosols have a cooling effect, as they reflect sunshine (the same thing occurs during volcanic eruptions). However, aerosols fall back down after a few months, while CO2 will accumulate in the air for over a century. Thus, in the long term, the heating effect will win out.

Smoke particles have another heating effect. The soot and aerosols will fall back to earth, sometimes very far from Australia. Recently, brownish soot has been observed on New Zealand glaciers, and it seems, as far as Antarctica. However, ice and snow contaminated in this way see their albedo diminish, so their melting will accelerate. [7]

One major unknown is the impact of the catastrophe on forest survival in the middle term. Australia experiences fires every year. Up to now, the forests have resisted and regenerated. Eucalyptuses, in particular, are very fire-resistant plants. But, on the one hand, the current fires are unprecedented, moreover, the heating and drought risk making regeneration more difficult, if not impossible. A mature forest can resist hydric stress for a long time, but this makes growth and survival very difficult for young seedlings growing on naked soil, in an atmosphere made drier by the disappearance of forests, where fires also become more probable. Australia is experiencing a multi-year drought cycle. [8] In this context, specialists fear that a large part of the forests will not regenerate and will be replaced by shrub formations, which contain far less CO2. [9]

Optimists will say that Australia has mostly sandy, chalky, gritty and clayey soils, rather light in colour, and that these soils reflect a larger percentage of the sun's rays when bush grows than when they are covered in forests. Indeed, a broadleaf forest forms a dark mass that reflects only 15% to 20% of rays "about twice as less as light soils. But it is doubtful that this cooling effect of a greater albedo will compensate the heating effect of the CO2 released into the atmosphere by the destruction of millions of hectares of forests.

Poor forests!

In the world in general, many forests are in bad shape. Whether spontaneous or provoked, forest fires are tending to multiply and heating makes them ever more formidable and hard to master. We have seen this recently, in California, in Bolivia, in Ecuador, in Indonesia, in Congo, in Mexico and in the Mediterranean region (cf. the terrible fire that killed more than 80 people in Greece in 2018)âEuros! To the fires are added, in the Global South, deforestations caused by the capitalistsâEuros" extractivist frenzy in lumber, pulp, livestock, soya, palm oil, as well as mining, oil or hydroelectric exploitation.

In temperate zone developed countries, the forested area has been increasing for several years. However, for many years now, the treesâEuros" health has tended to decline, largely due to more severe heat waves. Fires have also multiplied even in the most northerly regions, such as Sweden, Canada and Siberia. According to certain scientists, contaminants caused by fires, very uncommon in these regions, have also been a significant factor in the record melt of the Greenland ice cap, in 2012. [10]

If CO2 emissions continue to increase, it is certain that forest fires will multiply. To what extent? Californian scientists estimate that the relation between rising temperatures is not linear but exponential. [11]. *EarthâEuros"s Future*, 7, 892âEuros"910.]]

As we know, national governmentsâEuros" climate plans (âEuros"nationally determined contributionsâEuros") are taking us to heating over 3Â°C by the end of the century. According to IPCC, with such a warming, fire frequency will increase on over 60% of the globeâEuros"s surface. Recently, Brazilian and US scientists came to the conclusion that if policies are unchanged, thirty years from now, they could experience the fate that is AustraliaâEuros"s today. [12]

Alas, we have reason to fear that such warnings will not be heard any more than those made thirty years ago by Australian scientists when they warned of the probability that warming would provoke more and more serious fires.

The cause of this wilful deafness does not fall from the sky: it is the product of governments in thrall to capitalist interests, thus of the capital accumulation that inevitably results from competition for markets between private owners of means of production. And yet, it is precisely this endless dynamic of accumulation that causes climate tipping.

Systematic climate denial

Among these capitalist governments, AustraliaâEuros"s is playing a particularly cynical, criminal role. The country is one of the highest CO2/inhabitant/year (more than 15t, more than the United States âEuros" only the Gulf monarchies do worse). But since the beginning of climate negotiations, in 1992, the leaderships of the parties in power have their foot on the brake of imperative measures.

As early as the Kyoto protocol negotiations, in 1996-97, Australia decided to accept no emissions reduction that would have any negative impact on the countryâEuros"s competitiveness. Thus, the country privileged âEuros"emissions creditsâEuros". On the national level, it merely planted trees and limited deforestation (not to mention the bounty on killing dromedaries âEuros" imported in the 19th century âEuros" on the pretext that those animals were major methane producers).

This outlook has been systematically maintained up to the present. In the framework of the Paris agreement, Australia pledged to cut its emissions from 26 to 28% by 2030. As we recall, at that deadline, respecting the goal of

1.5°C maximum with no "temporary overruns" requires a global average cut in net emissions of 58% on average. In light of its historical responsibilities, Australia's contribution should be around 70%.

The Australian government does not only slam on the brakes when emissions cuts are mentioned. It also cheats, by activating its two favourite gadgets: natural absorption of CO₂ and buying carbon credits.

Firstly, the emissions calculation method has been altered to increase the estimate of quantities absorbed by forests. This modification had the dual outcome of re-evaluating upwards the emissions volume during the previous Labor government, then slightly lowering it since the Conservative government is in charge. But watch out: emissions caused by fires are not counted. [\[13\]](#)

Secondly, the Australian delegates to COP25 fought with Brazil, China and India for unsold carbon credit stocks generated within the Kyoto protocol would remain exchangeable within the "new market mechanism" foreseen in article 6 of the Paris agreement. However, it has been proven that scarcely 2% of these credits actually represented actual reductions. [\[14\]](#)

Australia, privileged supplier of the world capitalist market

The explanation for Australia's climate positioning can be sought in the particular space its ruling class chose to occupy in the international division of labour. A wealthy western imperialist country, governed by whites, Australia is not an industrial nation but an exporter of raw materials: farm products, coal, gas, iron and other minerals that its geographical location allows it to valorise in trade with China. This role as a privileged supplier for the "workshop of the world" has enabled Australia to be among the few countries generally spared by the 2008 crisis.

Despite a few nuances, the two major parties (Labor and right-wing Liberal/National Coalition) are fundamentally at the service of this system and the policies it requires). Providing raw materials to China requires being particularly competitive, as the competition is tough with "emerging" countries of the South. Thus, the need to be particularly neoliberal.

The consequences are there, in all fields. Energy: 80% of electricity produced from coal (though there is no shortage of solar resources!). Social: from 2003 to 2015, the average wealth of the richest 20% of households has risen by 54% while the 20% poorest have seen theirs fall by 9%. Environmental: natural resources are offered to the private sector (particularly water; considered a "mining resource" and listed on the stock market). [\[15\]](#) Democratic: The Australian state has conducted a particularly vile policy of deportation of migrants. [\[16\]](#) and is on the frontline of repression of unions, journalists and ecosocialist movements protesting environmental destruction. [\[17\]](#) Scientific: the government offered 4 million Australian dollars to climate denier Björn Lomborg and would have raised their offer further to base himself at University of Perth. Lomborg had to abandon the idea after an outcry among scientists... [\[18\]](#)

Major extractivist capital's control of Australian political life was at the fore of the last electoral campaign. Coal magnate Clive Palmer (a notorious climate denier, particularly for his plan to extend a coal terminal that would gravely damage the Great Barrier coral reef) invested huge sums (53.6 million AUS\$, more than the rightwing and Labor combined!) to create a sham political party, whose only aim was to steal votes from Labor and ensure the victory of Scott Morrison, who is utterly devoted to Palmer's plans. [\[19\]](#)

Towards a political and social tipping point?

Megafire "Management" is the reflection of this policy subservient to big capital to its very marrow. The list of the government's misdeeds in this crisis is actually so long that not all of them can be listed in the scope of this article. Morrison was catching the sun in Hawaii while his country was in flames. Firefighting services are entirely staffed by volunteers and underequipped. Casual disregard by those in power is directly responsible for the fact that at least 23 people have died, more than 2000 households have lost their homes, more than 250,000 residents have been displaced, five million people are inhaling toxic fumes and thousands of terrified people had to seek refuge on the beaches because they were circled by walls of fire more than 70m high.

As a New Zealand journalist wrote, such a balance sheet does not come out of a void: it expresses a deep contempt for the "common people". Marie-Antoinette said that starving French people in 1789 could simply "eat cake" if they had no bread. Morrison seems to think that rebroadcasting cricket matches on TV and the New Year's fireworks (which went on in Sydney in the midst of the catastrophe!) would lead the mass of people to keep on sleepwalking towards climate catastrophe, without drawing political lessons from the disaster, without realising that this policy leads directly to a scenario where the rich can get by while all the others would simply lay down and die. [20]

The tipping point concept also applies to social sciences, as we said at the beginning of this article. Let's hope that the scope of the catastrophe will mark the beginning of a tipping point in Australian public opinion. And hope that the social majority struggles for those who bear the economic responsibility and their political lackeys pay their debt, which will be a very heavy one. [21] And that an alliance of forces able to put on the agenda the break with productivism, extractivism, neoliberalism, racism (targeting migrants and Indigenous Australians) and the ideology of domination (over nature and over women). The toxic nature of this deadly nexus no longer needs to be proven. Another, non-capitalist world, is not only possible, it is more and more urgently needed. Struggle without borders for its emergence.

13 January 2020

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[1] In ten years, this has multiplied four-fold.: Michael BEVIS et al. "Accelerating changes in ice mass within Greenland, and the ice sheet's sensitivity to atmospheric forcing", PNAS 5 February 2019.

[2] This scenario is described by Will STEFFEN et al. (Aug. 2018) "Trajectories of the Earth System in the Anthropocene", PNAS, August 2018.

[3] *New York Times*, 13 May 2014. Ian Joughin et al., "Marine Ice Sheet Collapse Potentially Under Way for the Thwaites Glacier Basin, West Antarctica", *Science* 16 May 2014, Vol. 344 ; Issue 6185.

[4] *The Guardian*, 16 November 2019

[5] *Le Monde*, 3 December 2019. Gondwana was the single continent once in existence, from which the current continents have drifted.

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[6] Emissions caused by fires were slightly superior to 8Gt in 2003, according to the data of the European Copernicus programme. A slight tendency to decrease has been observed (Australia will change this!) but we must not misinterpret this: it is due to forests being replaced by crops or pasture.

[7] Albedo refers to the proportion of sunlight reflected by a surface. It is zero for a black surface and almost one for a very white surface.

[8] The Australian and Horn of Africa climates are influenced by a multi-year oscillation (the "Indian Ocean Dipole") which tends to make weather alternate between hotter and wetter weather in the West, cooler and drier in the East. Climate change seems to be increasing this phenomenon.

[9] Cf the notices collected by Bob Berwyn for *InsideClimate News*, 20 January 2020.

[10] *InsideClimate News*, 23 August 2018.

[11] Williams, A. P. & al. (2019). ["Observed impacts of anthropogenic climate change on wild re in California"](#).

[12] *Congresso em foco*, 10 Jan 2020.

[13] *The Guardian*, 22 December 2017

[14] "How additional is the Clean Development Mechanism ?", Ä-ko-Institut E.V, Berlin 2016

[15] Australia is the country which has gone furthest in privatization et la "financialization" of water (whose price is fixed daily in the market). Hundreds of farmers have had to give up: no money, no water to irrigate your fields but... agrobusiness takes over land and water for almond monoculture and speculate on prices. In the last ten years trading in water has become the new El Dorado, with a turnover of two billion euros per year. Some households have to pay up to 25% of their income on buying water. See the French television programme by Arte ["Main basse sur lâ'eau"](#).

[16] The current prime minister, Scott Morrison, was previously minister of immigration. While in office he perfected the Australian system of interning migrants in offshore camps where they survive in atrocious conditions. This system was held up as an example by the former Belgian immigration minister, the fascist Théo Francken.

[17] "Under legislation pending in Tasmania, and expected to be copied across Australia, environmental protesters now face up to 21 years in jail for demonstrating," ["Australia is committing Climate suicide"](#), *New York Times*, 3 January 2020.

[18] *Science*, 12 May 2015.

[19] *New Daily*, 25 October 2019.

[20] James Plested, *Red Flag*, 6 January 2020. ["Intense Bushfire : Australia's dark age of climate catastrophe"](#).

[21] In mid-December, the insurance companies already faced a bill of 240 million Australian dollars. ["Australia fires: The huge economic cost of Australia's bushfires"](#), BBC News 20 December 2019.