

Sustainable Human Development

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ESSAYS ON TRUE DEMOCRACY AND CAPITALISM

Trees and the 'Net-Zero' Emissions Hoax

The trees of the forest, a natural paradise of complex plant engineering under the deception of 'net zero' emissions in the Amazon. The irreconcilable contradiction between the cycles of nature and the spiralling growth of capital.

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"A tribute to his Majesty, the Tree, a marvellous creature of Mother Earth. In it, day by day, the miracle of photosynthesis and the reproduction of the cycle of life takes place. With its extermination, humanity disappears."

Introduction

he U.S., the European Union and China, the world's biggest polluters, have fallen far short of the commitments and targets in the climate change targets. These were to be achieved by reducing greenhouse gas (GHG) emissions. This is evidenced by the 1.1°C rise in global temperatures, the highest since the end of the 19th century. The climate policies of the North are driven by the rhetoric of energy transition and a return to fossil fuels. At the same time, in the Global South, countless corporations, environmental NGOs and private investment funds are scattered everywhere to plunder the natural world. Together they are selling carbon



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credits to third parties at higher prices, replacing fertile agricultural land with large-scale commercial monoculture tree plantations, and selling off land, water, air and photosynthesis as part of the definition of ecosystem services.

In the Pan-Amazonian region,¹ corporate policies of adaptation and mitigation to the climate crisis have updated old mechanisms of ethnic-peasant eviction from their territories and accelerated the destruction of vegetation cover, and native trees, including ecosystems and biodiversity as a whole. After COP27, green capitalism has swept through tropical

^{1 🕂} It is made up of 9 countries: Brazil, Venezuela, French Guyana, English Guyana, Suriname, Colombia, Ecuador, Peru and Bolivia.

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rainforests and natural reserves for the conservation of biodiversity, as well as the oceans, water, air and photosynthesis. Among the legal instruments, the concession, another form of deterritorialisation of indigenous peoples, occupies a

privileged place. This is defined as the act or effect of granting, making available, and making accessible consent or permission. This is the case of the Fundo or Fecho de Pasto communities, who are confronted with concessions in defence of their customary rights by supporting the notion of dispossession established in colonial times with renewed exploitative tools. Capital accords with local governments, its unconditional accomplices in the fragmented surrender of every component of the majestic Amazon forest to financialised capital.²

In practice, the resistance of traditional communities as a social group is the same as what international law recognises for states as *uti possidetis de iuris*, the principle that those who occupy a territory have a right to it. Thus, traditional peasant communities join the Indigenous Peoples and the *Quilombola/Ccimarro/Palenquero* communities, whose rights are recognised by ILO Convention 169 of 1989, reaffirmed in the United Nations Declaration on the Rights of Indigenous Peoples of 2007. The Indigenous Peoples of South America and Mesoamerica question the name Latin America, an expression of oppressive

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Eurocentric colonialist history. In its place, they have recovered the name *Abya Yala*, alluding to our true prehistoric roots, which have not yet been sufficiently disseminated in the struggles of social and ethnic resistance in the Region. In this context, the declarations of Bolivia and Ecuador in their Magna Carta as Plurinational States in 2010 and 2008 are framed under the recognition of ethnic rights within their States.³ The economic growth of the North subverts these rights by undermining the autonomy of our security with food sovereignty, a bastion of independence, industrial and agricultural development and the fight against hunger. This scourge haunts the Region, aggravated after the pandemic and the climate crisis.

Control of the land was vital to the colonisers. It was about wealth, territorial control, access to 'resources' and cheap (and often enslaved person) labour. The separation of indigenous peoples from their territories was a crucial component that continues today (...) and in the conflicts surrounding it. The imposition of the Eurocentric worldview adopted by local elites through Catholic evangelisation separated the land and its inhabitants from the rest of nature - water, flora and fauna, and photosynthesis. In contrast, in the indigenous languages of the highlands of Sulawesi, Indonesia, for example, there is one word for 'land' and several words for forests and their human connections as one. There is no abstract category of 'land'. Similarly, we find a similarity in the Wixárika indigenous community in Jalisco, Mexico. This community expresses the concepts of 'plant' and 'animal' in Spanish because, in indigenous dialects, plants, animals, and people are part of the same concept.⁴

² Carlos Walter Porto-Goncalves. Boletín del WRM260. Concesiones de Tierra: una causa subyacentes de deforestación. http://www.wrm.org.uy /es. Marzo de 2022. p. 15.

^{3 ┙} Ibid. Pp. 16-17

^{4 ←} Ibid. P. 5

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The Brazilian state has curtailed the ancestral rights of the communities of Fundo e Fecho de Pasto through the legal instrument of 'concessions of real right of use', which deny land ownership for a certain time. From the point of view of

Once biodiversity is lost, it never comes back.

the Global South, this legal arrangement is unacceptable, given that the commons have been an inalienable part of the indigenous natural heritage since prehistoric times. In most villages, communal land is divided according to use and needs:

single-family houses around the dwellings, communal areas for collecting wood and fruit, grazing land called the 'fundo de pasto' (back pasture), and in the areas farthest from the dwellings and used by the community, the 'fecho de pasto' (surrounding pasture).⁵

Once biodiversity is lost, it never comes back. Fourteen years ago, Greenpeace published alarming figures on the cattle industry, responsible for nearly 80% of the deforestation of the world's most carbon-sequestering rainforest. Since 2008, studies have shown that the Brazilian Amazon is the largest beef exporter.⁶ Since 2016, around 600,000 hectares have been illegally deforested in the Colombian Amazon and converted to cattle pasture for export. At the same time, the region lost 9,7% of its natural vegetation between 1985 and 2021. At a regional level, the Amazonian Andes, which provide water for millions of people and feed springs and other watercourses, has been reduced by 46% during this period, and mining has expanded by more than 1100%. This destruction is almost irreversible, says Mapbiomas Amazonía.⁷ In turn, the destruction of the tropical forest threatens the biome and life and sets an uncertain future for humanity at the dawn of the planet's sixth extinction. Among its most essential functions, the tropical forest regulates the global climate system, distributes rainfall to regions far removed from its biogeography, and represents a unique reservoir of biodiversity and indigenous cultures on the planet.⁸

This paper develops two themes directly related to the ongoing collapse of the climate: The first, the ecological physiology of trees, describes the interrelationships between the main functions of trees up to the complex creation of the miracle of photosynthesis. This natural energy is a common good that nature has given to humankind but which, by

The dismantling of the Amazon makes it clear that the historical externalisation of nature by capital and the consumer society, mostly of useless things, is coming to an end, under the depletion of the soil, a natural capital as a provider of environmental goods and services. its existence, imposes specific requirements in return for its well-being. In return, Mother Earth, through her spokespersons, the indigenous peoples, has spread across the planet a commandment about the conditions that the people of the planet had to fulfil: to consider the Earth as a loan. That is, as a place of transit, not only for the present but also for future generations. This is the principle of reciprocity, another

law, that of give and take, a mandate to take care of the Earth, to preserve and maintain those natural areas of unique richness as a refuge of biodiversity, another common good that guarantees the sustainability of the planet.

The dismantling of the Amazon makes it clear that the historical externalisation of nature by capital and the consumer society, mostly of useless things, is coming to an end, under the depletion of the soil, a natural capital as a provider of environmental goods and services. The physical support of the soil has been drastically modified by the intensive use of

^{5 ┙} Ibid. P. 16

⁶ Creenpeace published The 'blacklist': global brands that are silently complicit in the problem: Adidas, Audi, BMW, Carrefour, Casino, Colgate-Palmolive, Honda, Johnson & Johnson, Kraft, Marks & Spencer, Metro, Morrison's, Nike, Northem Foods, Sainsbury's, Tesco, Toyota Unilever, Volkswagen Wal-Mart. Greenpeace. Resumen del informe Sacrificando la Amazonia. 2008. <u>https://archivo-es.greenpeace.org/espana/Global/espana/report/cambio_climatico/090601.pdf</u>. Pp. 1-15.

^{7 🗝} Colección 4.0 de MapBiomas Amazonía, una iniciativa de la Red Amazónica de Información Socioambiental Georreferenciada (Raisg). raisg.org/es/

⁸ Creenpeace-España. Amazonia: adiós a 626 millones de árboles en un año. <u>https://es.greenpeace.org/es/noticias/amazonia-adios-a-626-millones-de-arboles-en-un-ano/.2</u> de diciembre de 2020.

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technology in its exploitation following the sustained depletion of tropical rainforests. Corporate concessions have issued another ultimatum of extinction to preservation sanctuaries, impacting the atmospheric load of carbon dioxide (CO₂) and mainly methane (CH₄), a powerful emitter of GHGs. Hence, the forcefulness of Mother Earth's message reminds us once again that natural goods are finite and, from this perspective, we must understand for its application the theories and concepts more appropriate for the Region, an economic decrease in the function of well-being with another scale of needs, satisfiers and values more focused on the search for the well-being of the communities of each country in the Pan-Amazon Region.

Ecological physiology of trees

The cycles of the plant world are natural and perennial processes, their movements recycling different chemical elements. Microbiology, with a more interdisciplinary approach, yields results with projections beyond its circular compartment. It shows interactions, dynamism and connections in interactive networks between a surprising diversity of abiotic micro-organisms in the plant world. For microbiologist Francis Martin, a separate world of great complexity exists below ground that has not been thoroughly investigated. Roots interact with bacteria, viruses, microbes, and small animals; above all, the marvellous fungi emerge as the main protagonists of the forest. A tree is a supra-organism; it does not exist alone or for itself. For Bruno Moulia, many beings inhabit it: birds, fungi, lichens, and insects. Losing trees is like losing the thickness of the earth's surface. Underground, they develop complex interactive networks with plant micro-organisms and insects, responsible for exchanging signals and molecules with sufficient capacity to adjust or modify themselves, ideally to environmental changes.⁹

Roots, hydraulic redistribution and microbiotic fungi

In tropical forests, the maximum depth of the root system depends on the forest type and is usually in the order of 2 to 5 m (Canadell et al., 1996). However, depths of up to 18 m have been reported in an Amazonian forest (Nepstad et al., 1994). The deep roots of trees and woody plants transport water hydraulically, from the water table to the drier portions of the soil, where it is released. Thus, the plant or neighbouring plants reabsorb the water in their active roots through this soil layer. This process occurs upwards and laterally, and even downwards (it is a physical process that only requires a potential water gradient in the soil). It is known as hydraulic redistribution (Burgess et al., 1998; Scholz et al., 2004).¹⁰

The scientist Stefano Mancuso has discovered in plants the capacities of memory, learning and communication, hitherto attributed to intelligence. The tree interacts with microbiotic fungi, which in turn interact with bacteria, and below the ground, they deploy microscopic filaments that colonise the tree's roots. If you dig a little, you can see how the filaments of the symbiotic fungus are closely intertwined with the smaller roots of the tree. The function of the filaments is to absorb minerals such as nitrogen and phosphate from the soil, transport them dissolved in water to the root and bring them up to the leaves. They are indispensable nutrients for tree growth. It is believed that for every metre of a root, there are a thousand metres of filament that spread through the soil and slip through the holes to extract phosphate and nitrogen, and in return for this work, the trees will provide sugars to the symbiotic fungi.

La genialidad de los árboles. Seres inteligentes para aprender a crecer. 15 de abril de 2022. <u>https://www.youtube.com/watch?v=EBRv_XCIRyM&t=2271s</u>
 L. Andrade. Fisiología ecológica de árboles tropicales: avances y perspectivas. 2003. Revista Chapingo Serie Ciencias Forestales y del Ambiente 11(2):83-91, 2005. P. 85.

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Some researchers compare this huge network that circulates underground to a kind of plant internet that connects trees to each other and allows them to communicate. Similarly, tree species exchange nutrients and signals through this underground network. The ecological and biological importance of such a network is unknown to science. Similarly, the scientific research of Hauser et al. discovers in the rooting depth an ecosystem trait with respect to the degree of soil development, carbon (C) and the water cycle. In particular, scientists have revealed the most recent hypotheses on the Earth's biogeochemical cycles, propagated deep underground by changes in land cover induced by large-scale agriculture and climate. Another worrying fact concerns the global-scale quantification of the depth of rootedness to human activity with limits to the knowledge of hydrosphere-atmosphere-lithosphere feedbacks in the Anthropocene. Therefore, the research points to the following Key Points: The depth to which 99% of crop roots extend is shallower by ~60 cm compared to natural systems. In other regions identified by woody encroachment, roots deepen by ~38 cm compared to the previous dominant vegetation. These negative phenomena result in average rooting depths that are ~8 cm shallower today and are projected to become ~30 cm shallower by 2100.¹¹

Photosynthesis is one of the most amazing wonders on Earth. Plants¹² owe their growth to the photochemical reduction of carbon dioxide with electrons from water. The factors that influence this process are direct determinants of agricultural productivity and crop yields. It is believed that the process replaces all the oxygen in the atmosphere every two thousand years.

Trees rely on abundant CO₂ from the atmosphere and sunlight to trigger photosynthesis. They also have plenty of water. For this purpose, they have a high-performance irrigation system to quench their thirst at any time—a technological jewel hidden in the heart of the wood. The microscope shows an incredible plumbing system made up of a multitude of vessels whose number, arrangement and size vary according to the species of tree: Chene Quercus, Epicea Picea, abies, Hetre Fagus svlvarica, The California giant sequoia, one of the largest creatures on the planet, transports between 2000 and 3000 litres of water daily through its trunk up to a height equivalent to a 30-storey building, a colossal task.

Therefore, the trees suck up the water, and the system is activated by solar energy. To understand this, let's go back to photosynthesis. To absorb CO₂, the leaves must open their stomata and let out most of the water they contain. For every molecule of CO₂ that enters, 500 molecules of water leave through transpiration. But this water is not lost uselessly. Thanks to the laws of physics, this evaporation exerts an attraction in the canopy, activating the roots to suck up the water. In the same way, the water molecules are packed together in the microscopic vessels, change their consistency, become more compact and rise in one piece through the vessels. This sophisticated mechanism solves the water circulation problem. However, this kind of recycling still has another issue: never running out of this resource, as it cannot fetch it elsewhere.

Dominick Sprackden and his team at the University of Leeds have, for the first time, shown, using satellite data, that forests cause rain, and it is not just rain that creates forests. This magic trick arises from the evaporation produced by leaves and the moisture condensed in the atmosphere giving rise to clouds. When the water droplets become too heavy, they end up falling as rain. This water is then absorbed by the soil and reaches the water table, from where the trees collect it again through their roots, and by ensuring their supply, the cycle can begin again. Forests can cause rain not

¹¹ ↔ Hauser E., Sullivan P.L., Flores A.N., Hirmas D. & Billings S.A. 2022. Global-Scale Shifts in Rooting Depths Due To Anthropocene Land Cover Changes Pose Unexamined Consequences for Critical Zone Functioning. *Earth's Future*, 10 (11): e2022EF002897. Doi: <u>10.1029/2022EF002897</u>.

^{12 🕹} Educárbol de Corma. Bosques y ecosistemas. Ciclos en el bosque. <u>http://www.educarbol.cl/bosque/ecosistemas_ciclos.php</u>

only in situ through the action of the wind that moves the moisture in a forest, but they are able to induce rainfall hundreds or thousands of kilometres away. They influence rainfall on a large scale, so trees also have the power to influence the climate beyond their territory. For all these reasons, trees have managed to take advantage of the disadvantages of their condition by making them beneficial to the environment.¹³

In the Amazonia, the destruction of this marvellous and unique natural engineering has a high price equivalent to the

Our CO₂ emissions are increasing; trees will not be able to compensate for our excesses indefinitely, especially since forest ecosystems have been destabilised by a farreaching phenomenon, thus releasing all the CO₂ that matter had stored little by little.

same extinction in ineluctable advance on Earth. It surpasses the empire of natural biological and ecological forces by being prevented from controlling the fundamental processes and cycles of the biosphere, as Vernadsky rightly affirmed. By transgressing the limits of production/consumption categories based on exponential economic growth, the capitalist system is moving steadily towards extinction, known as the Anthropocene epoch.

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As we have written, the Amazonia harbours a great diversity of species in its forests crucial for the planet's survival. *Based on this diversity of species*, ¹⁴ *architectures and morphologies, one would also expect to find a wide physiological variety.* However, extremely high deforestation rates do not hide a large-scale catastrophe with global repercussions on the Earth. The Anthropocene defines an irreversible impact on the Earth's equilibrium caused by human activity. Bruno Moulia emphasises not only the magnitude but also the speed of the climate crisis. *Our CO2 emissions are increasing; trees will not be able to compensate for our excesses indefinitely, especially since forest ecosystems have been destabilised by a far-reaching phenomenon, thus releasing all the CO2 that matter had stored little by little. Industrial agricultural expansion and massive logging have severe consequences at all levels of the planet's functioning. When a forest is cut down, the trunks are cut down, and the roots are left behind. Suddenly, the roots, deprived of photosynthesis, die and are decomposed by microorganisms in the soil. Then, when they breathe, they produce CO2 and release the accumulated CO2 deposited in the roots. This process cannot be stopped because we have already lost the green surface that was there.¹⁵*

The irreconcilable contradiction between the cycles of nature and the spiral growth of capital

Marx argued that the circulation of capital does not form a cycle but is a spiral, i.e. infinite, as opposed to the

It is not just a matter of having more at the end of the day, but that part of that surplus is reinvested in generating more and more. From this conception, growth became fixed in our conception and understanding of the world. biogeochemical cycles of nature. In his illustrious essay *Reasons to be Anti-Capitalist*, Harvey infers that the crises of 2007 and 2008 were 'solved' by adding zeros to the world's money supply. *It is an accumulation of numbers, and numbers are infinite; you can always find a number greater than the previous one*. It is what Hegel called negative infinity. Conversely, positive infinity goes on forever, referring to the seasons, the rotation of the earth and so on. And this movement forms a

¹³₽ Ibid.

^{14 🕶} J. L. Andrade. Fisiología ecológica de árboles tropicales: avances y perspectivas. 2003. Revista Chapingo Serie Ciencias Forestales y del Ambiente 11(2):83-91, 2005. P. 83.

¹⁵ ← La genialidad de los árboles. Op. Cit.

cycle.¹⁶ Harvey adds: the adaptation of capital to its spiralling growth occurs through profit, the main motivation of the capitalist economy, and that certain structures can guarantee the accumulation of capital. *It is not just a matter of having more at the end of the day, but that part of that surplus is reinvested in generating more and more. From this conception, growth became fixed in our conception and understanding of the world.*¹⁷

When Marx gets to the background of the growth of the capitalist system, he discovers that abstractions govern it, not people. He also found that the hidden hand was not in the market, as Adam Smith claimed, but in the labour force and its organisation. In this direction, another fundamental question was asked: *where does the surplus capital generated by quantitative easing that adds millions to the world's money supply go, and who benefits from it?* Quantitative easing flows into the stock market, inflates market prices, and consequently benefits the richest.¹⁸ For Marx, capital circulates and rises constantly, thus creating a destructive infinity; that is, he does not know where it is going and how it will behave.

Nonetheless, destructive infinity does make it clear that it benefits the richest, whereas the cycles of nature benefit humans, animals and all other creatures scattered above and below the Earth. For example, the hydrological cycle, as it

We have not understood that the human population depends on the biosphere, a shelter for the planetary biodiversity, similar to an umbrella, gradually losing its protective capacity. travels through the Earth, benefits all creatures and the inert forms of the biosphere. At the same time, it is a biogeochemical cycle, and various chemical reactions (carbon, hydrogen, nitrogen, oxygen, phosphorus, silicon, calcium, sulphur and iron) are involved in its dynamics. It is a multiplicity of movements. It is a mode of existence of matter that drives changes and processes from the physical state of water to other forms as

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it travels through different parts of nature. The momentum of life on the planet depends on the proper functioning of the natural cycles.

According to the literature on hydrological cycles, the matter involved in the constitution of living beings is maintained, renewed and recycled through biogeochemical cycles. In short, it is the dialectic of nature's movement. The unreversed alterations of the geochemical cycle affect the slow death of nature as it is happening before our eyes, without anyone

The substantial difference between the spiral growth of capital and the geobiological movement of nature's cycles is located in the unfettered growth of the world of things and its waste. being able to deny it. In our geological epoch of the Anthropocene, unlike in Marx's time, we are moving in leaps and bounds towards the collapse of the climate. We have not understood that the human population depends on the biosphere, a shelter for the planetary biodiversity, similar to an umbrella, gradually losing its protective capacity and giving way to the extinction of the diversity of animal

and plant species and the reconfiguration of green landscapes into desolate, fractured and deserted crevices on all continents.

In conclusion, the substantial difference between the spiral growth of capital and the geobiological movement of nature's cycles is located in the unfettered growth of the world of things and its waste. The endless expansion of capital comes at the cost of the alteration of the laws of nature governing movement as a form of existence in the vegetational web between biotic and physical organisms in ecosystems. There is and will be no technology that can replace or

^{16 🕹} David Harvey. "Razones para ser anticapitalistas". Biblioteca Masa Crítica. CLACSO. Buenos Aires, ISBN 978-987-722-600-32020. P. 33.

¹⁷ ↩ Ibid. p. 34.

^{18 ┙} Ibid. P. 45

reconstruct it. Thus, the movement and the mode of existence of the laws of plant nature are not inert, passive or unchanging substances. Hence, they have not been artificially created in abstractions or algorithms but have been developed in natural processes independent and autonomous of humans in complex biological processes and connections over thousands of years. Trees exist not for their benefit but to ensure the survival of humans and other creatures on Earth. It is a common good and indispensable in the development of life.

Concessions on plant preservation sanctuaries and the climate crisis

Over the last 30 years, the Region's forest area has shrunk, particularly its natural forests have been lost. Considering the entire Region, between 1990 and 2020, the area covered by natural forest decreased by 150 million hectares, while forest plantation cover increased by only 14 million hectares. PRODES satellite monitoring figures indicate that deforestation in the Brazilian Amazon has increased 9,5%, the highest rate since 2008.¹⁹ Only 20%²⁰ of the soya grown is destined for domestic consumption; the rest covers external demand for biofuels and food production, especially in Europe. T&E attributes this to the EU's decision to classify oil palm as a high-risk feedstock and call for its elimination from fuels by 2030.²¹

For the WRM Secretariat, the imposition of land concessions in the Global South is one of the causes of deforestation and the large-scale dispossession of forest-dwelling indigenous peoples. This mechanism has separated, divided and mapped land and forests for the benefit of capital. The most representative cases are the Amazon, Southeast Asia and the Congo Basin concessions. In these regions, international pressure is directed towards creating Protected Areas in Natural Parks 'without people'. Similarly, carbon concessions are expanding in the so-called 'ecosystem services' of tropical forests, where stored carbon is synonymous with commodities. For example, in Colombia, the arrival of big capital and the hollowing out of plains and peasant culture was protected by the valorisation of capital through public investment. The value of land is not explained by its higher productivity or potential value generation in agricultural and forestry activities. Large national and foreign investors can show futures contracts on their balance sheets and share issues on land whose value is now multiplied by 30 or 50 times and up to a thousand times. This is due to the expectations of investment and infrastructure, the navigability of the Meta river, irrigation districts and a whole investment plan that the Santos government projected for this area.²²

Returning to international conservation NGOs, multinationals, stockbrokers, banks, certification bodies etc. are involved in this adverse web and involve hundreds of multinational companies and over 130 governments committed to climate targets linked to the 'net zero', nature-based emissions hoax that may well explain the Carbon Deal fever.²³ The historical continuity of this onslaught of capital on ecosystem services can be found in REDD+ forest carbon offsetting in

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^{19 -} Greenpeace. España. Amazonia: adiós a 626 millones de árboles en un año. https://es.greenpeace.org/es/noticias/amazonia-adios-a-626-millones-de-arboles-enun-ano/ Diciembre 2 de 2020.

²⁰ - Alejandro Tena. Ecologistas en Acción. La deforestación en la Amazonía alcanza el nivel más alto en 15 años y los combustibles "sostenibles" tienen mucha culpa. <u>https://www.desdeabajo.info/rotador-incio/la-deforestacion-en-la-amazonia-alcanza-el-nivel-mas-alto-en-15-anos-y-los-combustibles-sostenibles-tienen-mucha-culpa/.</u> 7 de noviembre de 2022.

²¹ - Greenpeace. España. Amazonia. Op. Cit.

^{22 🕂} Wilson Arias. Así se roban la tierra en Colombia. Bogotá. Colombia. ISBN: 978-958-48-3049-4. 2017.p. 22

²³
Boletín del WRM 260. Op. Cit. P. 5

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Malaysia, Indonesia, the Americas, Sub-Saharan Africa. In Africa, extreme labour exploitation, along with coercion and violence, erected as basic conditions for the accumulation of exorbitant profits in concession markets.²⁴

The geo-strategic confrontation between the power blocs of the North and the powers of the Eurasian region is taking

This mechanical process of treating nature as a mechanical object has led to major difficulties in certifying biodiversity, and adverse effects on CO2 absorption are expected.

place in the worst-case scenario of the climate crisis. COP 27, co-opted by big corporations and private investment funds, have presented countless tree plantation projects. In total, *they proposed to allocate 1,2 billion hectares (almost a tenth of the submerged lands, after deducting the areas covered by ice or*

rocks!) It is worth noting that, under forest offsetting mechanisms, drones randomly spread tree seeds over 623 million hectares. This mechanical process of treating nature as a mechanical object has led to major difficulties in certifying biodiversity, and adverse effects on CO₂ absorption are expected. In Africa and India, the resistance of rural communities is being met with violence and repression. It is repeated in the Amazon with the advance of other major conflicts in the face of the rejection of the usurpation of forest lands of communities in voluntary isolation, increasing tensions in areas destined for food production already in existence with deep fractures in the ecosystem services of the region.²⁵

Deforestation, droughts and floods

Deforestation of tropical rainforests fractures nutrient cycles and irreparably changes the hydrological regime, decreases water retention and infiltration capacities, and increases soil erosion and sedimentation. Drought at its most extreme levels becomes desertification. In addition, the suspension of species flows and the inevitable ecosystemic fractures, the extinction of wild flora and fauna in degraded areas due to the reconversion of forested land through technology applied to extensive monocultures. Another ecological problem of great magnitude is the rupture of the interdependence between the Andean and Amazonian ecosystems, an area of great ecosystemic wealth in the foothills and at the same time, a point of connection between the two regions.²⁶ Thus, the aggressive intervention of the agribusiness market and the absence of political will on the part of pan-Amazonian governments have left the protection and recovery of strategic areas of regional connectivity adrift, thus promoting the preservation of the ecological sanctuaries that are home to the last endemic species on the verge of extinction.

In Germany, the Drought Monitor of the German Environmental Research Centre reveals another unusually interesting fact about soil dryness down to a depth of 1m 80. The abundant rainfall in 2021 demonstrated an unexpected fact: although the soil appeared very wet, it could only replenish the upper layers. Below them, they found the droughts of the last three years, i.e. floods and droughts can coexist simultaneously. The 2018 drought caused millions of dollars in damage to agriculture. There were substantial crop failures, entire rivers dried up like the Drei Sanz near Freiburg coming from the Black Forest, industry lacked sufficient raw materials, and even the availability of petrol decreased.

²⁴ To quote one case: (1) *MRL*, based in *PNG*, aims to become the Region's leading supplier of 'carbon neutral cement and lime products'. This project assumes that these Carbon Concessions will turn its Central Cement and Limestone Project near Port Moresby into a 'carbon neutral' business. (2) In December 2021, VT Carbon Partners awarded a fund jointly managed by Viridios Capital and Tribeca Investment Partners. It was launched in 2021 with an initial portfolio of A\$500 million, applied to Verra-certified nature-based projects. With these large Carbon Concessions and expansion plans, PNG would become one of the world's largest producers of carbon credits. In: WRM Land concessions: an underlying cause of deforestation". Boletín del WRM 260. Movimiento Mundial por los Bosques Tropicales. Http:// www.wrm.org.uy/es/boletines/nro-260. Pp. 2-3-4

²⁵ ↔ Daniel Tanuro. La COP27, una nueva cumbre del lavado verde, el capitalismo verde y la represión. <u>https://www.desdeabajo.info/rotador-incio/la-cop27-una-nueva-cumbre-del-lavado-verde-el-capitalismo-verde-y-la-represion/</u> 6 de noviembre de 2022. P. 3

²⁶ ← CEPAL. Amazonia posible y sostenible. La Región Amazónica. <u>https://www.pidamazonia.com/content/amazon%C3%ADa-posible-y-sostenible</u> Bogotá, 2013. P. 13.

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The results of other experiments also in Germany agree that the repeated water shortage is the primary constraint for

The planet is warming far more than estimated. Among the leading causes: poor methodology, incomplete reports, intentional errors and laziness that paint a climate situation far removed from reality. organic farming. Indeed, to cope with severe droughts, the soil has to be as permeable as possible to rainfall that compensates for extreme fluctuations in precipitation. The main river basins in the Lower Mussel Valley hardly filter water into the soil. According to researchers, this is due to the extreme poverty of humus, composed of organic matter, which prevents the rapid

currents of water from washing away all the soil and turning it into an avalanche of mud that buries entire villages. This phenomenon is reiterated on all continents..²⁷

Tropical rainforests and counting hidden GHG emissions

The Washington Post analysed reports from 196 countries submitted to the UN on the gap *between the 8,5 billion tonnes of unreported GHG emissions per year - at best - to 13.3 billion tonnes, 23% of what is emitted yearly. These hidden emissions account for 25-40% [of what] we could emit to stay within 1,5°C.* The same goes for more than one billion tonnes of emissions from international aviation and shipping, for which no country takes responsibility. This huge mismatch means that the planet is warming far more than estimated. Among the leading causes, he identifies poor methodology, incomplete reports, intentional errors and laziness that paint a climate situation far removed from reality. Among the explanations, let's look at two cases: Since 2009, some 45 countries have failed to report new GHG figures to the United Nations. Algeria, a major oil and gas producer, has not reported since 2000.²⁸ Similarly, large volumes of emissions from the South are also not reported by the mega-corporations responsible for the growing agrofuel and food markets in both emerging and industrialised countries.

In all circumstances, nature has given forests and other natural ecosystems the power to intervene in either adapting, mitigating or otherwise accelerating the climate crisis through logging, burning of vegetation cover and depletion of trees with impacts on CO₂ and CH₄ (methane) emissions from fossil fuel use, decomposition of organic matter in wetlands, and as a by-product of livestock farming, as hypothesised by NOAA. Therefore, the two main GHGs, carbon dioxide and methane, are responsible for the emissions mismatches, followed by fluorinated gases, for which hardly any data are reported.

The atmospheric burden of carbon dioxide (CO₂) and methane (CH₄) as a trigger for climate collapse

The atmospheric CO₂ burden in the Anthropocene geological epoch can be compared to the levels during the Pliocene Warm Period 3,6 million years ago when carbon dioxide concentrations ranged between 380 and 450 parts per million. At that time, sea levels approached 78 feet higher than today, with average temperatures 7 degrees Fahrenheit higher than in pre-industrial times when large forests occupied the areas of the Arctic that are now tundra.²⁹ Atmospheric methane (CH₄) levels, a powerful greenhouse gas, averaged 1.895,7 ppb in 2021. This is 162% higher than pre-industrial levels. It is noted to have a shorter lifetime in the atmosphere - between 9 and 12 years - than CO₂, i.e. if its emissions

²⁷ OW Documental. Clima extremo, ¿Qué nos espera? <u>https://www.youtube.com/watch?v=0rzAluuejUw</u>. 16 de julio de 2022.

^{28 🕹} Eduardo Robaina. La acción climática mundial, ¿construida sobre datos inexactos? (lamarea.com) 9 de noviembre de 2021.

²⁹ Caboratorio de Monitoreo Global Laboratorios de Investigación del Sistema Terrestre. NOAA. A pesar de los cierres pandémicos, el dióxido de carbono y el metano aumentaron en 2020. A pesar de los cierres pandémicos, el dióxido de carbono y el metano aumentaron en 2020 - Bienvenido a NOAA Research. 7 de abril de 2021.

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If microbial methane emissions from wetlands are increasing due to climate change, then that would constitute an extremely worrying climate feedback loop that could amplify warming. were reduced, its effects on temperatures would be felt more quickly. On the other hand, carbon dioxide levels recorded by NOAA continue to rise at historically high rates, comparable only to the Pliocene epoch some 4,3 million years ago. Global average surface CO₂ during 2021 was 414,7 parts per million (ppm), an increase of 2,66 ppm over the 2020 average. This is the tenth consecutive year that this gas has

increased by more than two parts per million and represents the fastest sustained rate of increase in 63 years since monitoring began. The safe level of CO₂ in the atmosphere is estimated to be 350 ppm, a value exceeded in the 1990s.³⁰

Since 2007, the potent greenhouse gas methane has shown a sudden and sustained increase in atmospheric levels. The research team led by NOAA's Xin Lan offers an answer to the most pressing question in climate research: where is it coming from? Fossil fuels? Biological sources? A diminished ability of the atmosphere to break down methane? A climate tipping point? Data analysed by Xin Lan has pointed to microbial sources, such as natural wetlands, lakes and shallow rivers, and human-managed sources, such as livestock, landfills, rice paddies and sewage treatment. It finds that methane emissions from fossil fuels are unlikely to be the dominant driver of the post-2006 increase," Lan said. Nor can the long-term change be explained by a reduction in the rate at which the atmosphere degrades methane.

Methane is much less abundant but 28 times more potent than CO₂. By trapping heat over a 100-year period, it is emitted into the atmosphere from three main source categories, fossil fuels, microbes and biomass/biofuel burning. If microbial methane emissions from wetlands are increasing due to climate change, then that would constitute an extremely worrying climate feedback loop that could amplify warming, Lan said. Likewise, NOAA scientists are concerned that the increase in biological methane may be the first sign of a feedback loop caused in part by more rainfall on tropical wetlands that would be largely beyond the ability of humans to control.

A partial conclusion of the IPCC report makes it clear that it would be impossible to mitigate climate change without methane reductions. To limit the temperature by 1.5°C, the IPCC asserts that methane emissions must be reduced by 34% by 2030. Doing so would prevent warming up to 0.3°C.³¹

Spiral growth of production and consumption, the predominant source of global emissions

Livestock emissions from manure and gastroenteric releases account for about 32% of methane emissions caused by

What is emitted today will continue to warm the planet for generations: The effect of carbon dioxide emissions is cumulative. For example, about 40% of the 1911 Ford Model T emissions are still in the air today (2022).

agro-food production activities, population growth, industrial development and urban migration. In addition, paddy rice cultivation accounts for 8% and animal feed supplements for 16,7%, representing 30 million tonnes of human-related emissions per year by 2030. In 2021, 36 billion tonnes of carbon dioxide were emitted into the atmosphere due to production and

^{30 🕹} Eduardo Robaina. "El metano alcanza valores récord en la atmósfera por segundo año consecutivo". Op. Cit.

³¹ Ceduardo Robaina. El metano alcanza valores récord en la atmósfera por segundo año consecutivo. <u>https://www.climatica.lamarea.com/metano-niveles-record-co2/.</u> 22 de abril de3 2022.

consumption activities in humans and animals for the agri-food industry. Compared to the same year, methane emissions were around 640 million tonnes. Unlike methane, CO₂ remains in the atmosphere for thousands of years. *What is emitted today will continue to warm the planet for generations: The effect of carbon dioxide emissions is cumulative*. For example, about 40% of the 1911 Ford Model T emissions are still in the air today (2022). We are halfway to doubling the carbon dioxide in the atmosphere at the start of the Industrial Revolution.³²

Similarly, NOAA reports an alarming statistic. In the last 800.000 years, carbon dioxide concentrations have reached the level they are at today (2022). This means that the problem of global warming is due to the fact that the mass of this chemical compound in the atmosphere is already so great that, even if we were to reduce the rate to zero from now on, the Arctic ice, most of the glaciers in Greenland, the Himalayas and [the Andes] and so on would also disappear.³³

Six of every seven calories Europeans ingest come from fossil fuels and only one from photosynthesis caused by sunlight. And nine out of ten calories are from fossil fuels in North Americans. Dale Allen Pfeiffer can therefore say with all propriety that we eat oil.

Nonetheless, we must remove carbon dioxide from the atmosphere to reduce its levels to 300, rather than focusing on how to get to zero by 2050. Indeed, we need to change our consumption habits and diet and stop food waste, which could contribute up to 44,4% of annual emissions reductions (65-80 million tonnes per

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year).³⁴ Prieto says that six of every seven calories Europeans ingest come from fossil fuels and only one from photosynthesis caused by sunlight. And nine out of ten calories are from fossil fuels in North Americans. Dale Allen Pfeiffer can therefore say with all propriety that we eat oil.³⁵

Liberal economics and the concept of economic growth in the South and Central American Region

Liberal economics promotes the law of capitalist economic growth, competition for goods, services and low prices resulting from externalising raw material costs, labour exploitation, and privatisation of natural resources and common goods in the Global South. Conscious degrowth in society is almost improbable. According to Álvaro de Regil,³⁶ societies are totally dominated by market logic. With the advance and consolidation of Marketocracy, the only value it recognises is the systematic reproduction and accumulation of wealth through the imposition of an ethos of relentless growth in the consumption of the Earth's resources. It has hijacked the life of humanity and all living beings around the world.

In contrast, in the South American and Mesoamerican regions, the concept of degrowth in the Global North is not understood, nor does it apply if we analyse it from the perspective of our sovereignty and the climate crisis. Historically, our countries have wanted a development similar to the industrialised countries and have even copied lifestyles and consumption habits. We have also failed to understand that although the South and the North live in parallel economic, technological and industrial worlds, they find a point of tragic confluence in the Pan-Amazon Region. By plundering our

³² ↔ Administración Nacional Oceánica y Atmosférica. NOAA. "El aumento del metano atmosférico estableció otro récord durante 2021". <u>El aumento del metano</u> <u>atmosférico estableció otro récord durante 2021 | Administración Nacional Oceánica y Atmosférica (noaa.gov)</u> Abril 7 de 2022.

³³
David Harvey. Op. Cit. P. 49

 ³⁴ O-Anne McArthur. PNUMA. UN. Environment. Las emisiones de metano están impulsando el cambio climático. A continuación, le indicamos cómo reducirlos.
 <u>Las emisiones de metano están impulsando el cambio climático. A continuación, le indicamos cómo reducirlos. (unep.org)</u>
 20 de agosto de 2021.

^{35 🟳} Pedro Prieto. "Lo prescindible", 22 de julio de 2013. https://lacrisisenergetica.wordpress.com/2013/07/22/lo-prescindible/

³⁶ ↔ Álvaro de Regil: <u>"Is Population Crucial for Degrowth?"</u> — The Jus Semper Global Alliance, September 2022.

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common goods and natural resources, they are also devastating the life of the Earth. This is the price of 'development' that humanity has to pay. Added to this is the imposition of free trade agreements, foreign debt, repeated coups d'état, indiscriminate violence, drug trafficking, etc. The strategy of historical domination is the institutionalisation of violence, marked by profound socio-economic inequalities. The imposition of neoliberalism has been a resounding failure in our welfare conditions, technological and industrial development, social equity and free access to our natural resources. For neoliberalism, growth is an end in itself, based on the concentration of capital and the hijacking of our political sovereignty, popular democracy, and industrial and agro-food development.

The figures are eloquent. ECLAC (2022) reports for the region after Covid-19, the effects of a prolonged social crisis, with a silent and devastating impact on education and inflationary pressure derived from unstable scenarios due to the war in Ukraine. Consumer basket and energy prices have increased. GDP in 2023 may reach 1.4%. High inflation, especially in the food component of the consumption basket, hits the lowest income quintiles, the most vulnerable middle-income strata, hardest. These factors are in addition to other ongoing risks, such as the increased frequency of natural disasters and the impacts of climate emergencies. In particular, ECLAC warns us about the increase in food and nutrition insecurity in the face of rising food prices. According to FAO et al. (2022), in 2021, hunger affected 56,5 million people in the region (49,4 million in South America and 7.2 million in Central America). Rising food prices are expected to increase malnutrition, overweight and obesity.³⁷

Consequently, the proposal of economic degrowth in the context of the climate crisis should be addressed from our realities, needs, utopias, endogenous sovereignty policies, the strengthening of political-administrative institutions and citizen control over the bureaucratic apparatus. Likewise, a legitimate ecosocialist system includes all social sectors historically impoverished and made invisible by neoliberal governments in the most remote areas of the Amazon and Andean regions. We must advance in the construction of welfare theories and policies that guarantee the excluded access to education, internet, food, drinking water and energy. We are not starting from scratch. The ethnic-African peasant peoples have decades of resistance and struggles in the defence of water and natural resources. In short, we are left with one option:³⁸ ecosocialist degrowth can only win through a confrontation with the fossil oligarchy and the ruling classes that control political and economic power.

Conclusions

Indigenous peoples share the territory of the deep Amazon, some in voluntary isolation on the Andean and Amazonian borders and others in contact with local populations. These communities play a crucial role in the conservation and preservation of forests. Moreover, peasant-ethnic agriculture plays two roles, one in becoming fundamental custodians of ecological sustainability and the other in guaranteeing food sovereignty for human populations. In this context, we have elaborated a synthesis of the ecological physiology of trees with particular reference to the residents of the Pan-Amazonian region of South and Central America. For this purpose, we have rescued from some scientific research in biology how the secret life of trees unfolds and its decisive incidence in the creation of photosynthesis.

Likewise, the essential functions of the tree world have built up a precious carbon store in climate change mitigation. In particular, the soil in general and the forest soil has created a thin layer over millions of years with a variety of reliefs adapted to the provision of water and some minerals suitable for developing different tree species. The nutrients it

³⁷ Comisión Económica para América Latina y el Caribe (CEPAL). *Panorama Social de América Latina y el Cribe, 2022* (LC/PUB.2022/15-P), Santiago, 2022. p. 15

³⁸ - Michel Lövy, Bengi Akbulut, Sabrina Fernández y Giorgos Kallis: For an Ecosocialist Degrowth — La Alianza Global Jus Semper, Mayo 2022.

Capitalism assaults the kingdom of life in the core of every Amazonian tree and, in the process, throws humanity to the brink of collapse. We are biting the hand that feeds us.

provides to the soil fulfil the function of support, conservation and protection from the effects of rain and wind. It also hosts millions of microorganisms, creatures and small animal species in complex ecosystems. In general terms, the soil is a resource that is difficult to renew due to the extreme slowness of its

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recovery processes. Hence, the only viable management is the conservation and preservation of vegetation covers and protected areas or sanctuaries.

For the biologist Janine Benyus, the wisdom of trees has shown us that, from the very beginning, they understood that unity is strength through surprising strategies of cooperation with the creatures that coexist in their environment. Natural selection in the plant kingdom rewards organisms that know how to associate to give and receive; in this exchange, they carry out a perfect balance, as well as different actions of compensation and exchange of nutrients, adapting to environmental changes. This principle is found in the behaviour of ethnic communities in a close relationship with nature. In contrast, capitalism is based on competition and eliminates the weaker in confrontation.

Capitalism assaults the kingdom of life in the core of every Amazonian tree and, in the process, throws humanity to the brink of collapse. There is no artificial technology that can compare in perfection and efficiency to the creation of photosynthesis, as well as the method of hydraulic engineering in the circulation of nutrients and water from the roots to the branches and leaves at the top and vice versa. Trees are trapped in a vicious circle. Cutting them down increases temperatures and intensifies periods of drought, leading to another plague. Giant fires have been ravaging the forests for years and raging on every continent in Siberia, Africa, California, Indonesia, Australia and the Amazon. Millions of hectares have burned all over the world. We are biting the hand that feeds us.³⁹

In other words, the capitalist crisis is deepening through the execution of reckless strands of financialised capitalism within the biophysical limits of the planet. According to Castillo, since the beginning of the Covid-19 pandemic, the World Economic Forum in Davos has concocted a plan called the Great Reset, designed to rebuild the world economy towards a new cycle of capital accumulation with various subterfuges. Among them, 'zero emissions' on natural capital transfigured into a "vision of the future" through public-private cooperation. Consequently, within the framework of the regulation of the neoliberal financialised model, it drags the imprint of poverty, dispossession and exclusion of millions of vulnerable people, especially in protected and tropical rainforest areas, in this writing, the Pan-Amazon Region.⁴⁰

From the opposite point of view, trees in their habitat follow their omniscience, intelligence and knowledge accumulated in the evolution of the earth. It conforms to its laws, rhythms and timing that directly contradict the spiralling and unlimited growth of capital profits. Whereas seeds, products, fruits and ecosystem services are produced by nature as common and universal goods for the well-being of humanity and other creatures of the plant kingdom. In contrast, the profits of capital (represented in green paper) are for the benefit of an elite to the detriment of the very nature that allows us to satisfy needs, satisfiers and desires. In Harvey's view, one of the main reasons for opposing

³⁹ ← La genialidad de los árboles. Op. Cit.

^{40 🗗} José Castillo. "Bienvenidos al capitalismo de la escasez". https://www.elsaltodiario.com/opinion/bienvenidos-al-capitalismo-de-escasez. 25 de agosto de 2022.

capitalism lies in the fact that we cannot continue with compound growth rates for the next hundred years from an environmental and ecological point of view.⁴¹

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It warns that emphasis on energy transition policies without halting deforestation and the draining of the Amazon for industrial food production and biofuels will not slow the increase in carbon dioxide-fuelled biological methane discovered by NOAA. Similarly, economic growth and the intensification of fossil fuels to the detriment of the transition to renewable energy in the countries of the Global North will inevitably result in increased GHG emissions. *Experts, therefore, liken the four horsemen of the end of climate change to famine and malnutrition, extreme weather, conflicts and diseases that can lead to pandemics, as happened with Covid-19 following the advance of forest destruction due to drastic changes in land use and the expansion of urbanisation areas.*

All disciplines of knowledge address the collapse of the climate. In this paper, Roy Scranton warns,⁴² The greatest challenge we face is philosophical: to realise that this civilisation is already dead. The sooner we come to terms with our situation and realise that there is nothing we can do to save ourselves, the sooner we will be able to undertake the difficult task of adapting, with mortal humility, to our new reality. In this direction, NOAA Administrator Rick Spinrad emphasises: The evidence is consistent, alarming and undeniable. We need to build a climate-ready nation to adapt to what is already here and prepare for what is to come. At the same time, we can no longer afford to delay the urgent and effective action needed to address the root cause of the problem: greenhouse gas pollution.⁴³

From the Pan-Amazon region, we ask ourselves, will the trees at the top of plant evolution survive the sixth extinction of humanity? We do not know, but we are sure that extinction announces and also forewarns us about what to do about the coming eco-social instabilities in the making. For more than fifty years, a conflict between industrial societies and nature's biophysical limits has been predicted to engulf the Global South. We are at a turning point. Projections are distorted, and politicians are confused and make decisions contrary to the demands of their citizens in the face of an avalanche of unexpected climatic, environmental and social events. In these scenarios, the only possible reality is uncertainty. Hence sooner rather than later, rebellions will be the order of the day.

⁴¹ ightarrow David Harvey. Op. Cit. p. 61

^{42 🗝} Roy Scranton. Learning to Die in the Anthropocene. Reflections on the End of a Civilization, City Light Books, San Francisco 2015, p, 26

⁴³ ← Administración Nacional Oceánica y Atmosférica. NOAA. "El aumento del metano atmosférico estableció otro récord durante 2021". <u>El aumento del metano</u> atmosférico estableció otro récord durante 2021 | Administración Nacional Oceánica y Atmosférica (noaa.gov) Abril 7 de 2022.

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About Jus Semper: The Jus Semper Global Alliance aims to contribute to achieving a sustainable ethos of social justice in the world, where all communities live in truly democratic environments that provide full enjoyment of human rights and sustainable living standards in accordance with human dignity. To accomplish this, it contributes to the liberalisation of the democratic institutions of society that have been captured by the owners of the market. With that purpose, it is devoted to research and analysis to provoke the awareness and critical thinking to generate ideas for a transformative vision to materialise the truly democratic and sustainable paradigm of People and Planet and NOT of the market.

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