

TERRITORIALIDADES, CONFLITOS SOCIOAMBIENTAIS E PERSPECTIVAS DE LUTA

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**Territorialidades, conflitos
socioambientais e perspectivas de
luta**



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Índice para catálogo sistemático

I. Território



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Apresentação

A região amazônica terá centralidade na obra, no entanto, procuraremos apresentar ao leitor trabalhos que tratem de assuntos mais gerais que estejam relacionados a Territorialidades, Conflitos Socioambientais e Perspectivas de Lutas, como por exemplo, debates teóricos e metodológicos, estudos e ensaios sobre ecologia política, mudanças climáticas, agronegócio, agroecologia, povos tradicionais, capitalismo e meio ambiente, reforma agrária, mineração, garimpo, saúde, bem como todos aqueles assuntos que impactam diretamente na vida das populações da região da Amazônia brasileira e internacional. A ideia é gerar reflexões que conectem a Amazônia aos debates mais gerais e estes a Amazônia. Portanto, não é obrigatório o texto trabalhar especificamente sobre a Amazônia.

Sumário

Apresentação	4
Capítulo 1	6
Saúde e Controle Social na Amazônia: Espaços a Ocupar	6
Capítulo 2	16
El desconcierto del neoliberalismo latinoamericano.....	16
Capítulo 3	31
Desafios políticos, epistêmicos e metodológicos do mapa de conflitos envolvendo injustiça ambiental e saúde no Brasil.....	31
Capítulo 4	62
Geografia do narcotráfico e facções do crime organizado na Amazônia.....	62
Capítulo 5	76
Marxism and the environment: the issues	76
Capítulo 6	100
Identificação de forçantes socioambientais atuantes no aumento de vulnerabilidades em comunidades da Bacia Amazônica	100
Capítulo 7	126
Mineração em terras indígenas: quatro lentes conceituais para contribuir com o debate no Brasil.....	126
Capítulo 8	139
As cerimônias rituais do noroeste amazônico: na perspectiva da sustentabilidade do patrimônio territorial ..	139
Capítulo 9	157
Conflitos socioterritoriais e pandemia de Covid-19.....	157
Capítulo 10.....	179
Como deter o trem do progresso? O Fórum Social da Pan- Amazônia e as lutas sociais (2002-2014)	179
Capítulo 11.....	192
Ecosocialismo, uma proposta concreta.....	192
Capítulo 12.....	213
America Latina: la Simplificación Territorial.....	213
Capítulo 13.....	238
A criminalização da homofobia no Brasil: a ADO 26 e a omissão legislativa	238
Capítulo 14.....	249
A geografia em ruínas dos grandes projetos na Amazônia: a mineração e os processos de territorialização de exceção	249
Índice Remissivo.....	263
Os organizadores	264

Marxism and the environment: the issues

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Michael Roberts 

INTRODUCTION

In what ways is the capitalist mode of production destroying the environment and the planet? Why is it doing so faster and even more than previous modes of human social production?

Capitalism destroys the environment through the commodification of nature. This means that nature is treated as a resource to be exploited for profit, with no regard for the long-term consequences. This has led to the over-exploitation of natural resources, such as water, forests, and minerals. It has also led to the pollution of the environment, as businesses dump waste into rivers, lakes and oceans. Fossil fuel production and consumption has led to a rise in average global temperatures that threatens to lead to permanent droughts, flooding and large areas of the globe becoming uninhabitable for humans and other species. Already this has led to the elimination of millions of species of flora and fauna, threatening the diversity of nature and its survival. Worse, uncontrolled mining, logging, urbanization has exposed humanity to deadly pathogens previously contained in wild animals in remote areas. Regular pandemics are the order of 21st century capitalism.

The commodification of nature is driven by the capitalist law of value leading to the tendency for the rate of profit to fall. This means that capitalists are constantly looking for new ways to increase profits, even if it means damaging the environment. This is the foundation of the Marxist theory of the current environmental collapse.

MARX AND ENGELS ON NATURE

Marx and Engels are often accused of what has been called a Promethean vision of human social organization, namely, that human beings, using their superior brains, knowledge and technical prowess, can and should impose their will on the rest of the planet or what is called ‘nature’ – for better or worse. The charge is that other living species are merely playthings for the use of human beings. There are humans and there is nature – in contradiction. This charge is particularly aimed at Friedrich Engels who, it is claimed, took a bourgeois ‘positivist’ view of science: namely that scientific knowledge was always progressive and neutral in ideology; and so was the relationship between man and nature. The ‘green’ critique of Marx and Engels is that they supposedly were unaware that *Homo sapiens* were destroying

the planet and thus themselves. Instead, Marx and Engels had a touching faith in capitalism's ability to develop the productive forces and technology to overcome any risks to the planet and nature.

But this critique runs contrary to the writings of Marx and Engels. Marx wrote:

Nature is man's inorganic body, that is to say, nature in so far as it is not the human body. Man lives from nature ... and he must maintain a continuing dialogue with it if he is not to die. To say that man's physical and mental life is linked to nature simply means that nature is linked to itself, for man is a part of nature (MARX, 1844, p. 84).

This conception of humans and nature as parts of a single totality can be found throughout the work of Marx and Engels. The idea that Marx and Engels paid no attention to the impact of human social activity on nature has been recently debunked, particularly through the groundbreaking work of Marxist authors such as John Bellamy Foster and Paul Burkett. They have reminded us that, throughout *Capital*, Marx was acutely aware of capitalism's degrading impact on nature and the planet's resources. As Marx wrote:

the capitalist mode of production collects the population together in great centres and causes the urban population to achieve an ever-growing preponderance ... [It] disturbs the metabolic interaction between man and the earth, i.e., it prevents the return to the soil of its constituent elements consumed by man in the form of food and clothing; hence it hinders the operation of the eternal natural condition for the lasting fertility of the soil. Thus, it destroys at the same time the physical health of the urban worker, and the intellectual life of the rural worker (MARX, 1867, p. 637–638).

Marx argued that 'Labour is not the source of all wealth. Nature is just as much a source of use values (and it is surely of such that material wealth consists!) as labour, which is itself only the manifestation of a force of nature, human labour power', so says Marx (1875). 'The use values ... of commodities, are combinations of two elements – matter and labour. If we take away the useful labour expended upon them, a material substratum is always left, which is furnished by Nature without the help of man ... We see, then, that labour is not the only source of material wealth, of use values produced by labour.'

Can we quantify the damage to nature imposed by capitalism? The World Bank's calculation of depletion depends on measuring "rents" on resources. The estimates of natural resource rents are calculated as the difference between the price of a commodity and the average cost of producing it. Here, Marx's discussion of rent becomes relevant. While Marx analyzed the emergence of ground rent in relation to agricultural production under conditions of landed property, the analysis can be equally well applied to understanding rent income derived from mining, real estate, and oil and natural gas production.

What is important is the structure of the relationship established in the production process — between, on the one hand, the capitalist commodity producer and on the other, the owner of some non-produced resource used in that production. As long as capitalist commodity production relies on some privately owned, non-produced resource that is limited in quantity—as is the case, for instance, in mining, oil and gas extraction, or real estate development—the owner of that resource can claim a portion of the surplus value in the form of rent (Tapia, 2014).

Capital-intensive agriculture has become more, not less, central to rising energy consumption in the Global North, contributing a stunning ‘80 percent of energy flow increases’ in the US between 1997 and 2002 (Canning and Tsigas, 2000). Marx’s law of the tendency of the rate of profit to fall is the basis for predicting the transient future of the capitalist mode of production. The law forecasts a secular decline in the profitability of capital that increasingly puts the capitalist production into crises that become more difficult to extricate from. The law has counter-tendencies that can slow the pace of falling profitability and even reverse the decline for periods. But in the long run, these counter-tendencies cannot overcome the tendency.

One of the counter-tendencies is capital’s drive to reduce production costs and raise profitability through the intensive use of natural resources, aiming to lower the cost of raw materials (or circulating capital) in capitalist production. The rate of profit is thus “inversely proportional to the value of the raw materials” (Marx, 1967, v. III, p. 111). The cheaper the raw materials and energy, the higher the rate of profit. And yet, the dynamism of capitalist production leads the “portion of constant capital that consists of fixed capital ... [to] run significantly ahead of the portion consisting of organic raw materials, so that the demand for these raw materials grows more rapidly than their supply” (Marx, 1967, v. III, pp. 118–119). Raw materials become “scarce” relative to the rise in fixed asset investment.

The more capitalist production is developed, bringing with it greater means for a sudden and uninterrupted increase in the portion of constant capital that consists of machinery, etc., the greater is the relative overproduction of machinery and other fixed capital, the more frequent the *underproduction* of plant and animal raw materials, and the more marked the previously described rise in their price and the corresponding reaction. (Marx, 1981, p. 214).

If a sufficient mass of cheap energy and raw materials can be mobilised, the rising organic composition of capital can be attenuated – especially if ‘capital saving’ innovations run strongly alongside labour saving movements – and the tendency towards a falling rate of profit, is not only checked, but (for a time) reversed. The same logic applies to variable capital. If a sufficient volume of cheap food can be supplied, the rate of surplus value may be augmented.

Tapia (2014) has argued that the transitions from peat and charcoal to coal, and from coal to oil, were major technological revolutions that initiated periods of accelerated accumulation in the history of global capitalism, since cheap energy ‘powerfully checks the falling rate of profit’. Conversely, expensive oil reduces profitability and pushes towards crisis, as clearly illustrated by what happened in the early 1970s, late 1980s, late 1990s, and in the years immediately before the Great Recession. The global slump of the mid-1970s has often been called the Oil Crisis, and indeed a peak in the world price of oil occurred in 1974. But there were also peaks of oil prices in 1980, 1990, 2000 and 2008, which means that oil prices were rising in the period immediately previous to each of the last five crises.

The econometrician Hamilton (2021) reported a statistically significant correlation between oil price shocks and economic recessions in post-war US data (Marx, 1875). Hamilton’s conclusion was that

the evidence ‘makes it difficult to reject the historical correlation as entirely spurious’, meaning that oil price increases might be the shocks that push the economy into recession.

Indeed, we can find a high inverse correlation between the change in the price of crude oil and the change in the average rate of profit. The average rate of profit is defined here as the internal rate of return (IRR) in the G20 economies since 1950.² We find an inverse correlation of -0.76 between price of crude oil and the G20 IRR between 1950 and 2019. However, between 1950 and 1966, when the IRR rises by about 8 per cent, the oil price also rises by 14 per cent and thus there is no negative correlation. This was the golden age of high profitability and low oil prices. However, in the profitability ‘crisis’ period between 1966 and 1982 when the IRR falls 34 per cent, the oil price rises ten times. Between 1982 and 1997, the oil price falls 39 per cent and the IRR rises 17 per cent. From 1997 to 2019, the IRR drops 12 per cent coinciding with a tripling of the oil price. In all these periods, there is a significant inverse correlation.

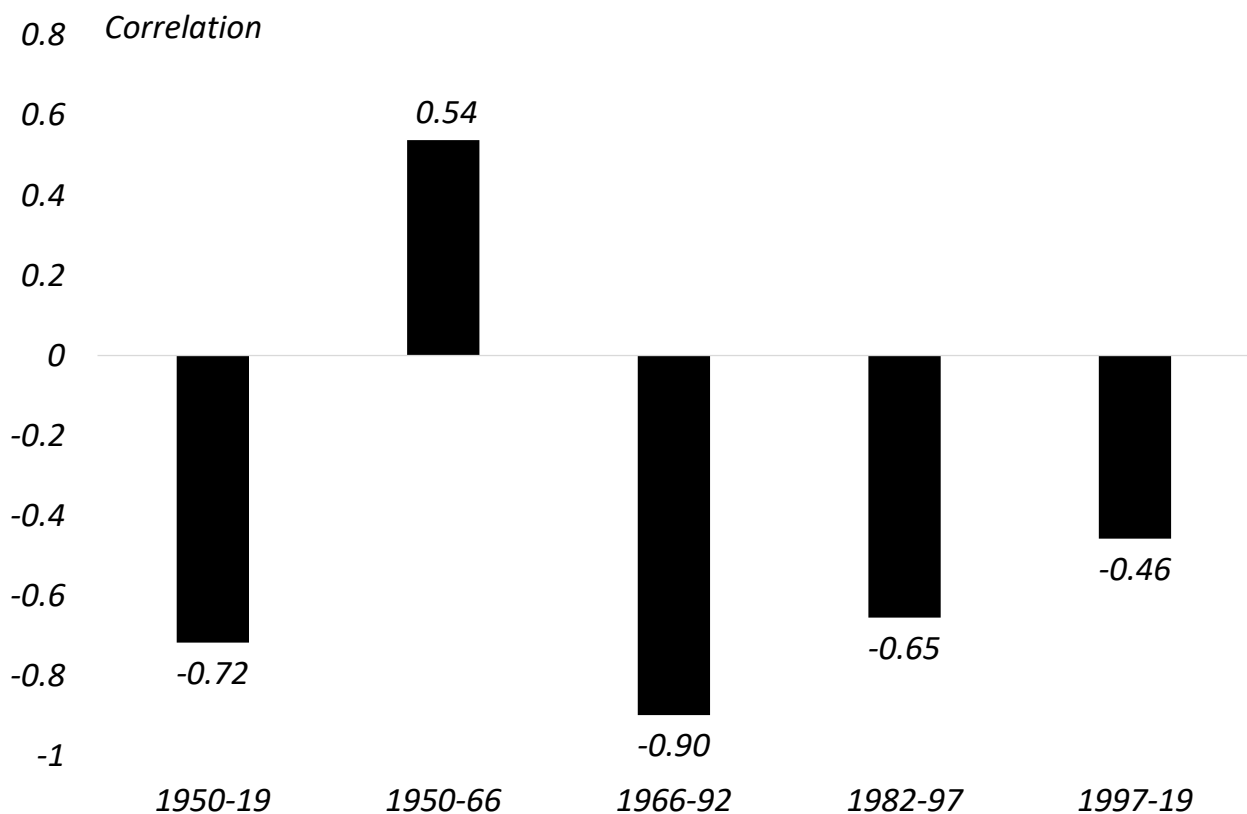


Figure 1. Correlations: crude oil price and internal rate of return on capital.

Capitalism thus turns the ‘free gifts of nature’ into profit. And in the incessant drive to raise profitability, it depletes and degrades natural resources. And as nature is privatised and turned into private property, the owners of ‘nature’ can also extract rent from the exploitation of labour. However, there is

² Notes on Marx and ground-rent, SPGB, <https://socialiststudies.org.uk/marx%20groundrent.shtml>

a continual battle by capital to control and lower rising raw material prices as natural resources are depleted and not renewed, adding another factor to the tendency of the rate of profit to fall.

GLOBAL WARMING AND CLIMATE CHANGE

The drive for profit has led to an uncontrolled expansion of industrialization, energy and commodity production in agriculture that emits carbon emissions and provokes natural resource depletion that is heating up the planet to levels that threaten its very existence.

The sixth report from the Intergovernmental Panel on Climate Change (IPCC) states clearly that climate change and global warming is ‘unequivocally caused by human activities’. But can climate change be laid at the door of the whole of humanity or instead on that part of humanity that owns, controls and decides what happens to our future? Sure, any society without the scientific knowledge would have exploited fossil fuels in order to generate energy for production, warmth and transport. But would any society have gone on expanding fossil fuel exploration and production without controls to protect the environment and failed to look for alternative sources of energy that did not damage the planet, once it became clear that carbon emissions were doing just that?

The culprit is not “humanity” but industrial capitalism and its addiction to fossil fuels. At a personal level, over the last 25 years, it is the richest 1 per cent of the world’s population—mainly based in the imperialist core—that has been responsible for more than twice as much carbon pollution as the 3.1 billion people who make up the poorest half of humanity (Tapia, 2014). The richest 10 per cent of households consume nearly half (45 per cent) of all energy linked to land transport and three-quarters of all energy related to aviation. Transportation accounts for about a quarter of global emissions today, while SUVs (sport utility vehicles) were the second largest driver of global carbon emissions growth between 2010 and 2018. Even more to the point, just 100 companies have been the source of more than 70 per cent of the world’s greenhouse gas emissions since 1988. It is big capital —more than even the ultra-rich — that is the true polluter.

The IPCC provides various scenarios on when global temperatures will reach the so-called Paris target of 1.5°C above average pre-industrial levels. The reality is that the IPCC’s very low emissions scenario is improbable, and the global temperature is likely to hit 1.5°C much earlier than 2040 and reach a much higher level, even with the conditions of SSP1 in place, namely, a 50 per cent reduction in CO₂ emissions by 2050 (Tapia, 2014). More likely, global warming will reach around 1.8°C by 2050 and 2.5°C by the end of the century. That means even more drought and flood events than currently forecast and so even more suffering and mounting economic losses from the mix – a loss in world GDP of 10–15 per cent on current trajectories and double that in the poor dominated countries, the so-called ‘Global South’.

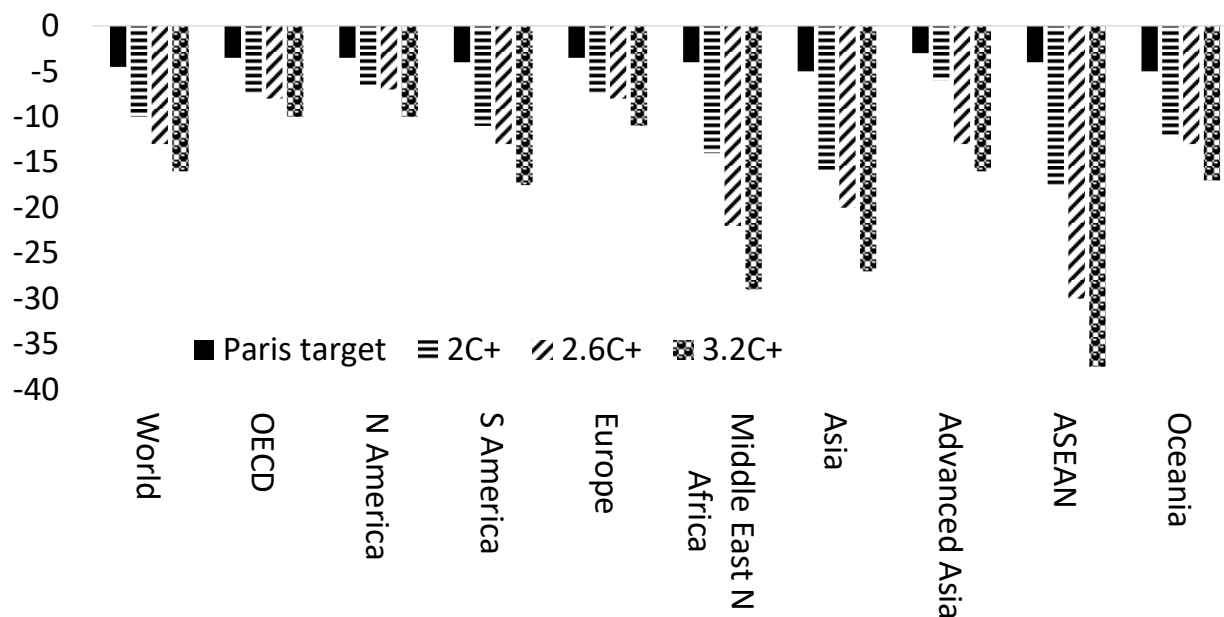


Figure 2. GDP losses by mid-21st century due to climate change (%). Source: IPCC

If emissions do not come down drastically before 2030, then by 2040 some 3.9 billion people are likely to experience major heatwaves, twelve times more than the historic average. By the 2030s, 400 million people globally each year are likely to be exposed to temperatures exceeding the workability threshold. Also, by the 2030s, the number of people on the planet exposed to heat stress exceeding the survivability threshold is likely to surpass ten million a year.³

The UN forecasts that unless global warming is stopped the planet will turn into ‘uninhabitable hell’ for millions.⁴ Even at 1.5°C, we will see sea level rises of between two and three metres. Instances of extreme heat will be around four times more likely. Heavy rainfall will be around 10 per cent wetter and 1.5 times more likely to occur. Much of these changes are already irreversible, like the sea level rises, the melting of Arctic ice, and the warming and acidification of the oceans. Drastic reductions in emissions can stave off worse climate change, according to IPCC scientists, but will not return the world to the more moderate weather patterns of the past. A ‘tipping point’ will be passed.

MAINSTREAM ECONOMICS AND CLIMATE CHANGE

However, mainstream economics remains seeped in complacency. Integrated assessment models (IAMs) are used to calculate the social cost of carbon (SCC). They attempt to model the incremental change in, or damage to, global economic output resulting from 1 tonne of anthropogenic CO₂ emissions

³ The internal rate of return on capital (IRR) is value added minus labor compensation divided by fixed assets, from the Penn World Tables 10.0, and as such is close (proxy) to the Marxian average rate of profit (ARP).

⁴ Oxfam, 21 September 2020, www.oxfam.org/en/press-releases/carbon-emissions-richest-1-percent-more-double-emissions-poorest-half-humanity

or equivalent. These SCC estimates are used by policymakers in cost–benefit analyses of climate change mitigation policies.

The IAM neoclassical growth accounting approach is fraught with flaws, however. The IPCC mitigation assessment concluded from its review of IAM outputs that the reduction in emissions needed to provide a 66 per cent chance of achieving the 2°C goal would cut overall global consumption by between 2.9 per cent and 11.4 per cent in 2100. This was measured relative to a ‘business-as-usual’ scenario. But growth itself can be derailed by climate change from business-as-usual emissions. So the ‘business-as-usual’ baseline, against which costs of action are measured, conveys a misleading message to policymakers that fossil fuels can be consumed in ever greater quantities without any negative consequences to growth itself.

IAM values often depend crucially on the discounting used to translate future costs into present-day dollars. The high discount rates that predominate essentially assume that benefits to people in the future are much less important than benefits today. Most current models of climate change impacts rest on two flawed assumptions: first, that people will be significantly wealthier in the future; and second, that lives in the future are less valuable than lives today. The first assumption overlooks the substantial risks of severe damage and disruption to livelihoods posed by climate change. The second assumption constitutes a form of “discrimination by date of birth.” It is a value judgment that is rarely scrutinized, difficult to justify, and at odds with most moral and ethical frameworks.

The argument about the discount rate exposes the argument about the future. The IAMs assume that the world economy will have a much larger GDP in 50 years so that even if carbon emissions rise as the IPCC predicts, governments can defer the cost of mitigation to the future. And if you apply stringent carbon abatement measures, for example, ending all coal production, you might lower growth rates and incomes and so make it more difficult to mitigate in the future.

Also, because the IAMs omit so many of the big risks, SCC estimates are often way too low. As the IPCC acknowledged, published SCC estimates ‘lie between a few dollars and several hundreds of dollars.’ For example, a new analysis draws upon several public health studies to conclude that for every 4,434 metric tons of CO₂ pumped into the atmosphere beyond the 2020 rate of emissions, one person globally will die prematurely from the increased temperature (Tapia 2013). This additional CO₂ is equivalent to the current lifetime emissions of 3.5 Americans. Under Nordhaus’ DICE model the 2020 social cost of carbon is \$37 a metric ton but the addition of the mortality cost brings this figure up to \$ 258 a ton.

Finally, as with all these neoclassical growth accounting models of which the IAM of Nordhaus is one, there is no allowance for recurring crises of production in capitalism or rising inequality of income and wealth. Growth accounting is the mainstream version of explaining long-term economic growth. Neoclassical theory assumes perfect competition and free markets and it assumes what it should prove:

that capitalist economic expansion will be harmonious and without crises as long as markets are free and competition is operating.

And IAMs also exclude the feedback – namely, that global warming leads to more natural disasters, droughts and floods and thus to massive disruption and migration of affected populations and thus a sharp reduction in GDP growth rates. The world will not be much ‘richer’ in the next generation if global warming goes unchecked.

MEASURING GLOBAL WARMING AND GROWTH

It is undoubtedly true that when economies accelerate in growth and industrial output—particularly when driven by fossil fuel energy—carbon emissions also rise inexorably. There is firm empirical evidence supporting the correlation between economic growth and carbon emissions. Indeed, whenever there is a recession, as in 2008–09, the growth in carbon emissions declines. Tapia and Carpintero (2025) have demonstrated a pro-cyclical correlation between the rate of increase of atmospheric CO₂ and the rate of growth of the global economy, providing strong evidence that the world economy is directly linked to the build-up of the greenhouse effect and, therefore, to the process of global warming.

Tapia and Carpintero (2025) use multivariate analysis of the influence of the world economy on CO₂ levels to show that the annual increase in atmospheric CO₂ is significantly linked to the growth of the global economy. Years of above-trend GDP growth are years of greater rise in CO₂ concentrations, and similarly, years of below-trend growth are years of smaller rise in CO₂ concentrations. So global emissions of CO₂ have increased at rates strongly correlated with the absolute growth of the global economy. When capitalist production stops, so does global warming, as in 2009 and 2020.

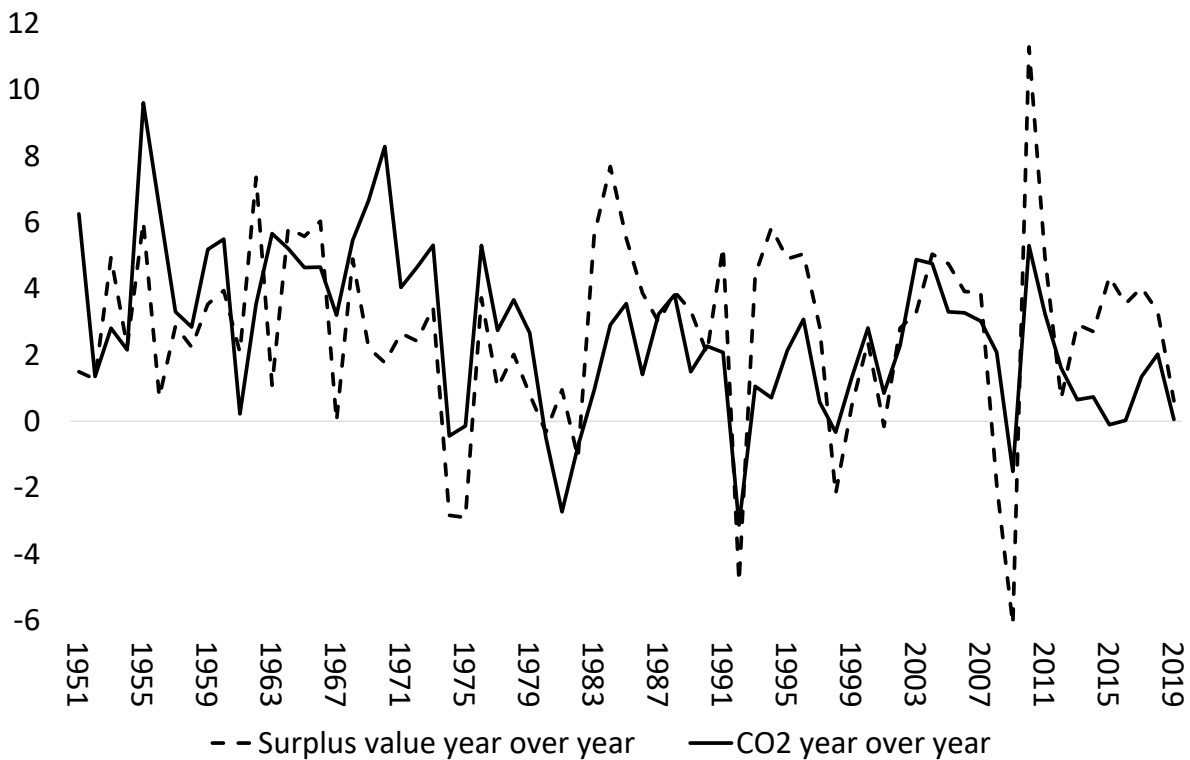


Figure 3. Yearly change in global CO2 and global profits.

Most of the rise in emissions comes from emerging economies, where economic growth has been fastest. In 2009, China was responsible for 24 per cent of global emissions, compared to 17 per cent for the United States and 8 per cent for the eurozone. However, each Chinese person emitted only one-third as much as an average American and less than four-fifths of what a resident of the eurozone emitted. China is a relatively inefficient emerging economy in terms of emissions per unit of output. Yet it still emits less per capita than high-income countries because its population remains relatively poor. As emerging countries continue to develop, emissions per person tend to rise toward levels seen in high-income countries, thereby increasing the global average. This dynamic helps explain why global per capita emissions rose by 16 per cent between 2000 and 2009 —a period marked by rapid growth in emerging economies.

I find a high correlation between carbon emissions growth and total profits (Figure 4). There is a positive correlation (0.48) between the annual change in global carbon emission and the annual change in total profits of the G20 top economies and the annual change in profitability (0.41). The faster the rise in profits, the faster the rise in CO₂ emissions.

THE MARKET SOLUTION

Market solutions to climate change are based on trying to correct ‘market failure’ by incorporating the nefarious effects of carbon emissions via a tax or quota system. The argument goes that as mainstream economic theory does not incorporate the social costs of carbon into prices, the price mechanism must

be ‘corrected’ through a tax or a new market. The first problem with this is that climate change is not one market failure (like tobacco) but several: in capitalist transport, energy, technology, finance and employment.⁵ Economists who have attempted to calculate what the ‘social price’ of carbon should be have found that there are so many factors involved and the pricing must be projected over such a long time horizon that it is really impossible to place a monetary value on the ‘social damage’ – estimates for the carbon price range from \$14 per ton of CO₂ to \$386! ‘It is impossible to approximate the uncertainties in low-probability but high-damage, catastrophic or irreversible outcomes’ Quiggin (2021). Indeed, where carbon pricing has been applied, it has been a miserable failure in reducing emissions, or in the case of Australia, dropped by the government under the pressure of energy and mining companies.

And while there is much talk about raising carbon emission prices, little or nothing is said about the huge subsidies that governments continue to make to fossil fuel industries. EU Commissioner Gentiloni admitted as such: ‘Paradoxically, [the current energy taxation directive] is incentivising fossil fuels and not environmentally friendly fuels. We have to change this.’

The G20 countries have provided more than \$3.3 trillion (£2.4 trillion) in subsidies for fossil fuels since the Paris Climate Agreement was sealed in 2015, despite many committing to tackle the crisis. G20 member states continue to provide substantial financial support for fossil fuel production and consumption (UNDRR, 2020, p. 15). China provided nearly a quarter of the 2019 count. But with a per capita total of \$104, it was well below the G20 average of \$313. In contrast, Saudi Arabia (\$1,962), Argentina (\$734) and Russia (\$523) came top. The G20 as a whole has cut this funding by 10 per cent in 2015–19. But this masks significant variation across countries, with eight members boosting support – notably Australia, Canada and the US.

⁵ Indeed, the latest measures suggest that the increase in world temperatures will surpass 1.5C in this decade. https://essd.copernicus.org/articles/15/2295/2023/?fbclid=IwAR2pPhIN83U6oWY003cIR8LF7S-Lv_Z1wD4_Z4giuXnOKPKKxRMqmR0pKW0

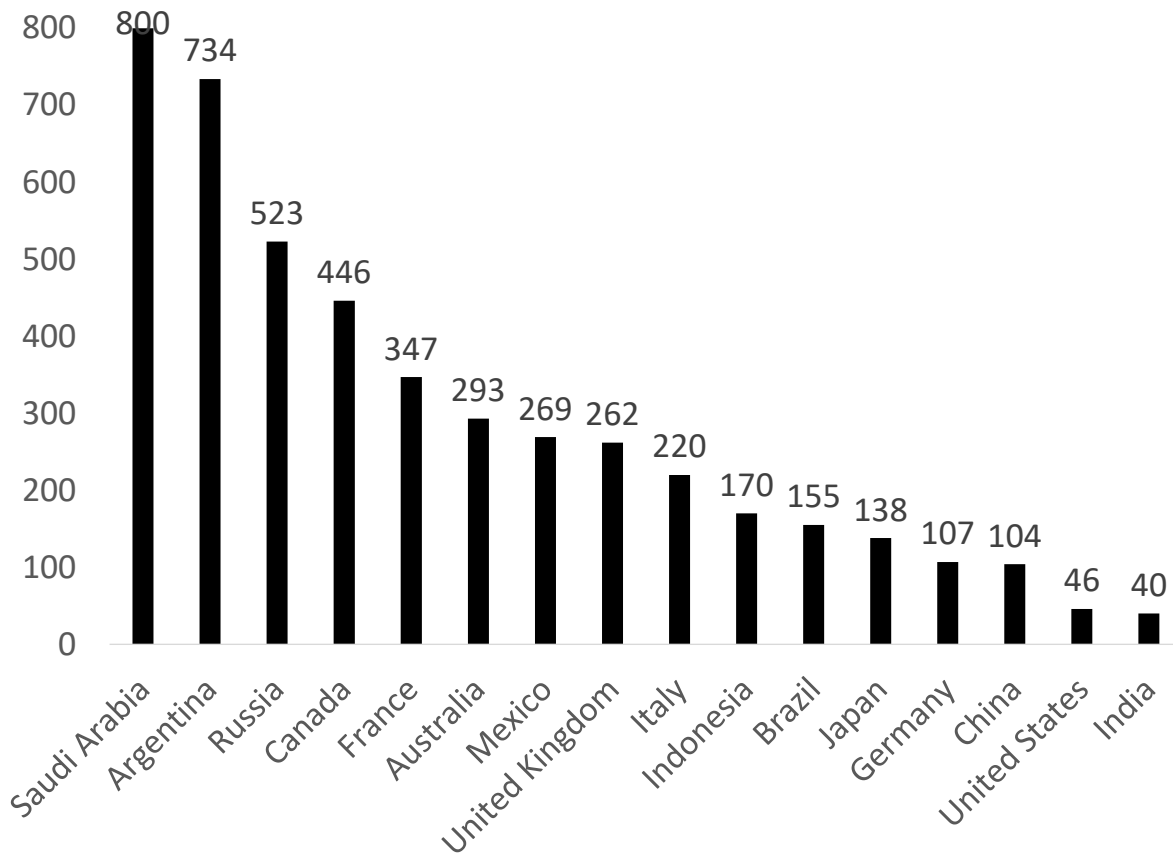


Figure 4. Fossil fuel subsidies per capita (\$).

More than 80 per cent of emissions are covered by carbon price schemes in France, Germany and South Africa. In the UK, only 31 per cent of emissions are covered but the UK has one of the highest carbon prices at \$58 per tonne of CO₂. Just 8 per cent of US emissions are covered and at the low price of \$6 per tonne. Russia, Brazil and India do not have any carbon prices. Indeed, the current average global carbon price is under \$2 and 80 per cent of global emissions have no carbon emissions pricing market at all (Bressler, 2021).

Table 1. Coverage of carbon price schemes.

Region	% of region's emissions	Carbon price (USD/tCO ₂)	Effective carbon rate	% of global emissions
Sweden	40	127	50.8	<1
Norway	60	59	35.4	<1
Switzerland	33	96	31.7	<1
British Columbia	70	26	18.2	<1
France	33	50	16.5	<1
California	85	16	13.8	2

Region	% of region's emissions	Carbon price (USD/tCO ₂)	Effective carbon rate	% of global emissions
European Union	43	25	10.8	8
Japan	70	3	2.1	5
Argentina	20	6	1.2	<1
China	40	3	1.2	1
North East US	18	5	0.9	1
Mexico	45	1	0.5	1.5
The rest	100	0	0	80
Global average			1.7	

So the carbon pricing and taxation solution, even if it worked to lower emissions, is a pipedream as it can never be implemented globally before global warming reaches dangerous ‘tipping points’ (Tapia and Carpintero, 2013).

Apart from carbon pricing and taxes, the IMF proposes a green investment stimulus — investments in clean public transportation, smart electricity grids to integrate renewables into power generation, and retrofitting buildings to enhance energy efficiency. Supposedly, this green infrastructure push will achieve two goals. First, it will boost global GDP and employment in the early years of recovery from the COVID-19 crisis. Second, the green infrastructure will increase productivity in low-carbon sectors, thereby incentivizing private sector investment and facilitating adaptation to higher carbon prices.

However, the IMF model assumes no financial and investment crises in capitalist production for the next 30 years! It projects average annual global growth of 3.3 per cent up to 2050. And yet it also reckons its ‘mitigation’ strategy would knock 1 per cent a year off that rate. On that basis, per capita real GDP growth would be barely above population growth in many countries of the Global South. The model does not really avoid the conflict between lives and livelihoods.

THE ‘DEGROWTH’ SOLUTION

Degrowth has become increasingly popular among many environmentalists and leftists. Some even call themselves “degrowth communists” (Spearing, 2021). Kohei Saito (2023) uses this term, and Jason Hickel (2020) —a prominent proponent of degrowth—defines it as follows: “The objective of degrowth is to scale down the material and energy throughput of the global economy, focusing on high-income nations with high levels of per-capita consumption.” The degrowth perspective questions why society is so obsessed with “growth” (as measured by GDP) and seeks to deconstruct the entire “ideology

of growth.” This “ideology of growth” is used by the capitalist class to argue that ever-increasing growth is necessary to overcome poverty and create jobs.

Giorgos Kallis, another major proponent of the movement, says that ‘degrowth envisions radically reducing the surplus’ and advocates so-called ‘self-limitations’ where there are ‘collective decisions to refrain from pursuing all that could be pursued’. Rather than the typical Malthusian ‘natural’ external limits, degrowth calls for a collective enforcement of limits and constraints.⁶

The target of degrowth, Kallis declares, is ‘not just capitalism, but also productivism’. Proponents of degrowth argue that any type of ‘economic growth is ecologically unsustainable – whether it is capitalist growth or socialist does not make a difference’. Kallis justifies this claim by arguing that if we did not change consumption levels in a post-carbon energy regime, then nothing would really change in terms of environmental destruction because ‘the manufacturing of renewable energies requires lots of earth materials. And the fact that they cost more than fossil fuels might have something to do with their lower energy returns and higher land requirements.’ Thus, degrowth does not really have an ecological theory of capitalist accumulation. For degrowth, any type of accumulation is bad.

But accumulation simply means reinvesting the surplus back into production to expand the means of production. The difference is that accumulation under socialism is guided by the workers themselves who collectively determine what and how much surplus to produce and how to use it. Under capitalism, accumulation happens for accumulation’s sake, to invest more and thus to make more profits without a plan and purely in the interests of private profit.

When workers are in control of the surplus, will we not develop and grow the productive forces to make life better and easier for ourselves and more sustainable for the earth and its inhabitants? Wouldn’t we especially grow green productive forces to build more (and better) schools, public transportation etc.? Shouldn’t socialists strive to repair the underdevelopment of imperialism by assisting in the development of productive forces in the formerly colonised world?

‘Yet for all its stinginess, capitalist production is thoroughly wasteful with human material, just as its way of distributing its products through trade, and its manner of competition, make it very wasteful of material resources, so that it loses for society what it gains for the individual capitalist’ (Marx).⁷ The wasteful and environmentally unsustainable consumption patterns of the working class are not produced by ‘personal’ choice but are system-induced. Every day, millions of workers in the US commute to work in single occupant vehicles not because we ‘choose’ to drive. It’s because public transportation is so unreliable (if it exists at all), jobs in the labor market are so unstable and temporary that few workers are actually able to live close to work, and the rents around major industries tend to be unaffordable for our class. Then there is planned obsolescence, such as when commodities like cell phones are produced to

⁶ Michael R. Bloomberg, ‘Climate Policy Factbook’, 20 July 2021, <https://about.bnef.com/blog/new-report-finds-g-20-member-countries-support-fossil-fuels-at-levels-untenable-to-achieve-paris-agreement-goals/>

⁷ William Nordhaus, <https://carbon-price.com/william-nordhaus/>

break every two years. When capitalism is overthrown and replaced with socialism, we can produce things that are 'built to last' because our aim is to satisfy society's needs and not private profit.

Jason Hickel argues that degrowth is not about reducing GDP.⁸ Rather, it is about reducing excess resource and energy throughput, while at the same time improving human well-being and social outcomes. Excess resource and energy use are being driven by rich nations, not poor nations. So rich nations need to reduce their resource and energy use. Hickel reckons that we could end global poverty and ensure flourishing lives for everyone on the planet (for ten billion people by the middle of the century), including universal health care and education, with 60 per cent less energy than we presently use (150 EJ, well within what is considered compatible with 1.5°C).

Capitalism is highly inefficient when it comes to meeting human needs; it produces so much, and yet leaves 60 per cent of the human population without access to even the most basic goods. Why? Because a huge portion of commodity production (and all the energy and materials it requires) is irrelevant to human well-being. In an actual degrowth scenario, the goal would be to scale down ecologically destructive and socially less necessary production (what some might call the exchange value part of the economy), while protecting and indeed even enhancing parts of the economy that are organised around human well-being and ecological regeneration (the use value part of the economy).

Who are the biggest emitters or consumers of carbon apart from the fossil fuel industry? It is the richest wealth and income earners in the 'Global North' who have excessive consumption and fly everywhere. It is the military (the biggest sector of carbon consumption). The waste of capitalist production and consumption in autos, aircraft and airlines, shipping, chemicals, bottled water, processed foods, unnecessary pharmaceuticals etc. is directly linked to carbon emissions. Harmful industrial processes like industrial agriculture, industrial fishing, logging, mining etc. are also major global heaters, while the banking industry operates to underwrite and promote all this carbon emission.

Would Marx be a 'degrowth communist' in the 21st century? According to Saito, there was a turning point in Marx's travel towards an 'ecological dimension' in his critique of capitalism. Saito reckons this is when he begins to use the term 'metabolism' and refines his understanding of the concept as the general metabolic tendency of capital. Saito argues that Marx progressively realises that capital's continuous expansion exploits not just labour, but also nature in the search for profit, leading to the destruction of the soil, deforestation and other such forms of the degradation of natural resources. Capital wants more and more value and, in particular, surplus value. That becomes the purpose of production and the metabolic harmony that existed between humans and nature before capitalism is broken. There is now a metabolic rift caused by capitalism.

⁸ Simon Dietz, James Rising, Thomas Stoerk and Gernot Wagner, 'Tipping Points in the Climate System and the Economics of Climate Change', https://thenextrecession.files.wordpress.com/2020/01/tippingpointsintheclimatesystemand_preview.pdf

But there is a debate about whether using the term ‘metabolic rift’ is useful because it suggests that at some time in the past before capitalism there was some metabolic balance or harmony between humans, on the one hand, and ‘nature’, on the other. Any emphasis on rifts or ruptures has the risk of assuming that nature is in harmony or in balance until capitalism disturbs it. But nature is never in balance, even without humans. It is always changing, evolving, with ‘punctuated equilibriums’ to use the term of Marxist paleontologist Stephen Jay Gould – such as the Cambrian explosion, with many species evolving as others go extinct⁹. The rule of the dinosaurs and their eventual extinction had nothing to do with humans (despite what the movies may depict). And humans have never been in a position to dictate conditions on the planet or with other species without repercussions. ‘Nature’ lays down the environment for humans and humans act on nature. To quote Marx: ‘Men make their own history, but they do not make it just as they please; they do not make it under circumstances chosen by themselves, but under circumstances directly encountered and inherited from the past.’

It’s true that Marx refers to the robbing of the soil by capitalist production. In *Capital*, Volume I, Chapter 15 on machinery Marx says: “Moreover, all progress in capitalist agriculture is a progress in the art, not only of robbing the worker, but of robbing the soil; all progress in increasingly the fertility of the soil for a given time is a progress towards ruining the more long-lasting sources of that fertility. The more a country proceeds from large-scale industry as the background of its development ... the more rapid is this process of destruction. Capitalist production, therefore, only develops the techniques and the degree of combination of the social process of production by simultaneously undermining the original sources of all wealth – the soil and the worker. “(Marx, 1995 [1887]). But is the ‘metabolic rift’ the “fundamental contradiction of capitalism”?

For Marx, capitalism was a system of “brutal exploitation” of labour power in production for profit, not one of robbery or dispossession. For Marx, agriculture under capitalism is a sector that exploits labour in the same way as industry. Marx rejected the Ricardian theory that the profitability of capital tended to fall because of diminishing returns in agriculture. Marx’s law of tendency of the rate of profit to fall depended on a rising “organic” composition of capital (the word “organic” perhaps taken from Liebig, as Saito suggests), where the material value of machinery and natural materials rises in cost relative to the exploitation of labour power. But contrary to Saito’s conclusion, Marx rejected Liebig’s soil exhaustion theory of the limits of capitalism and rejected the implied Malthusianism that population would outrun the availability of food and the necessities for human life.

De-growth in general as a solution to capitalism’s destruction of nature has become increasingly popular among many environmentalists and leftists. Jason Hickel, a prominent proponent of de-growth, defines it like this: ‘The objective of degrowth is to scale down the material and energy throughput of the global economy, focusing on high-income nations with high levels of per-capita consumption.’ There is

⁹ <https://www.amazon.co.uk/Marx-Anthropocene-Towards-Degrowth-Communism/dp/1108844154>

a big debate here – as expressed in a critique by ex-World Bank chief economist and expert on global inequality, Branco Milanovic.¹⁰ Milanovic argues that any proposal to redistribute income and wealth to the global South by stopping or even reducing accumulation and GDP growth in the rich countries is economically irrational and politically infeasible. Hickel responded by saying that Milanovic was misrepresenting the de-growth argument because he has a ‘blind faith’ in economic growth.¹¹

Suffice it to say that, under capitalism, accumulation happens for accumulation’s sake, to invest more and thus to make more profits without a plan and purely in the interests of private profit. When workers are in control of the surplus, will we not develop and grow the productive forces to make life better and easier for ourselves and more sustainable for the earth and its inhabitants? Wouldn’t we especially expand ‘green’ productive forces to build say, more (and better) schools, public transportation etc.? Shouldn’t socialists strive to repair the underdevelopment created by imperialism by assisting in the development of productive forces in the formerly colonised world? As Marx himself put it: “Yet for all its stinginess, capitalist production is thoroughly wasteful with human material, just as its way of distributing its products through trade, and its manner of competition, make it very wasteful of material resources, so that it loses for society what it gains for the individual capitalist.” The wasteful and environmentally unsustainable consumption patterns of the working class are not produced by ‘personal’ choice but are system-induced.

But the proponents of de-growth seem to argue that there are absolute ‘planetary limits’ and a fixed ‘carrying capacity’ that cannot be surpassed by humans if we want to avoid ecological collapse. Here there’s no distinction between socially produced limits and natural limits. But degrading nature, exterminating species and threatening to destroy the atmosphere of the planet are the result of the contradictions to be found in the capitalist mode of production itself, not in some existential threat from outside the system. Increased rates of pollution and environmental degradation occur because capitalists pursue profits at the expense of the environment, not because of the technologies themselves. Socialists should distinguish between the instruments of production and their use under capitalism.

In a socialist de-growth scenario, the goal would be to scale down ecologically destructive and socially less necessary production (what some might call the exchange value part of the economy), while protecting and indeed even enhancing parts of the economy that are organised around human well-being and ecological regeneration (the use value part of the economy).

Saito is right that ending the dialectical contradiction between humans and nature and bringing about some level of harmony and ecological balance would only be possible with the abolition of the capitalist mode of production. As Engels (1896) said, “To carry out this control requires something more

¹⁰ Jason Hickel, ‘Degrowth: A Theory of Radical Abundance’, *Real-World Economics Review*, 87(19), 2019, pp. 54–68.

¹¹ Giorgos Kallis, *In Defense of Degrowth: Opinions and Manifestos*, 2018. UK: Uneven Earth Press, pp. 22, 21.

than mere *knowledge*.” Science is not enough. “*It requires a complete revolution in our hitherto existing mode of production, and with it of our whole contemporary social order*” (ibid.)¹²

The solution to these multifaceted and compounding environmental crises is not ‘degrowth’, but rather, as Mandel formulates it, ‘controlled and planned growth’: ‘Such growth would need to be in the service of clearly defined priorities that have nothing to do with the demands of private profit ... rationally controlled by human beings ... The choice for “zero growth” is clearly an inhuman choice.’¹³ Two-thirds of humanity still lives below the subsistence minimum. If growth is halted, it means that the underdeveloped countries are condemned to remain stuck in the swamp of poverty, constantly on the brink of famine. ‘Planned growth means ‘controlled growth’, rationally controlled by human beings. This presupposes socialism: such growth cannot be achieved unless the “associated producers” take control of production and use it for their own interests, instead of being slaves to “blind economic laws” or “technological compulsion”.’

A global plan could steer investments into things society does need, like renewable energy, organic farming, public transportation, public water systems, ecological remediation, public health, quality schools and other currently unmet needs. And it could equalise development the world over by shifting resources out of useless and harmful production in the North and into developing the South, building basic infrastructure, sanitation systems, public schools, health care. At the same time, a global plan could aim to provide equivalent jobs for workers displaced by the retrenchment or closure of unnecessary or harmful industries. And a global plan could start to utilise new technology in food production. Damaging and cruel livestock farming could be phased out with plant-based ‘meat’ production and organic farming.

PANDEMICS: NATURE STRIKES BACK

There is now firm evidence of a strong link between environmental destruction and the increased emergence of deadly new diseases such as COVID-19. Indeed, increasing numbers of deadly new pandemics will afflict the planet if levels of deforestation and biodiversity loss continue at their current catastrophic rates. Almost a third of all emerging diseases have originated through the process of land use change. As a result, five or six new epidemics a year could soon affect Earth’s population. ‘There are now a whole raft of activities – illegal logging, clearing and mining – with associated international trades in bushmeat and exotic pets that have created this crisis’, says Stuart Pimm, professor of conservation at Duke University. ‘In the case of Covid-19, it has cost the world trillions of dollars and already killed almost a million people, so clearly urgent action is needed.’¹⁴

It is estimated that tens of millions of hectares of rainforest and other wild environments are being bulldozed every year to cultivate palm trees, farm cattle, extract oil and provide access to mines

¹² Marx, *Capital Vol 3*, New York: Penguin, 1991, p. 180.

¹³ Jason Hickel, *Less Is More: How Degrowth Will Save the World*, February 2021. Windmill Press.

¹⁴ Stephen Jay Gould, <https://www.hup.harvard.edu/catalog.php?isbn=9780674024441>

and mineral deposits. This leads to the widespread destruction of vegetation and wildlife that are hosts to countless species of viruses and bacteria, most unknown to science. Those microbes can then accidentally infect new hosts, such as humans and domestic livestock. Such events are known as spillovers. Crucially, if viruses thrive in their new human hosts, they can infect other individuals. This is known as transmission and the result can be a new, emerging disease. Zoologist David Redding, of University College London explains what happens in places where trees are being cleared, mosaics of fields, created around farms, appear in the landscape interspersed with parcels of old forest.¹⁵ This increases the interface between the wild and the cultivated. Bats, rodents and other pests carrying strange new viruses come from surviving clumps of forests and infect farm animals – who then pass on these infections to humans.’

The blame for the 2019-nCoV outbreak is supposedly open markets for exotic animals in Wuhan, but it could also be due to the industrial farming of hogs across China. Or even a leak from a lab. But whatever the specific source of COVID-19, there appears to be an underlying structural cause: the pressure of the law of value through industrial farming and the commodification of natural resources. Commoditising the forest may have lowered the eco-systemic threshold to such a point that no emergency intervention can drive any outbreak low enough to burn out. For example, in relation to the Ebola outbreak in the Congo (which is also happening again). ’

Deforestation and intensive agriculture may strip out traditional agroforestry’s stochastic friction, which typically keeps the virus from lining up enough transmission.’ And anyway, ’even the wildest subsistence species are being roped into ag value chains: among them ostriches, porcupine, crocodiles, fruit bats, and the palm civet, whose partially digested berries now supply the world’s most expensive coffee bean. Some wild species are making it onto forks before they are even scientifically identified, including one new short-nosed dogfish found in a Taiwanese market.’ All are increasingly treated as food commodities. As nature is stripped place-by-place, species-by-species, what’s left over becomes that much more valuable. Spreading factory farms meanwhile may force increasingly corporatised wild foods companies to trawl deeper into the forest, increasing the likelihood of picking up a new pathogen, while reducing the kind of environmental complexity with which the forest disrupts transmission chains. It is very likely that there will be more and possibly even deadlier pathogens ahead.

The capitalist economy is based on the private sector and the public sector operates as a support of the former. The private sector works for profit, so it engages into activities procuring profits and abstains and/or withdraws from non-profitable activities. Furthermore, the capitalist economy in order to surpass health and economic crises needs to mobilise primarily the private sector (as this is the dominant sector of the economy). This requires using the public sector in order to subsidise the private

¹⁵ <http://glineq.blogspot.com/2017/11/the-illusion-of-degrowth-in-poor-and.html>

sector by giving to the latter sufficiently profitable incentives. So actions are slow and fuzzy in a capitalist economy.

On the contrary, the planned economy would operate on the basis of economic planning and its dominant sector is the public sector. Thus, it could have non-surplus producing activities and even loss-making activities if this were decided by social planning. Loss-making activities would also be viable since they would be designated as such by social planning and would be structurally subsidised by the other economic activities. Additionally, when faced with an urgent contingency, it could mobilise resources on time and in sufficient numbers. This would be a direct mechanism operated by the planning authority. Hence, it is certain that (a) it would take place and (b) be punctual. This holds for socialism where the private sector and a large public sector co-exist and if the latter is planned to produce not for profit but for the satisfaction of human needs. In a capitalist economy, the planned sector is subordinated to the law of values

For these reasons a planned economy is better equipped to face contingencies like a health crisis. As President Donald Trump put it for the US economy, it is not built to be shut down. The fundamental reason is that capitalist enterprises operate for profit, or else they have no reason to exist. Consequently, they cannot operate at a low cost of production level and moreover with losses. Unless someone else subsidises them to keep operating, they are going to close. On the contrary, a socialist economy can survive without achieving surplus (profits) by simply covering production costs. For the same reasons it can survive longer even with economic losses.

Economic crises start with a supply deficiency not a demand one and the COVID pandemic slump was no different. It was production, trade and investment that was first stopped when shops, schools, businesses were locked down in order to contain the pandemic. Of course, then if people cannot work and businesses cannot sell, then incomes drop and spending collapses and that produces a ‘demand shock’. Indeed, it is the way with all capitalist crises: they start with a contraction of supply (due to a profitability fall) and end up with a fall in consumption – not vice versa.

Around 2.7 billion workers worldwide were affected by full or partial lockdown measures to combat the COVID-19 pandemic – around 81 per cent of the world’s 3.3 billion workforce. The world economy had seen nothing like this before. Cyclically, the world economy was already ‘on the verge of falling into a new cyclical crisis because of the imbalances accumulated after the 2007–09 cyclical crisis.’ Structurally, the major capitalist economies were not equipped to handle the pandemic because they had run down the health, medical and public services needed to cope. And systemically, the pandemic had shown that capitalism’s drive for profit over need leads to recurring crises in humanity, the climate and nature.

Before the COVID-19 pandemic engulfed the world, the big pharmaceutical companies did little investment in vaccines for global diseases and viruses. It was just not profitable. Of the 18 largest US pharmaceutical companies, 15 had totally abandoned the field. Heart medicines, addictive tranquilisers

and treatments for male impotence were profit leaders, not defences against hospital infections, emergent diseases and traditional tropical killers. A universal vaccine for influenza – that is to say, a vaccine that targets the immutable parts of the virus's surface proteins – has been a possibility for decades, but never deemed profitable enough to be a priority. So, every year, we get vaccines that are only 50 per cent efficient.

The impact of the pandemic slump was not equal. While hundreds of millions lost their jobs, businesses and incomes and been forced to go to work; others stayed at home on full pay, saved money and became cash-rich. And a tiny elite made a 'killing' on the financial markets, fuelled by a huge injection of credit by central banks and direct financial support by governments, mainly in the richer 'global north'. In the year of the pandemic, billionaires' wealth soared by 27.5 per cent while 131 million people were pushed into poverty due to COVID-19.

IMF chief Georgieva reported that by the end of 2022, cumulative per capita income will be 13 per cent below pre-crisis projections in advanced economies – compared with 18 per cent for low-income countries and 22 per cent for emerging and developing countries excluding China. 'Put another way, the convergence between countries can no longer be taken for granted. Before the crisis, we forecast that income gaps between advanced economies and 110 emerging and developing countries would narrow over 2020–22. But we now estimate that only 52 economies will be catching up during that period, while 58 are set to fall behind. ... There is a major risk that most developing countries will languish for years to come.'

The lesson of the coronavirus vaccine response is that a few billion dollars a year spent on additional basic research could have prevented a thousand times as much loss in death, illness and economic destruction. What better lesson can we learn from the COVID vaccine experience than that the multinational pharma companies should be publicly owned so that research and development can be directed to meet the health and medical needs of people not the profits of these companies? Sure, state-owned companies can also work for the interests of capital and profits, but within a democratically planned economy, they would work for social needs.

Within a planned global economy, it would be possible to set up a programme to monitor wildlife, reduce spillovers, end the wildlife meat trade and reduce deforestation. Such a scheme could cost no more than \$20 billion a year, a price tag that is dwarfed by the cost of the COVID-19 pandemic, which has wiped trillions of dollars from national economies round the world. Spending of about \$260 billion over ten years could substantially reduce the risks of another pandemic on the scale of the coronavirus outbreak, which is just 2 per cent of the estimated \$11.5 trillion costs of COVID-19 to the world economy. Furthermore, the spending on wildlife and forest protection would be almost cancelled out by another benefit of the action: cutting the CO₂ emissions driving the climate crisis.

The New Nature Economy project, published by the World Economic Forum (WEF), says:

We are reaching irreversible tipping points for nature and climate. If recovery efforts do not address the looming planetary crises, a critical window of opportunity to avoid their worst impact will be irreversibly lost. And yet the cost of action to deal with these impending disasters would be not much more than the recent fiscal spending by governments to save jobs and businesses from the COVID-19 pandemic.¹⁶

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Índice Remissivo

A

ADO 26, 238, 262
Amazônia, 6, 7, 62, 63, 67, 68, 69, 70, 71, 72,
73, 74, 75, 144, 152, 249, 250, 251, 252, 255,
256, 257, 258, 259, 260

B

Brasil, 31, 32, 33, 34, 36, 37, 38, 41, 43, 45, 46,
47, 49, 52, 54, 56, 238, 239, 240, 241, 242,
243, 244, 245, 247

C

Covid-19, 157, 169, 172, 176
Criminalização, 244

E

Ecosocialismo, 192, 205
Estados Unidos, 16, 17, 18, 19, 20, 21, 23, 24,
25, 26, 27, 28, 29

F

Facções, 70, 74
Fórum Social da Pan-Amazônia, 179
FOSPA, 179, 181, 182, 183, 184, 185, 188, 189,
190, 191

G

Geografia, 62, 67

H

Homofobia, 245

M

Mineração, 126, 127, 251, 252, 258

N

Neoliberalismo, 181

S

Saúde, 6, 7, 8, 9, 13

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