

The Ecological State

Erald Kolasi

The central problem of economics is scarcity, or at least that is how the story is told. The basic argument is that we have infinite desires but limited resources, and because we cannot have everything we want, we must necessarily devise a system to distribute goods and resources.¹ Enter the efficient market economy, with its prices and wages set by the magical forces of supply and demand, the supposed gatekeepers of the warehouse of economic nirvana. There is a kernel of inadvertent truth behind this narrative. Natural limits certainly impose absolute scarcities that are impossible to overcome. There is only so much uranium in the solar system, for example. And even if we synthesise certain substances by using other substances, the total amount we can produce will still be limited by the availability of the raw materials going into the production process. We cannot beat energy conservation.



Although natural constraints on supply are important, most economic scarcities that rule our lives are actually social and artificial. Supply and demand are not natural forces drifting through the air; they are contrived realities established by an interactive social environment involving governments, corporations, institutions, and classes. Supply and demand cycles are social constructs designed to answer a basic question: Who gets what? Those with social and institutional power decide how they want to distribute money, labor, and resources, and those without must navigate the resulting

¹ ↪ For a typical version of this argument, see William A. McEachern, *Macroeconomics: A Contemporary Introduction* (Boston: Cengage Learning, 2008), 2–3. One of the many false assumptions here is the idea that all people have unlimited desires. It is a purely ideological construct that has no support in historical and anthropological studies. Capitalism needs people to keep consuming without end, and thus capitalists want people to believe that every level of consumption is a barrier that must be surpassed. Needless to say, this is not how most people throughout history understood their world.

Supply and demand are not natural forces; they are established artificial realities. Who gets what? Those who have social and institutional power decide how they want to distribute money, labour and resources, and those who do not have power must navigate the resulting constraints and obstacles placed in front of them, or challenge the system.

constraints and roadblocks that have been thrown in front of them, or they can challenge the system and remove some, if not all, of the roadblocks. Especially under capitalism, artificial scarcity is an important social reality that torments the lives of billions around the world, but scarcity as a natural limiting factor in economic activity is not as fundamental as we might like to think. In that case, what is?

Let us begin answering this question by remembering that human economies are dynamical systems powered by energy flows, and their successful operation requires the presence of stability in the face of an uncertain environment. If ecological instabilities make it difficult for an economy to keep collecting energy, then that economy is susceptible to collapse even though plenty of energy remains available for consumption. The coronavirus pandemic has painfully

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revealed this fundamental truth once again. The global economy is experiencing the worst cataclysm since the Second World War not because we are running out of stuff, but because chaotic feedback loops between nature and society have the power to severely destabilise cycles of economic activity. As industrialised agriculture keeps expanding into pristine habitats,

it is dramatically increasing the odds of viral transmission from wild animals to human beings.² As we pump more greenhouse gases into the atmosphere, the planet keeps getting warmer and nearly all living organisms are feeling the impact. There are unavoidable ecological consequences associated with every kind of economic activity, but the energy-intensive modes of capitalism have been uniquely harmful.

The central problem of economics is not scarcity, but stability in the flow of goods and resources, and especially the stability of the ecozones that act as an economy's primary energy reservoir. The primary goal of any economic system should be to ensure stability and sustainability in the face of nature's external perturbations, which have always played a dominant role in the development of human history. Before going further, we should have a concrete sense about what

The problem is not scarcity, but the stability of the flow of goods and resources, and the stability of the ecozones that act as the primary energy reservoir of an economy. The aim of any economic system should be to ensure stability and sustainability in the face of external disturbances from nature, which have always played a dominant role in the development of humankind.

stability means on a theoretical and empirical level. We cannot pursue stability as a strategy unless we know what we are trying to stabilise, and why it is worth stabilising in the first place. Stability will be understood as something like a dynamic equilibrium, an acceptable range of energy consumption for human civilisation that allows it to function without transgressing critical planetary boundaries. People are

complex, to say nothing of entire societies. No civilisation would be able to maintain a constant rate of energy consumption at all times, which is why viewing stability as a constrained dynamic equilibrium offers civilisation more balance and flexibility as it tries to coexist with the natural world.

² ↪ See Rob Wallace, *Big Farms Make Big Flu* (New York: Monthly Review Press, 2016).

Economies absorb energy from the natural world and then convert a portion of that energy consumption to power their cycles of production, distribution, and consumption. An ecological system needs to prioritise the stability of the energy flows that sustain these productive economic cycles. This means primarily stabilising an economy's aggregate rates of energy conversion and consumption. The fraction of total consumption (throughput) that a civilisation converts to useful forms of energy is the aggregate energy efficiency. In a previous article for *Monthly Review*, I argued that aggregate efficiencies for economic systems across history generally change at very slow rates, given the constraints on technological development and the economic incentives of each system.³ Because aggregate efficiency does not change much as economies consume more energy, much of that extra energy consumption is lost as waste and dissipation to the environment. In the last two centuries of capitalist development, these energy losses have profoundly reorganised our planet's entire ecosphere, to the point where intensifying ecological disturbances have become a major threat to the stability of the energy flows that power our economic systems.

Moving past capitalism will require lower rates of energy consumption from the advanced economies of the

Moving past capitalism will require the world's advanced economies to reduce their rates of energy consumption, but also a tectonic shift in the understanding of the purpose of the economy from the current obsession with growth to a greater focus on energy stability. But how are we to maintain stability with the current economic structures of capitalism? The answer is that we cannot. We need entirely new social and political systems.

industrialised world, but also a tectonic shift in the way we understand the purpose of economic activity, from the current obsession on growth (measured currently in terms of gross domestic product) to a greater focus on energy stability. But how are we supposed to maintain stability with the current economic structures of capitalism? The simple answer is that we cannot. We need entirely new social and political systems that align with the energetic constraints of our stability program. The only realistic way of providing this kind of macroenergetic stability in the

near future is through the substantial involvement of the state in the control and administration of economic resources. This is not necessarily an obvious claim, and is worth explaining to some extent.

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The state is the only social institution powerful enough to curb and restrain the energy-intensive economic modes of capitalism. But it is not obvious how it should do so. Setting the wrong framework could lead to further ecological disasters. This is the central question addressed in this article: What should the role of the state be in an ecological society?

resources for their economic gain.⁴ Capitalism depends on ecological degradation because it needs to rapidly extract vast quantities of natural resources, manufacture the corresponding products, and then commodify the resulting surplus in global exchange markets.⁵ Capitalists cannot quickly dial back their energy-intensive methods of production and distribution without threatening their profit rates. Because this nexus

of corruption cannot be expected to clean its own filth, we must turn toward something that can. The state is the only social institution powerful enough to curb and constrain the energy-intensive economic modes of capitalism. But it is not immediately obvious how it should go about achieving this. Setting up the wrong framework could still produce additional ecological disasters. This is the central question addressed in this article: What should the role of the state be

³ ↪ Erald Kolasi, "The Physics of Capitalism" — The Jus Semper Global Alliance, April 2021.

⁴ ↪ For the impact of corporate activity on energy extraction, see Paul Griffin, *The Carbon Database Report* (London: CDP, 2017).

⁵ ↪ See John Bellamy Foster, *Marx's Ecology* (New York: Monthly Review Press, 2000).

in an ecological society? We will begin with a short review and critique of the state's economic role under the dominant liberal paradigm.

The State in Liberal Economic Theory: Review and Critique

Liberal economic theory regards state intervention in the economy as a harmful distortion of the market's apparently

Liberal economic theory sees state intervention as a distortion of the market's inevitable path to general equilibrium, that magical place where it satisfies all demands, the fantasyland where aggregate supply equals aggregate demand.

inevitable path toward long-run general equilibrium, that magical place where the market satisfies all requests for the right price, the fantasyland where aggregate supply equals aggregate demand. The neoclassical synthesis established at the end of the twentieth century maintains that governments can occasionally intervene to fix temporary problems caused

by market activity, but that markets will eventually get it right “in the long run”—a term of art that economists never specifically define. But even when adopting the myopic and idealised assumptions of neoclassical theory, results from the 1970s showed that “general equilibrium” is neither stable nor unique.⁶ An economy that reaches such a state would fall out of it, and the presence of multiple equilibria leaves open the problem of which one we should aim for. This objection still leaves out several methodological problems that make it virtually impossible to accurately measure aggregate supply and demand, so one can never really know if an economic system has actually reached general equilibrium, even after allowing for its existence.

But there is an even bigger problem with the liberal conception of the state as the impartial guardian of private property rights, the noble referee of the private sector's mistakes. The state and the accumulation process under capitalism are profoundly intertwined. The state does not merely “protect” private property; it can also actively create it. In the 1930s, at the height of the Great Depression, the U.S. government banned companies from manipulating their stock prices, which then caused most corporations to stop buying their own stocks as a way of avoiding charges of manipulation.⁷ But in 1982, after the collapse of the New Deal coalition allowed Ronald Reagan to obtain power, the government kissed goodbye to the lessons of the past and eliminated or substantially revised the prior regulations. The predictable result was that companies started pouring vast sums of money into their stocks, sending valuations sharply higher with little regard for actual performance or economic fundamentals.⁸ In the 1990s, the Bill Clinton administration issued new tax rules about CEO salaries that wound up incentivising companies to pay their executives through lucrative stock packages.⁹ Through these and other actions, the state encouraged massive wealth redistribution toward capitalists and away from workers. Once the apologists of capital took over the state, there was little doubt about who would benefit. Another well-known example of the state boosting capitalist power comes from volume 1 of Karl Marx's *Capital*, in

⁶ ↪ In the 1970s, the economists Hugo Sonnenschein, Rolf Mantel, and Gérard Debreu published a series of papers concerning the uniqueness and stability of general equilibrium in neoclassical economics. Their work came in the context of earlier results from Debreu and the U.S. economist Kenneth Arrow showing that general equilibrium could exist, but only under highly idealized assumptions that apply absolutely nowhere in the real world. The results of Sonnenschein, Mantel, and Debreu collectively became known as the “SMD theorem,” after their last names. The SMD theorem is a highly negative and deflationary result for neoclassical theory because it shows that even if you know the equilibrium prices that prevail in general equilibrium, that information cannot tell you anything about the underlying economy that actually produced those prices. In effect, there are many “microscopic configurations” that can produce the same state of general equilibrium. Later results from Alan Kirman, Donald Saari, Ivar Ekeland, Donald Brown, and Chris Shannon have only strengthened and expanded the original conclusion. For an excellent overview of the SMD theorem and subsequent debates, see S. Abu Turab Rizvi, “The Sonnenschein-Mantel-Debreu Results after Thirty Years,” *History of Political Economy* 38 (2006): 228–45. Another excellent review of the failures of the general equilibrium program can be found in Frank Ackerman, “Still Dead After All These Years: Interpreting the Failure of General Equilibrium Theory,” *Journal of Economic Methodology* 9, no. 2 (2002): 119–39.

⁷ ↪ For an excellent introduction to stock buybacks, see Emily Stewart, “Stock Buybacks, Explained,” *Vox*, August 5, 2018.

⁸ ↪ See Lenore Palladino, *Stock Buybacks: Driving a High-Profit, Low-Wage Economy* (New York: Roosevelt Institute, 2018). She finds that, in the twenty-first century, U.S. corporations have used an astonishing 94 percent of their profits for stock buybacks and dividend payments to shareholders.

⁹ ↪ Sarah Anderson, “The Failure of Bill Clinton's CEO Pay Reform,” *Politico*, August 31, 2016.

which he recognised the importance of expanding national debt to the process of wealth accumulation.¹⁰ In particular, the explosion of war debt in the eighteenth century helped unleash the financial floodgates in many European economies.

These examples demonstrate that the state provides critical top-down constraints on economic activity, and thus exerts

The exercise of state power cannot be detached from the class dynamics that constrain the distribution of labour and wealth. The state does not act in a vacuum; its actions are conditioned by various kinds of social and class struggles. The state is a raucous battleground between competing economic classes. The economy cannot be understood apart from the collective actions of the state.

enormous amounts of influence over the cycles of production and distribution. The concept of a “free market” is largely an abstraction because virtually all governments have a strong impact on the dynamics of market activity. Governments decide what counts and does not count as property and enforce property rights. Governments define the rules governing market operations. Governments can even create new global markets for domestic companies through warfare and other forms of strategic competition, like sanctions, embargoes, and blockades. Trade and commerce cannot be decoupled from state power. Likewise, the

exercise of state power cannot be decoupled from the class dynamics that constrain the distribution of labor and wealth. The state does not act in a vacuum; its actions are shaped by various kinds of social and class struggles. The state is a thunderous battleground among competing economic classes and social groups. Economics, especially in the modern world, cannot be understood separately from the collective actions of the state.

The coronavirus pandemic has provided another powerful and historic example for understanding the state’s critical

The pandemic has provided another powerful example. The US government pumped trillions of dollars into the economy to save private capital. While private capital laid off millions of workers to save its profits and eagerly accepted the dollars the government pumped in.

economic role. In 2020, the U.S. federal government pumped the economy with trillions of dollars in a desperate bid to save private capital from a systemic breakdown.¹¹ Meanwhile, capitalists did not hesitate to fire millions of workers as a way of salvaging their profits, all while eagerly accepting the trillions of dollars the government injected into corporate balance sheets. This is the second time in the last two decades that capitalists

have relied on massive interventions from their governments in order to avoid total collapse. How are workers faring through this crisis? It depends on where they live.

In many European countries, governments took several ambitious steps to prevent economic catastrophe, such as

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deciding to finance most of the wages for their private-sector employees. Although European nations experienced small increases in unemployment as a result of the crisis, their figures paled in comparison to the jaw-dropping numbers that emerged from the United States last year.¹² The federalised system of the United States produced a patchwork of different responses to the pandemic; this incoherent and uncoordinated strategy is partly to blame

¹⁰ ↩ Karl Marx, *Capital*, vol. 1 (London: Penguin Classics, 1976), 919.

¹¹ ↩ See Heather Long, “The Federal Reserve Has Pumped \$2.3 Trillion into the U.S. Economy. It’s Just Getting Started,” *Washington Post*, April 29, 2020.

¹² ↩ Michael Birnbaum, “Coronavirus Hits European Economies but Governments Help Shield Workers,” *Washington Post*, April 30, 2020.

for the pandemic's rapid and intense proliferation throughout the country, even as some societies around the world have returned back to normal after sharp declines in the number of new cases. U.S. journalist George Packer infamously called his country a "failed state" for its botched response.¹³ On the financial front, the U.S. government provided money to finance limited unemployment benefits through two stimulus bills, but many workers have had a hard time accessing the benefits because of how certain states run the program.¹⁴ Millions have slipped into poverty as a result of this and other social failures. Throughout this crisis, the people of the United States have received a painful reminder that the distribution of economic resources, including jobs, is largely a product of social policy, not the preordained outcome of impersonal economic laws waltzing their way through history.

Nationalisation and Efficiency

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legitimate and, when necessary, reinforce their continued plundering of society. And there is nothing that terrifies the reigning neoliberal orthodoxy more than the spectre of nationalisation, the transfer of assets from private to public ownership. In the last few decades, many Western nations have

sold a substantial portion of their public assets as part of a larger political power shift away from labor and toward private capital. These changes may have enriched a few corrupt plutocrats and worsened the lives of millions of people, but they have not altered the strategic and structural importance of the state, as Western capitalism seems to be on the verge of collapse about once a decade unless the state intervenes to save the system.

When liberal and conservative economists criticise nationalisation, they are predominantly, though not exclusively,

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obsessing over the concept of so-called efficiency. This nebulous concept does not have a universally accepted definition, and different research studies focus on varying aspects of the term. For dominant economic groups, the main focus is on lowering production costs as one possible method of boosting profitability. In general, any result that boosts profits is treated as efficient. For many economists, efficiency has more to do with the "optimal"

allocation of resources, such that no new allocation can occur without hurting someone else (so-called Pareto optimality), a criterion designed to favor the corrupt status quo, in effect constituting a right to inequality.

Antinationalisation arguments based on the idea of market efficiency have an extensive history. In 1920, the Austrian economist Ludwig von Mises presented an argument against certain forms of socialism that became known as the "calculation problem."¹⁵ Mises argued that prices act like signals that tell us about supply and demand for labor and resources. A central board of public planners could never know enough about the fine-grained details of the economy, like how many fish this restaurant needs or how many shingles are going on that roof, to send the right signals to various consumers and producers. Only decentralised networks in which prices are set between individuals and corporations through mutual consent can offer an ideal allocation of resources.

¹³ ↪ George Packer, "[We Are Living in a Failed State](#)," *Atlantic* (June 2020).

¹⁴ ↪ Coral Murphy, "[Part-Time Workers Finding Coronavirus Unemployment Benefits Hard to Come By](#)," *USA Today*, April 17, 2020.

¹⁵ ↪ See Ludwig von Mises, *Economic Calculation in the Socialist Commonwealth* (Auburn: Ludwig von Mises Institute, 2014).

There are many possible refutations to the calculation problem, but the easiest is to point out examples of complex civilisations that efficiently allocated resources without using prices at all. Andean civilisations in South America, such as the Tiwanaku and Inca, developed complex states and empires without the corresponding rise of a large financial class. The state controlled the distribution of resources, handing out food and equipment as necessary, and people usually paid taxes to the government in the form of labor.¹⁶ Based on anthropological data, these systems thrived for centuries and they appear to have worked very efficiently, in the sense that they consistently avoided extreme resource shortages.

Leaving ancient history aside, markets under capitalism have routinely produced oligopolies and monopolies, creating many inefficiencies and externalities along the way. In other words, capitalism itself has a tendency to centralize economic planning in the hands of a few powerful corporations, which then control the distribution of resources for other individuals and corporations. Contemporary examples would include the likes of Amazon and Walmart, both of which establish prices through central planning for millions, or perhaps billions, of different commodities.¹⁷ Mises was wrong to view prices as innocent markers of supply and demand, as impartial signals about the physical state of the economy. Prices function more like symbolic quantifiers of social power, as mediated by class struggles, monopolies and oligopolies, and institutional rivalries.¹⁸ Capitalists price their commodities to beat out the profit rates of their competitors, to seize control over new markets against established rivals, and to extract profits from their hard-working labor force. Capitalists are not that interested in efficiency. They are interested in controlling the social distribution and utilisation of economic resources. More specifically, they are interested in augmenting their power by trying to organise society on their own terms, and that process includes pressuring governments and workers to accept their demands through a wide array of threats and coercive actions.

On the empirical side of things, global studies on the relative efficiency of nationalisation compared to privatisation have

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yielded mixed results. A major study of the British privatisation wave in the 1980s revealed no systematic evidence that private corporations were more efficient than the public companies they had replaced. The authors concluded that "it is difficult to sustain unequivocally the hypothesis that private ownership is preferable to nationalisation on efficiency grounds."¹⁹ Another major study about the privatisation of Indian banks concluded

that the public banks had higher productive efficiency than the private ones.²⁰ Other studies have offered more mixed results.²¹

Suppose we were to grant the questionable claim that the private sector is more "efficient" at allocating resources, primarily by keeping costs down, than the government. So what? How does this show that higher efficiency is something

¹⁶ ↪ For a concise description of the Inca imperial economy, see Gordon Francis McEwan, *The Incas: New Perspectives* (New York: W. W. Norton, 2008), 87–88.

¹⁷ ↪ See Leigh Phillips, *The People's Republic of Walmart* (New York: Verso, 2019).

¹⁸ ↪ See Jonathan Nitzan and Shimshon Bichler, *Capital as Power* (Abingdon: Routledge, 2009).

¹⁹ ↪ Stephen Martin and David Parker, "Privatization and Economic Performance throughout the UK Business Cycle," *Managerial and Decision Economics* 16 (1995): 225–37.

²⁰ ↪ Arunava Bhattacharyya, C. A. K. Lovell, and Pankaj Sahay, "The Impact of Liberalization on the Productive Efficiency of Indian Commercial Banks," *European Journal of Operational Research* 98 (1997): 332–45.

²¹ ↪ For example, see Sergei Guriev, Anton Kolotilin, and Konstantin Sonin, "Determinants of Nationalization in the Oil Sector: A Theory and Evidence from Panel Data," *Journal of Law, Economics, and Organization* 27, no. 2 (2011): 301–23.

Suppose we were to grant the questionable claim that the private sector is more “efficient”, by keeping costs down, than the government. So what? How does this show that higher efficiency is something worth achieving more than job security, poverty alleviation, and macroeconomic stability?

worth achieving more than other desirable aspects of economic activity, such as job security, poverty alleviation, and macroeconomic stability? It does not, at all. In other words, there are positive aspects associated with greater levels of nationalisation that we as a society could decide are worth more than the negative aspects, such as a slight decline in relative “efficiency.” Here it should also be

noted that greater efficiency in the production of such “goods” as luxury mansions and gas-guzzling SUVs may in fact be detrimental to human welfare as a whole. The “efficiency” argument against nationalisation is thus a total waste of time, and especially so from the perspective of an ecological system, which needs the state to have some direct control over the levers of production and distribution as a way of modulating the economy’s energy flows.

The Past and Present of Nationalisation

Before arguing about what governments should be owning or controlling, it is worth reviewing what many of them are already doing all over the world. In the United States, public control over vital social services still persists in unlikely places. Nebraska enforces direct public control over its electric utility companies, which are governed by “public power districts.” North Dakota has a state-owned bank with billions of dollars in assets. Worldwide, governments either control or operate numerous major businesses, including airlines, banks, and oil companies. Finland’s government owns Finnair, the country’s largest carrier. Norway’s government owns Equinor, one of the largest petroleum companies in the world. Governments are actually dominant players in the oil sector, as with Saudi Arabia’s Aramco, China’s Sinopec, and Russia’s Rosneft. Aramco has been recognised as the most profitable company in the world for many years over the last two decades.²² During the previous decade, the biggest commercial bank in the world has been the Industrial and Commercial Bank of China, which is also state owned.²³

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the shift toward sustainable human development as a mark of social success. It is certainly true that many state-owned companies in the past have been operated with great negligence and incompetence, but the same is true for many private companies as well. How many zombie corporations are kept around by venture capitalists on the fringe promise that they might deliver something in the future, even

though they are currently in shambles? How many, like Enron and Theranos, temporarily thrived because of blatant fraud and deceitful behaviour? Not only can state companies compete and succeed, they can also provide more stability and certainty to millions. State companies do not have to survive by obtaining profits because the government can keep financing them, including through taxation, borrowing, and various forms of monetisation, such as printing money. They offer the kind of longevity and job security that private corporations simply cannot.

The analysis thus far has ignored something important: history and the geopolitical order. The successes and failures of nationalisation programs cannot be understood separately from the power dynamics of the global economy. From Iran to Guatemala, many nations challenged the capitalist order in the twentieth century by trying to socialise and democratise

²² ↪ Stanley Reed, “Saudi Aramco Is World’s Most Profitable Company, Beating Apple by Far,” *New York Times*, April 1, 2019.

²³ ↪ Cheng Leng and Engen Tham, “China’s ICBC, World’s Largest Bank, Sees Best Third-Quarter Profit Rise in Five Years,” *Reuters*, October 25, 2019.

The successes and failures of nationalisation cannot be understood apart from the power of the global economy. Many nations challenged the capitalist order in the 20th century by attempting to socialise and democratise the ownership of natural resources. But the central bloc of the world system refused.

the ownership of natural resources. But the core bloc of the global system would have none of it. Because U.S. and European companies were in danger of losing their hefty profits from these nationalisation programs, Western powers almost always responded by trying to overthrow the local governments, either through coups and outright wars or by imposing sanctions intended to destabilise the

defiant country. We simply do not know how scores of nationalisation programs would have turned out because they were squashed before having a chance to even get off the ground.

The Iranian example is particularly instructive. Before the 1950s, the production and distribution of Iranian oil was controlled by the Anglo-Iranian Oil Company, in which the British government had a majority stake. Rising popular anger about the unfair distribution of profits prompted the Iranian government to nationalise the Anglo-Iranian Oil Company in 1951.²⁴ The move had many unintended consequences. Britain and other Western countries responded with severe sanctions that made it virtually impossible for Iran to export most of its oil. Iran also lost access to its financial reserves held in Western banks. With the economy reeling and internal political divisions intensifying, the government of Mohammad Mosaddegh was overthrown in 1953 through a violent coup orchestrated by the U.S. CIA and the British MI6. Nationalisation failed in Iran not because of some inherent deficiency, but because Western powers decided to make it fail as a way of protecting their control over the global oil trade.

The precariousness of nationalisation was not confined to smaller economies like Iran. The Soviet Union also suffered

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from the Western-led economic order. Although it was never directly attacked through a coup or a violent conflict during the Cold War, it still experienced the harmful economic consequences of being cut off from multiple credit and technology markets dominated by Western currencies and firms around the world. Despite these restrictions, the Soviet Union still made an amazing amount of progress in various

scientific and technological fields, such as launching the world's first artificial satellite and building the first nuclear power plant that supplied electricity to a connected grid. In any case, nationalisation is likely to be more successful if it manages to expand in the core of the global economic system, particularly in the United States. Regardless of where it takes hold, we need to model its impact on society through an ecological prism. We need to understand how the exercise of state power can be decoupled from the harmful legacy of capitalism and turned into a positive method for enhancing the ecological stability of society.

A New Model

The ecological state cannot be abstracted away from an ecological society. To analyse the dynamics of the state is to analyse the dynamics of society. In their seminal 1997 work, *A History of World Agriculture*, scientists Marcel Mazoyer and Laurence Roudart coined the term ecological valence to describe the ability of a species to maximise its population density in different environments.²⁵ Certain organisms, like bacteria, are capable of living in both normal and unforgiving ecosystems, which is a way of saying that they have a high level of equivalence. Other organisms require

²⁴ ↪ Edward Henniker-Major, "Nationalization: The Anglo-Iranian Oil Company," *Moral Cents: The Journal of Ethics in Finance* 2, no. 2 (2013).

²⁵ ↪ Marcel Mazoyer and Laurence Roudart, *A History of World Agriculture* (New York: Monthly Review Press, 2006), 30; translation of *Histoire des agricultures du monde* (Paris: Seuil, 1997).

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much more restricted environments; you would not find any polar bears roaming the equator, a sure sign that polar bears have low equivalence. We will borrow this useful term and modify it slightly for our purposes, redefining ecovalence as the ability of organisms to sustain or increase biophysical flows in response to external disruptions in their surrounding ecozones. In the context of wild animals, ecovalence could

be a measure of their adaptability when interacting with human civilisation.

For civilisation itself, ecovalence represents the central goal: the protection of our way of life in the face of chaotic

For civilisation itself, ecovalence represents the protection of our way of life from chaotic natural instabilities [and] is compatible with certain forms of socialism and other democratic movements focused on establishing a reciprocal relationship between human civilisation and the natural world.

natural instabilities. I introduce the term valerism to capture this new ecological perspective. Valerism is a combination of valence and regeneration. Valence stands for the collection of stable group modes that maintain sustainable economic activities. Regeneration is the idea that social activities should nurture and regenerate the natural world, not exploit it for short-term objectives. Valerism is compatible with certain forms of socialism and other democratic movements focused

on establishing a reciprocal relationship between human civilisation and the natural world.

The central objective of the valerist state is the pursuit of macroenergetic stability, making the valerist system very

The central goal of the valerist state is the pursuit of macroenergetic stability, making the valerist system very different from capitalism, which is heavily invested in the deceptive prospect of infinite growth.

different from capitalism, which is heavily invested in the deceptive prospect of infinite growth. In this context, stability means that production and consumption are changing and fluctuating around some predefined energy equilibrium. The equilibrium itself could be defined by local conditions, reflecting the confluence of social and political factors that dominate in a particular economy. Although

growth can certainly occur in a valerist system, growth itself would never be the organising principle of the economy. To overcome the ecological crisis, and to prevent another one from ever happening again on account of human activity, a valerist economy needs to impose limits on aggregate energy use and consumption (throughput). These limits could also be paired with constraints on the consumption of materials and the production of commodities. Furthermore, society also needs to place limits and constraints on the accumulation of financial wealth, as vast sums of money are often a gateway to accessing more energy for the very rich. Nevertheless, my primary focus here is on the energetic constraints.

In the discussion that follows, I cite energy consumption figures on a daily per capita basis. With this standard in mind, the current global average rate of consumption is roughly 50,000 kilocalories. This number disguises widespread variability among the world's economies. The United States, for example, has an average consumption rate of around 200,000 kilocalories.²⁶ Ecological scientists have shown that, if the entire planet consumed energy at this rate, human civilisation would quickly face catastrophe.²⁷ Many other Western economies are generally below the U.S. figure,

²⁶ ↪ British Petroleum, *BP Statistical Review of World Energy* (London: British Petroleum, 2020), 8. Note that British Petroleum presents its figures in terms of exajoules. To get from exajoules to kilocalories, you need to know that an exajoule is equal to 1,018 joules and a kilocalorie is equal to about 4,180 joules. Once you get the total annual number of kilocalories for the country, you need to divide by 365 (the number of days in a year) and the population of the country. This will give you the daily per capita consumption rate in kilocalories.

²⁷ ↪ George P. Nassos and Nikos Avlonas, *Practical Sustainability Strategies* (Hoboken: Wiley, 2020), 9–10.

hovering around 150,000 kilocalories. By contrast, a country like India, the world's second largest in terms of population, had a consumption rate of about 20,000 kilocalories in 2019.²⁸ For some historical perspective on these numbers, consider that hunters and gatherers after the invention of fire had a consumption rate of about 4,000 kilocalories.²⁹ The Roman Empire at its height might have reached an average rate of about 10,000 kilocalories.³⁰

Different countries are facing different realities. In past work, I have emphasised that efficiency gains and technological

Global warming is not our only ecological problem. Addressing the ecological crisis holistically means that we must focus on controlling energy use and consumption, while still meeting essential needs. However, the controls and limitations we need to adopt may vary from country to country. Some countries need to reduce consumption drastically... But in all societies it is desirable to set a maximum limit of 70.000 kilocalories for the average rate of energy consumption..... There are many reasons... it is in line with the recommendations of ecologists and other scientists; it is realistic, it would help reduce the ecological footprint and it would still allow us to conserve the most important achievements, such as higher life expectancies and improved levels of education.

innovations are not the best ways of tackling our ecological crisis. Reducing carbon emissions and increasing fuel efficiency are vital, but global warming is not our only ecological problem. Addressing the ecological crisis holistically means that we should focus on controlling energy use and consumption, all while meeting essential needs. However, the controls and constraints that we should adopt may vary depending on the country and wider historical context that brought it to the current moment. Some countries need to reduce consumption drastically; others can still continue consuming at higher rates for a few more years. But in every society, it is a good idea to establish an upper limit of 70.000 kilocalories for the average energy consumption rate. This limit would be actively enforced through various constitutional and legal decrees; it should only change in the event of an extreme social emergency. Why should societies choose this particular number? There

are many reasons, including that it is in line with the recommendations of ecologists and other scientists; it is a reasonable and realistic maximum value that would help reduce humanity's ecological footprint; and it would still allow us to conserve the most important achievements of the modern world, such as higher life expectancies and improved levels of education.³¹

Societies can also choose to set a lower limit, but here the guidelines can be more flexible. If we wish to protect some of

Societies may choose to set a lower limit, such as 30.000 kilocalories... Some people may worry that this will trap us in a cycle of poverty and death. Nothing could be further from the truth.

the trappings of modern civilisation, such as taking a drive or getting on a flight every once in a while, then a rough lower bound could be something like 30.000 kilocalories. The point of establishing a range, instead of a fixed number, is to recognise that societies are complicated and need some measure of flexibility as they interact with the world and respond to its challenges. Some people may be worried that this range

would trap us in a cycle of poverty, destitution, and death. Nothing could be further from the truth. Plenty of well-functioning societies are already in this range, or very near to it. For example, Italy has an average consumption rate of about 70,000 kilocalories.³² Spain is at around 80,000. The life expectancy of a Spanish citizen is 83 years and the vast

²⁸ ↪ British Petroleum, BP Statistical Review of World Energy, 8.

²⁹ ↪ Earl Cook, "The Flow of Energy in an Industrial Society," *Scientific American* 225, no. 3 (1971): 134–47.

³⁰ ↪ Paolo Malanima, "Energy Consumption and Energy Crisis in the Roman World," *Environmental History Conference* (2011): 4.

³¹ ↪ See Mathis Wackernagel and William Rees, *Our Ecological Footprint: Reducing Human Impact on the Earth* (Gabriola: New Society, 1996). Also see Johan Rockström et al., "A Safe Operating Space for Humanity," *Nature* 461 (2009): 472–75.

³²

Many well-functioning societies are already in this range. Italy has an average consumption of 70.000 kl. Spain has an average consumption of 80.000. The life expectancy of a Spaniard is 83 years and most of them do not starve to death... The amount of energy we use is not the only indicator of progress. It is also how society is organised, how it is educated, how wealth is distributed and how we protect our natural environments.

majority of them are not starving in the streets. It is certainly possible to have healthy societies with far lower rates of energy consumption than those that currently prevail in much of the West. This is because the total amount of energy that we use is not the only important indicator of social progress. It also matters how society is organised, how people are educated, how wealth is distributed, and how we protect our natural environments, among many other factors.

In any case, the only realistic way to impose these energetic constraints is to have strong public and collective control over the dominant sectors of the economy. It is important to qualify this claim and remove some possible misconceptions. A valerist system would still permit the existence of private exchange markets. You can still go to the local market and eat at your favourite restaurant; the government will not take those things away from you. But to prevent large corporations from accumulating too much wealth and power, and to prevent them from becoming energy guzzlers that threaten the planet's ecological stability, the state should be involved in their ownership and administration, which in many cases will involve some type of nationalisation. In so doing, the valerist state would also put the brakes on the ruthless tendencies of modern capitalism to plunder natural resources and commodify them for large profits in global markets.

In summary, the fundamental features of valerism as an economic system are the following: an average energy

The key features of valerism as an economic system are: an average energy consumption of between 30.000 and 70.000 kilocalories, the organisation of economic life around the principle of stability rather than growth, collective and democratic control of the extraction and distribution of natural resources, and a strictly regulated exchange market.

consumption rate between 30,000 and 70,000 kilocalories, the organisation of economic life around the principle of stability instead of growth, collective and democratic control over the extraction and distribution of natural resources, and a tightly regulated exchange market in which private individuals can try to obtain profits by buying and selling certain goods and services through mutual consent. This program would allow us to move toward a more egalitarian society. Just as importantly, it would also facilitate the survival and stability of industrial

civilisation.

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❖ **About the authors: Erald Kolasi** is a research associate in the Income and Benefits Policy Center at the Urban Institute. He develops computer models and simulations designed to study the effects of proposed retirement and economic policies. His research areas include state and local pension systems, Social Security, and the federal budget. Kolasi received his BA in physics and history from the University of Virginia and earned his MS and PhD from George Mason University, both in physics.



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Portal on the net: <https://www.jussemper.org/>
e-mail: informa@jussemper.org