

# Biophilic Markets

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*Markets must be made biophilic: that is, compatible with life flourishing on Earth. To do so, we must abandon prevailing notions of market efficiency and reconceive markets as social evolutionary systems embedded in nature. Such a reconception enables us to see that constraining markets within biophysical boundaries would not result in zero-sum trade-offs with the economy, but instead would drive market evolution to new forms of prosperity.*

Natasha Iskander and Nichola Lowe’s concept of “biophilic institutions” forces analytical and moral clarity: Are our institutional arrangements compatible with life flourishing on Earth? Do we want them to be? At present, the scientific and political evidence suggests the answer is “no.” Human activity has caused the species extinction rate to jump to tens to hundreds of times the average of the past ten million years, causing many scientists to conclude that a mass extinction event is underway with little being done to stop it.<sup>1</sup> As Iskander and Lowe observe, our current theories frame debates as the economy versus life, and we have chosen the economy.<sup>2</sup> Iskander and Lowe’s concept of biophilic institutions highlights the absurdity of both the framing and our choice. Earth’s previous five mass extinction events saw losses of over 75 percent of species. It is unlikely that human civilization, let alone anything like a modern economy, would survive an anthropogenically induced sixth event. It is biophilic or bust.

In this essay, I extend Iskander and Lowe’s concept and explore what it might mean for one specific set of economic institutions – markets – to become biophilic.

The standard economic answer to biophilia is to “price the unpriced externality,” for example, by using taxes or tradeable permits to put a price on human activities that harm nature.<sup>3</sup> This has been done with some success for pricing power plant sulfur dioxide pollution and ozone-damaging chlorofluorocarbon emissions, but with much less success for carbon emissions. Despite decades of effort, only about 0.8 percent of global emissions are subject to a carbon price consistent with the Paris Agreement.<sup>4</sup> There are political reasons why this approach has failed – namely, powerful vested interests who fight back – but to see how markets could become truly biophilic, we need a different understanding of how markets operate and their relationship with nature.

There are three conceptual shifts that must be made. First, the dominant economic paradigm sees nature as separate from human society: an “externality” that provides an infinite source of resources and an infinite sink for waste. The standard economic “production function” has no concept of energy, entropy, planetary boundaries, or any other finite limits to growth. If one looks inside the theories, models, and ideologies that shape the decisions of finance ministries, central banks, regulators, the courts, investors, and businesses, one finds that nature rarely, if ever, appears. This simply does not reflect the reality that economic value creation is both wholly dependent on, and significantly impacts, nature – the two are mutually interdependent. When nature does appear, it is usually in the form of a trade-off with the economy. As Iskander and Lowe put it, “[our] most influential institutions operate as if nature and the economy existed in a zero-sum game.”<sup>5</sup> This zero-sum mentality in turn frames climate as a cost-benefit problem in which the burden of proof is on the person showing that the “benefits” of preserving life on Earth are greater than the “costs” to the economy (again, think of the absurdity of this). This framing has provided an enormous political advantage to fossil fuel and other interests, who can portray themselves as champions of the economy versus environmentalists who want to kill jobs to save polar bears.

Second, we must see markets not as mechanical equilibrium systems, but as dynamic, social evolutionary systems.<sup>6</sup> Economics has traditionally viewed markets as gravitating toward a socially optimal allocation of resources. This equilibrium framework has impeded action on climate in multiple ways.<sup>7</sup> In particular, it has an inherent status quo bias, as it assumes that the current arrangements are optimal, and exogenous changes introduced by policy (for example, climate regulation) are typically assumed to reduce market efficiency and therefore social welfare (or again, in political speech, will “kill jobs and growth”). Furthermore, the equilibrium framing assumes that all change is marginal and expressed primarily through shifts in relative prices within the existing system. This perspective then encourages policy-makers to focus on incremental rather than structural change, and to see carbon pricing as “the answer” instead of the broad array of policies, investments, and institutional changes required for system transformation.

Markets are evolving social constructs, arrangements of institutions that in turn facilitate the evolution of products, services, jobs, technologies, and business models.<sup>8</sup> Such an evolutionary economy is not static but dynamic, with history showing both periods of marginal change and periods of transformational, structural change (for example, the Industrial Revolution). Processes of change are endogenous, emerging from interactions of economic, technological, political, and environmental forces. As a dynamic, evolutionary system, there is no “optimal” end state, but one can say that, over history, differing economic arrangements have varied greatly in delivering human well-being: there is certainly “better” and “worse.”

What then drives economic evolution toward “better” or “worse”? All evolutionary systems are driven by a fitness function that selects what survives and grows in the system and what fails and disappears. In biological systems, genes that enhance an organism’s fitness for its environment are more likely to survive and replicate, thus driving species evolution. In the case of the economy, the fitness function is socially constructed. One can think of the economy as a set of billions of experiments in products, services, jobs, technologies, and business models. Market competition sifts through these experiments, determining which survive, grow, and dominate, and which disappear. The market fitness function is determined by the interplay of consumer tastes, firm and investor behaviors, legal and regulatory rules, and normative beliefs about what are good outcomes. As those factors change over time, so too does the market fitness function: what is a “successful” business today is different from what it was in the past. Driven by economic theory, our current system is constructed on the belief that human welfare is best served when individuals maximize their consumption, firms maximize their profits, investors maximize their returns, and policy-makers maximize GDP growth.<sup>9</sup> These beliefs have played a powerful role in the market fitness function, evolving a system that is highly bio-destructive and whose impacts on human welfare are mixed at best.

This leads to our third conceptual shift: as a social construct, the market fitness function is a social choice. Orthodox economics treats the fitness function as if it were an exogenously determined law of nature, as if there is no alternative. Yet the variety of human arrangements in organizing economic systems over history and across cultures shows that it is indeed a social construction.<sup>10</sup> As such, we could choose a different market fitness function than the one we have today: we could choose one that is biophilic. Markets exist to serve society, and society therefore has a right to shape the market fitness function to its needs, including the need to avoid mass extinction. A society could choose to require that its markets operate within biophysical boundaries, and thus, firms could only be “successful” if they earned profits in ways that are biophilic. Such societal choices are most legitimately expressed through democratic institutions, which in turn put high demands on those institutions to shape the market fitness function in the right ways. There are legitimate questions as to whether our current institutions are up to the challenge, but in this case, there really is no alternative.<sup>11</sup>

**I** should be clear that I am not advocating central planning. I am not proposing, for example, that government bureaucrats should decide what quantity, price, and style of automobiles to produce. That work is the job of markets. Instead, I am arguing that society has a right to require that automobile manufacturers (and all other manufacturers) operate within biophilic boundaries. Forcing markets to operate within socially determined boundaries is nothing new. For example, in

the early twentieth century, child labor was still common, and when reformers began advocating to ban the practice, there was intense opposition from employers.<sup>12</sup> Paralleling today's debates over climate, industry interests argued that children were an economic resource to be exploited, and there was a zero-sum trade-off between child welfare and the economy: that is, ending child labor would "kill jobs and growth." But when the practice was finally banned in the United States in 1938, the mines didn't close, the farms didn't go bankrupt, and the factories didn't grind to a halt. Instead, markets did what evolutionary systems do; they adapted to the change in the economic fitness function, and firms figured out how to operate profitably without child labor (and those that didn't arguably deserved to go out of business). And not only was child welfare greatly enhanced, but longer-run economic performance was boosted as better educated children became more productive adults. Instead of zero-sum, the adaptive dynamics of markets turned the child labor ban into a positive-sum win.

Similar evolutionary dynamics would be at work if the market fitness function were changed to be biophilic. What would this look like in practice? At a minimum it would involve legally binding national economies to carbon budgets that led to net-zero emissions over a time period consistent with limiting warming to 1.5 degrees Celsius. The ultimate destination would be a global ban on net-positive emissions by 2050 (or "carbon abolition," as I call it).<sup>13</sup> Such legally binding emission limits would need to be backed by a full suite of regulatory tools and public investments, as well as carbon border adjustments to address trade with countries whose markets are not biophilic. Making markets truly biophilic would further require constraints on a broader set of environmental impacts (for example, waste, pollution, and habitat loss) to drive markets toward a "circular economy" that delivers human well-being with minimal waste and net resource use.<sup>14</sup>

The good news is that such a change in the economic fitness function would not result in inefficiencies and welfare loss – as predicted by traditional analyses – but would result in a massive wave of investment, innovation, and enormous welfare gains (perhaps even infinite welfare gains given the existential threat to future generations). As noted, when the fitness function changes, evolutionary systems adapt. The true genius of markets is not their static allocative efficiency but their dynamic adaptability. There is a long history of environmental policy sparking adaptation, innovation, and investment. Even the wholly inadequate policies of the past decades have triggered significant advances: solar power costs have dropped 82 percent, wind costs have fallen 39 percent, electric vehicle battery range has quadrupled, and the overall energy efficiency of the U.S. economy has increased by 23 percent.<sup>15</sup> Instead of experiencing "de-growth," as some would advocate, markets with hard biophilic limits (as well as policies for a just transition) would find new ways to meet human needs within those constraints.<sup>16</sup> Instead of bio-destructive growth, we could have biophilic progress.

The economy and nature are not in zero-sum competition. They are mutually interdependent, co-evolving systems. Our current economic and political framework does not recognize this fact. Markets are among humankind's most powerful inventions. How we harness their innovative power, and to what ends, is a social choice. Choosing biophilia does not mean choosing to become poorer: it means choosing to become prosperous in a different way.

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#### ABOUT THE AUTHOR

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#### ENDNOTES

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