## AT: Capitalism

### 2AC---Sustainability

#### It’s sustainable.

Shi-Ling Hsu 21, D'Alemberte Professor of Law at the Florida State University College of Law, “2 How Capitalism Saves the Environment,” Capitalism and the Environment, Cambridge University Press, 10/31/2021, pp. 28–55

2.8 CHOOSING CAPITALISM TO SAVE THE ENVIRONMENT: LARGE-SCALE DEPLOYMENT

Finally, a third reason that capitalism is suited to the job of environmental restoration and protection is its ability to undertake and complete projects at very large scales. In keeping with a major thesis of this book, construction at very large scales should give us a little pause, because of the propensity of capital to metastasize into a source of political resistance to change. But some global problems, especially climate change, may require very large-scale enterprises.

For example, because greenhouse gas emissions may already have passed a threshold for catastrophic climate change, technology is almost certainly needed to chemically capture carbon dioxide from ambient air. But carbon dioxide is only about 0.15% of ambient air by molecular weight, and a tremendous amount of ambient air must be processed just to capture a small amount of carbon dioxide. This technology has often been referred to as "direct air capture," or "carbon removal." Given that inherent limitation, direct air capture technology must be deployed at vast scales in order to make any appreciable difference in greenhouse gas concentrations. There is certainly no guarantee that direct air capture will be a silver bullet. But if it is to be an effectual item on a menu of survival techniques, it will more assuredly be accomplished under the incentives of a capitalist economy.

Capitalism might also help with the looming crisis of climate change by helping to ensure the supply of vital life staples such as food, water, and other basic needs in future shortages caused by climate-change. In a climate-changed future, there is the distinct possibility that supplies of vital life staples may run short, possibly for long periods of time. Droughts are projected to last longer, with water supplies and growing conditions increasingly precarious. Capitalist enterprise could, first of all, provide the impetus to finally reform a dizzying multitude of price distortions that plague water supply and agriculture worldwide. Second, capitalist enterprise can undertake scale production of some emergent technologies that might alleviate shortages. Desalination technology can convert salty seawater into drinkable freshwater.54 A number of environmental and economic issues need to be solved to deploy these technologies at large scales, but in a crisis, solutions will be more likely to present themselves.

A technology that is already being adopted to produce food is the modernized version of old-fashioned greenhouses. The tiny country of the Netherlands, with its 17 million people crowded onto 13,000 square miles, is the second largest food exporter in the world,55 exporting fully three-quarters that of the United States in 2017.56 The secret to Dutch agriculture is its climate-controlled, low-energy green-houses that project solar panel-powered artificial sunlight around the clock. Dutch greenhouses produce lettuce at ten times the yield57 and tomatoes at fifteen times the yield outdoors in the United States58 while using less than one-thirteenth the amount of water,59 very little in the way of synthetic pesticides and, of course, very little fertilizer given its advanced composting techniques. Sustained shortages in a climate-changed future might require that a capitalist take hold of greenhouse growing and expand production to feed the masses that might otherwise revolt.

2.9 CHOOSE CAPITALISM

Clearly, the job in front of humankind is enormous, complex, and many-faceted. The best hope is to be able to identify certain human impacts that are clearly harmful to the global environment, and to disincentivize them. Getting back to notions of institutions in capitalism, what is crucial is aligning the right incentives with profit-making activity. What capitalism does so well — beyond human comprehension — is coordinate activity and send broad signals about scarcity. Information about a wide variety of environmental phenomena is extremely difficult to collect and process. If a set of environmental taxes can help establish a network of environ-mental prices, then an unfathomably large and complex machinery will have been set in motion in the right direction.

Also, because of the need for new scientific solutions to this daunting list of problems, new science and technology is desperately needed. Capitalism is tried and true in terms of producing innovation. Again drawing upon the study of institutions, it is not so much that individuals need a profit-motive in order to tinker, but the prospect of profit-making has to be present in order for institutions, including corporations, to devote resources, attention, and energy towards the development of solutions to environmental problems. Corporations can and should demonstrate social responsibility by attempting to mitigate their impacts on the global environment, but a much more conscious push for new knowledge, new techniques, and new solutions are needed.

Finally, the scale of needed change is profound. Huge networks of infrastructure centered upon a fossil fuel-centered economy must somehow be replaced or adapted to new ways of generating, transmitting, consuming, and storing energy. A global system of feeding seven billion humans (and counting), unsustainable on its face, must be morphed into something else that can fill that huge role. About a billion and a half cars and trucks in the world must, over time, be swapped out for vehicles that must be dramatically different.

This is a daunting to-do list, but look a bit more carefully among the gloomy news. Elon Musk, a freewheeling, pot-smoking entrepreneur shows signs of breaking into not one, but two industries dominated by behemoths with political power. Thanks to California emissions standards, automobile manufacturers have developed cars that emit a fraction of what they did less than a generation ago. Hybrid electric vehicles have thoroughly penetrated an American market that powerful American politicians had tried to cordon off for American manufacturers only. At least two companies have developed meat substitutes that are now widely judged to be indistinguishable from meat, and have established product outposts in the ancient power centers of fast food, McDonald's and Burger King. The tiny country of the Netherlands, about half the size of West Virginia, exports almost as much food as the United States, able to ship fresh produce all the way to Africa. At bottom, all of these accomplishments and thousands more are and were capitalist in nature. While they collectively repre-sent a trifle of what still needs to be accomplished, they were also undertaken without the correct incentives in place, and thus also represent the tremendous promise of capitalism.

#### Best studies.

Hideo Noda & Shigeru Kano 21, Tokyo University of Science; The Shoko Chukin Bank, "Environmental Economic Modeling of Sustainable Growth and Consumption in a Zero-Emission Society," Journal of Cleaner Production, Vol. 299, 05/25/2021, pg. 1-2.

Manufacturing activities that pollute the soil, atmosphere, and water have adversely affected the environment. The abatement of pollution is therefore essential to maintaining environmental standards in the future. The purpose of this paper is to examine what kind of economic conditions should be satisfied if an economy adopts a rule stating that pollution must be cleaned up when it is produced, and whether the zero net emission of pollution flow (in the sense of a zero residual amount of pollution created minus pollution abated) is compatible with the continued growth of gross domestic product (GDP) and consumption when the economy experiences cyclical fluctuations.

A detailed understanding of the economic implications of cyclical fluctuations is crucial because actual economies inevitably undergo cycles of expansion and recession. In this respect, on the basis of the laboratory equipment model of Rivera-Batiz and Romer (1991), Matsuyama (1999) constructed a useful model that generates endogenous fluctuations. Notably, under specific conditions, an economy can perpetually oscillate between a capital-accumulation-based (no-innovation) growth phase and innovation-led growth phase. The former phase is called the Solow regime, after the work of Solow (1956), while the latter phase is called the Romer regime, after the work of Romer (1990) and Rivera-Batiz and Romer (1991).

However, Matsuyama (1999) did not pay attention to environmental aspects in a society. We therefore extend the model of Matsuyama (1999) by considering pollution abatement from the perspective of the kindergarten rule model of Brock and Taylor (2005). We thereby expect to obtain meaningful findings by analyzing endogenous fluctuations with pollution abatement, which has not been tackled in earlier studies. The term “kindergarten rule” originates from the title of a book written by Fulghum (1990) and implies that messes be cleaned up as they are created. Brock and Taylor (2005) referred to the proportion of pollution abatement expenditure in GDP for achieving zero net emissions of pollution (i.e., completely eliminating the amount of pollution created minus pollution abated) as the kindergarten rule level of abatement (or just the kindergarten rule).

Ono (2003) extended Matsuyama’s (1999) model to analyze endogenous fluctuations by accounting for environmental variables. Specifically, Ono (2003) incorporated the production structure of Matsuyama (1999) into the framework of the overlapping generations model on the basis of the work of John and Pecchenino (1994) and examined environmental taxation that maximizes the environmental quality and economic growth rate. It is found that there is a critical level of tax, and the economy achieves higher growth rates of GDP and environmental quality by raising (or reducing) tax if the initial tax is below (or above) the critical level. That is to say, the purpose of the present study differs from that of the study of Ono (2003). We analyze the feasibility of the positive growth of GDP with zero net emission that reflects the kindergarten rule of pollution abatement, while Ono (2003) focused on taxation for improving environmental quality and promoting economic growth. Recent efforts toward a zero-emission society, which are an important topic of the Paris Agreement that came into force on November 4, 2016, have received worldwide attention (see, for example, Pauli, 1997; Baumgartner and Zielowski, 2007; Tokimatsu et al., 2014). The present study is therefore of social importance and relevant. Additionally, we consider that the notion of environmental quality is vague and hence difficult to capture empirically. In contrast, the zero net emission of pollution has clear meaning.

Related studies of environment-growth models with endogenous fluctuations include those conducted by Zhang (1999), Chen and Li (2011), and Palivos and Varvarigos (2017). Zhang (1999), for example, examined the possibility of nonlinear dynamics in the model of John and Pecchenino (1994) and showed that cyclically or chaotically fluctuating equilibria are more likely to exist when people’s concerns are more towards greener preferences and the maintenance efficiency relative to degradation is not sufficiently high. Chen and Li (2011) introduced the habit formation of environmental quality and consumption tax to the model of John and Pecchenino (1994). The habit formation of environmental quality in the model of Chen and Li (2011) means that people get used to the environment while they grow up and will compare environmental quality in their old age with that when they were young. As a result, Chen and Li (2011) showed that cyclical fluctuations and entropic chaos may exist if households have a preference towards environmental quality and the maintenance efficiency is sufficiently low relative to degradation and the tax rate. The economy moves from complex to simple dynamics as the tax rate increases. Using an overlapping generations model where life expectancy is positively affected by the provision of public health services and by the environmental quality, Palivos and Varvarigos (2017) showed that, despite the presence of an aggregate learning-by-doing externality, the economy cannot sustain a positive growth rate in the long run if resources are not devoted to environmental preservation. Moreover, an active policy of environmental preservation is not only an important complementary engine of long-run growth but also a powerful tool of stabilization.

Zhang (1999), Chen and Li (2011), and Palivos and Varvarigos (2017), however, did not consider the role of innovation in economic growth. When we consider issues related to recent economic growth, it is noteworthy that the economic activities of industries in developed countries and some developing countries have increasingly become knowledge intensive. The economies of these countries are often termed knowledge-based economies. An important feature of such an economy is that it emphasizes innovation, including the creation of new products and production processes through industrial research and development (R&D), and the innovation is accompanied by accumulated knowledge that drives sustained growth. Accordingly, any study on the actual economic problems of a knowledge-based economy needs to construct a model that endogenously incorporates R&D and innovation. From such a perspective, the above-mentioned earlier studies are inadequate in terms of understanding the relationship between contemporary economic growth and environmental problems.

Our model leads to the theoretical possibility that the zero net emission of pollution flow is compatible with sustainable growth and consumption. In this regard, however, the economy requires GDP above a certain level. Moreover, to simultaneously achieve a zero net emission of pollution and sustained economic growth, the economy requires variability of the kindergarten rule level of abatement. In other words, the kindergarten rule level of abatement must not be fixed at a specific value. The present study makes two main contributions. First, we shed light on the relationship between the zero net emission of pollution and economic growth, which is not well understood, and address theoretically an important subject interesting environmental scientists, economists, and policy makers: whether both a zero net emission of pollution and sustained growth of GDP (consumption) are achievable when economies implement a zero net emission policy. In terms of the association with Sustainable Development Goals (SDGs), which were adopted by the United Nations General Assembly in September 2015 and have received international attention, our considerations are conducive to providing a theoretical basis for a part of SDG 8 (“Decent Work and Economic Growth”). Second, we present a dynamic macro-environmental modeling approach based on an extension to Matsuyama’s (1999) model with the idea of the kindergarten rule of Brock and Taylor (2005). To the best of our knowledge, there have been few studies on the environmental economic modeling of endogenous growth with cyclical fluctuations in a zero-emission society. That is to say, our dynamic macroenvironmental modeling approach can be interpreted as a methodological contribution in the research field of economic growth and the environment.

#### Recent data.

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The past 30 years have seen immense progress in improving the quality of life for much of humanity. Extreme poverty — the number of people living on less than $1.90 per day — has fallen by nearly two-thirds, from 1.9 billion to around 650 million. Life expectancy has risen in most of the world, along with literacy and access to education, while infant mortality has fallen. Despite perceptions to the contrary, the average person born today is likely to have access to more opportunities and have a better quality of life than at any other point in human history. Much of this increase in human wellbeing has been propelled by rapid economic growth driven largely by state-led industrial policy, particularly in poor-to-middle income countries. However, this growth has come at a cost: between 1990 and 2019, global emissions of CO2 increased by 56%. Historically, economic growth has been closely linked to increased energy consumption — and increased CO2 emissions in particular — leading some to argue that a more prosperous world is one that necessarily has more impacts on our natural environment and climate. There is a lively academic debate about our ability to “absolutely decouple” emissions and growth — that is, the extent to which the adoption of clean energy technology can allow emissions to decline while economic growth continues. Over the past 15 years, however, something has begun to change. Rather than a 21st century dominated by coal that energy modelers foresaw, global coal use peaked in 2013 and is now in structural decline. We have succeeded in making clean energy cheap, with solar power and battery storage costs falling 10-fold since 2009. The world produced more electricity from clean energy — solar, wind, hydro, and nuclear — than from coal over the past two years. And, according to some major oil companies, peak oil is upon us — not because we have run out of cheap oil to produce, but because demand is falling and companies expect further decline as consumers increasingly shift to electric vehicles. The world has long been experiencing a relative decoupling between economic growth and CO2 emissions, with the emissions per unit of GDP falling for the past 60 years. This is the case even in countries like India and China that have been undergoing rapid economic growth. But relative decoupling alone is inadequate in a world where global CO2 emissions need to peak and decline in the next decade to give us any chance at limiting warming to well below 2℃, in line with Paris Agreement targets. Thankfully, there is increasing evidence that the world is on track to absolutely decouple CO2 emissions and economic growth — with global CO2 emissions potentially having peaked in 2019 and unlikely to increase substantially in the coming decade. While an emissions peak is just the first and easiest step towards eventually reaching the net-zero emissions required to stop the world from continuing to warm, it demonstrates that linkages between emissions and economic activity are not an immutable law, but rather simply a result of our current means of energy production. In recent years we have seen more and more examples of absolute decoupling — economic growth accompanied by falling CO2 emissions. Since 2005, 32 countries with a population of at least one million people have absolutely decoupled emissions from economic growth, both for terrestrial emissions (those within national borders) and consumption emissions (emissions embodied in the goods consumed in a country). This includes the United States, Japan, Mexico, Germany, United Kingdom, France, Spain, Poland, Romania, Netherlands, Belgium, Portugal, Sweden, Hungary, Belarus, Austria, Bulgaria, El Salvador, Singapore, Denmark, Finland, Slovakia, Norway, Ireland, New Zealand, Croatia, Jamaica, Lithuania, Slovenia, Latvia, Estonia, and Cyprus. Figure 1, below, shows the declines in territorial emissions (blue) and increases in GDP (red). To qualify as having experienced absolute decoupling, we require countries included in this analysis to pass four separate filters: a population of at least one million (to focus the analysis on more representative cases), declining territorial emissions over the 2005-2019 period (based on a linear regression), declining consumption emissions, and increasing real GDP (on a purchasing power parity basis, using constant 2017 international $USD). We chose not to include 2020 in this analysis because it is not particularly representative of longer-term trends, and consumption and territorial emissions estimates are not yet available for many countries. There is a wide range of rates of economic growth between 2005-2019 among countries experiencing absolute decoupling. Somewhat counterintuitively, there is no significant relationship between the rate of economic growth and the magnitude of emissions reductions within the group. While it is unlikely that there is not at least some linkage between the two factors, there are plenty of examples of countries (e.g., Singapore, Romania, and Ireland) experiencing both extremely rapid economic growth and large reductions in CO2 emissions. One of the primary criticisms of some prior analyses of absolute decoupling is that they ignore leakage. Specifically, the offshoring of manufacturing from high-income countries over the past three decades to countries like China has led to “illusory” drops in emissions, where the emissions associated with high-income country consumption are simply shipped overseas and no longer show up in territorial emissions accounting. There is some truth in this critique, as there was a large increase in emissions embodied in imports from developing countries between 1990 and 2005. After 2005, however, structural changes in China and a growing domestic market led to a reversal of these trends; the amount of emissions “exported” from developed countries to developing countries has actually declined over the past 15 years. This means that, for many countries, both territorial emissions and consumption emissions (which include any emissions “exported” to other countries) have jointly declined. In fact, on average, consumption emissions have been declining slightly faster than territorial emissions since 2005 in the 32 countries we identify as experiencing absolute decoupling. Figure 2, below, shows the change in consumption emissions (teal) and GDP (red) between 2005 and 2019. There is a pretty wide variation in the extent to which these countries have reduced their territorial and consumption emissions since 2005. Some countries — such as the UK, Denmark, Finland, and Singapore – have seen territorial emissions fall faster than consumption emissions, while the US, Japan, Germany, and Spain (among others) have seen consumption emissions fall faster. Figure 3 shows reductions in consumption and territorial emissions for each country, with the size of the dot representing the size of the population in 2019. Absolute decoupling is possible. There is no physical law requiring economic growth — and broader increases in human wellbeing — to necessarily be linked to CO2 emissions. All of the services that we rely on today that emit fossil fuels — electricity, transportation, heating, food — can in principle be replaced by near-zero carbon alternatives, though these are more mature in some sectors (electricity, transportation, buildings) than in others (industrial processes, agriculture).

#### Seriously, we’ll do the math and insert charts

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Chart, line chart

Description automatically generated

Emissions reductions in the US have been a result of a wide variety of factors; this includes the switch from coal generation to lower-carbon natural gas, the rapid expansion of wind and solar generation, reduced industrial energy consumption, reduced electricity use in buildings, and reductions in transportation emissions — particularly as a result of increased vehicle fuel economy and reduced miles driven per-capita. Since 2005, US territorial emissions have fallen around 15%, with consumption emissions falling around 18% (much larger reductions were seen in 2020, and some of this is expected to persist). At the same time, GDP has increased by around 29%.

Chart, line chart

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In the UK, territorial emissions have fallen by nearly 40% and consumption emissions have fallen by around 30%, while GDP has increased by 22%. Similar to the US, there are a wide variety of drivers of UK emissions reductions, though renewable energy generation, reductions in electricity use, and reductions in industrial and residential energy use are the largest contributors.

Chart, line chart

Description automatically generated

In Germany, territorial emissions have fallen around 15%, and consumption emissions have fallen by around 20%, while GDP has increased by 24%

Chart, line chart

Description automatically generated

In France, territorial emissions have fallen by around 25%, and consumption emissions have fallen by a similar amount, while GDP has increased by 16%. It is a bit notable that France has seen larger emission reductions — as a percentage of total emissions — than Germany over this period, likely due in part to Germany’s choice to prioritize shutting down nuclear power plants over coal ones.

#### Alt fails and cap sustainable.

Hansen ’21 [Tyler; September 2021; Ph.D. Candidate in the Department of Economics at the University of Massachusetts; "Three Essays on the Political Economy of Global Inaction on Climate Change," https://doi.org/10.7275/23620313]

1.2.3 Four Additional Arguments

There are four additional arguments made by degrowth and revolution proponents that are worth responding to. (1) Climate change is not the only crisis; (2) The costs of climate stabilization will cancel out economic growth; (3) Sufficient absolute decoupling has not happened in the past, and thus is unlikely to happen in the future; and (4) Developed economies must reach net-zero emissions by 2030.

First, practically all degrowth and revolution proponents point out that climate change is not the only environmental crisis. It is just one of the “nine planetary boundaries.” The planetary boundaries framework was developed by Earth systems scientists in the late 2000s (Rockström et al. 2009; Steffen et al. 2015). Each boundary represents a natural process or cycle on which humans depend. Together, they define “a safe operating space for humanity for human societies to develop and thrive” (Steffen et al. 2015, 1). “Transgressing a boundary,” according to Will Steffen, lead author of the 2015 update to the framework, “increases the risk that human activities could inadvertently drive the Earth system 1.2.4 Structural Change

Revolution proponents are clear about the need to abolish capitalism. Degrowth proponents focus less on capitalism and more on economic growth, but most still understand that capitalism is a growth-based system that is inconsistent with degrowth. For example, Jackson (2016) states, “The capitalist model appears to have no easy route towards a steady state position. Its natural dynamics seem to push it towards one of two states: expansion or collapse” (Ch. 4). Hickel (2020) states more explicitly that “we must take steps to evolve beyond capitalism” (Ch. 6).

Moving beyond capitalism is an enormous task. As evidence, one only needs to realize that the world is still predominantly capitalist, surviving centuries of attempted revolutions. Nonetheless, both degrowth and revolution proponents argue that their approaches will make climate stabilization easier. According to Foster (2017), “There are better and faster ways of addressing the climate crisis through revolutions in social relations themselves.” Any non-revolutionary strategy “represents a failure of nerve.” According to Victor (2012), “A slower rate of economic growth requires a slower and, arguably, more manageable rate of transformation of the economy and society” (208). Hickel (2020) argues similarly: “The less energy we use, the easier it is to achieve a rapid transition to renewables” (Ch. 5). If they are right, then whether or not degrowth or revolution is necessary is a moot point. In this section, I examine degrowth and revolution proponents’ proposed action plans, i.e., what societies should do right now to address climate change, to understand the implied structural change of their plans. In doing so, I demonstrate that their plans would in fact make climate stabilization far more difficult.a much less hospitable state, damaging efforts to reduce poverty and leading to a deterioration of human wellbeing” (Stockholm 2015). As of 2015, four boundaries have been crossed: climate change, biodiversity loss, biogeochemical flows (i.e., the phosphorous and nitrogen cycles), and land-system change. Climate change and biodiversity loss are considered “core boundaries.” Transgressing one of these boundaries for too long (humanity has transgressed both), “has the potential on its own to drive the Earth system into a new state” (Steffen et al. 2015, 1).

Revolution and degrowth proponents argue that even if solving climate change is possible within capitalism, doing so will not solve these other crises, and leaving capitalism intact will only create more crises in the future. At the same time, they focus mostly on climate change in their own work. This makes sense—climate change is the most urgent and potentially catastrophic of the environmental crises facing humanity. In addition, climate change overlaps with other crises. Solving climate change will also make substantial progress towards solving ocean acidification and slowing the sixth mass extinction (Steffen et al. 2015; Cahill et al. 2013). Thus, humanity should focus disproportionate efforts on the climate crisis in particular. While the planetary boundaries framework does not support the claim that climate stabilization in particular requires moving beyond capitalism, it does support the claim that capitalism has a strong tendency towards environmental degradation in general, which outpaces any counter-tendencies. That is, thinking longer-term, to achieve general sustainability, societies will likely have to dismantle and replace capitalism.

Second, the costs of climate stabilization are sometimes treated as pure costs. That is, stabilizing the climate will bring about only climate benefits, not economic benefits, and thus will negatively impact economic growth. Both Victor (2012) and Jackson (2016) express this view. However, investments in climate mitigation should be viewed as investments. These investments are substantial—in the range of 2-2.5% of GDP per year to achieve the 1.5 °C target (Pollin 2019b; Jacobson et al. 2019). But they can be expected to generate millions of jobs, create a more efficient energy system, stimulate a new wave of technological innovation, and save millions of lives every year from reduced air pollution. Jacobson et al. (2019), for example, estimates that a 100% clean energy transition will reduce private energy costs from $18 trillion to $7 trillion per year. In addition, a substantial portion of clean energy investments will be matched by a decline in fossil fuel investments.

Third, degrowth proponents regularly cite the fact that sufficient absolute decoupling has not occurred, and use it to support their claim that it cannot occur (e.g., Kallis 2011; Jackson 2016; Schor and Jorgenson 2019a, 2019b). The modelling and evidence presented in Sections 1.2.1.2 and 1.2.1.3 disputes these claims, showing that a global climate stabilization program amounting to 1.5-2.5% of global GDP per year can achieve sufficient absolute decoupling.

Finally, revolution and degrowth proponents tend to use extreme climate projections, especially for developed economies. For example, Jackson and Victor (2019) and Kallis (2020) argue that developed economies must achieve net-zero emission by 2030. The logic behind this claim is that developing economies should be allowed to continue increasing emissions for years to come. Schor and Jorgenson (2019a) and Malm (2014) cite a 2012 paper by Kevin Anderson suggesting that for a 50% chance of limiting warming to 2 °C, net-zero emissions must be achieved globally between 2035 and 2045. Foster et al. (2011) quote climate scientist James Hansen, who claims, “the only resolution [to climate change] is for humans to move to a fundamentally different energy system within a decade.” Foster et al. then claim, “this raises the question of more revolutionary social change as an ecological as well as social necessity” (Ch. 6). The IPCC (2018b), widely considered the gold standard for climate science research, disputes these claims. According to the IPCC, for an even chance of limiting warming to 1.5 °C above preindustrial levels, humanity must achieve net-zero carbon emissions around 2050. For 2 °C, this is pushed back to 2070. Developed economies should certainly be more ambitious, but rather than allowing developing economies to continue to develop on dirty energy, a better approach is to provide them with the necessary resources to develop on clean energy. Finally, even if it turns out that Kevin Anderson is right, attempting to achieve degrowth or a revolution would only add to the challenge. This is shown in the next section.