

1. Climate change, system change, and the path forward

Melissa K. Scanlan

I. INTRODUCTION

The law must grow to meet evolving societal concerns, sometimes leading, sometimes lagging, but always there to identify and provide the new guidance and norms that are needed. And so it is now as we face the reality of our current system of political economy, which is characterized by large externalized environmental costs, a GDP growth fixation, rapidly widening income inequality, and runaway consumerism, to mention but a few of the major dimensions. Today's system is misaligned to meet the global imperatives to rapidly reduce greenhouse gases, to share wealth more equitably, and to encourage broader more inclusive participatory democracies.

Amidst the signs of system breakdown, the new economy movement has emerged to provide an alternative approach where ecological balance, wealth equity, and vibrant democracy are central to economic activity. But how does law and policy encourage the current economic system to evolve into the new economy the planet needs? And where does one even begin to intervene to leverage changes within the window of time necessary?

This chapter starts with an orientation to the conflict between the climate imperative and our current global GDP growth goals. The chapter then discusses systems thinking and various approaches to systems change, identifying paradigm change as one of the most powerful change agents. Then it explains the new economy paradigm that has emerged as an alternative to the current global political economy. Using a systems lens, the chapter explores areas where law and policy needs to evolve to facilitate a truly green and equitable economy, built on democratic principles.

II. COLLISION COURSE: THE CLIMATE IMPERATIVE AND THE GLOBAL ECONOMY

In taking the pulse of the planet, one could assess a vast array of different system trends (that is, world population, urbanization, water usage, marine fish capture, domesticated land and so on); many prominent scientists have done so and have sounded the alarm that we have left the Earth's known stable conditions of the Holocene Era.¹ As detailed in Speth's chapter, although we recognize environmental improvements in the US and Europe related to problems associated with industrialization, such as rivers that do not catch fire, air in major cities that is cleaner, lead out of gasoline, and a ban on DDT, it is far from enough progress. There is much more to be done in the US to meet long-established goals: restore damage to major ecosystems; ensure people are not just breathing cleaner air, but healthy air; and provide waters that are clean enough to support healthy fish populations and drinking water for people.

Significantly, three-quarters of the world population lives in countries where these primary environmental problems persist. Coupled with these environmental problems is the number of people living in poverty despite reductions in the percentage of people living in poverty.

The percentage of the world's population living in extreme poverty (less than US\$1/day) fell from 28 percent in 1990 to 21 percent in 2001, unevenly around the world. Yet, over the long haul, the number of people living at the barest subsistence level has not declined in more than two hundred years. In 2007 close to 3 billion people . . . lived on less than US\$2/day.²

On top of these persistent global problems of poverty and traditional pollutants, we face the most significant and intractable environmental

¹ Press Release, Int'l Geosphere-Biosphere Programme, "Planetary Dashboard Shows 'Great Acceleration' in Human Activity Since 1950" (15 January 2015), available 13 January 2017 at <http://www.igbp.net/news/pressreleases/pressreleases/planetarydashboardshowsgreataccelerationinhumanactivitiesince1950.5.950c2fa1495db7081eb42.html>; Will Steffen et al., *Planetary Boundaries: Guiding Human Development on Changing Planet*, 347 SCI. 6223 (2015) (showing 4 of 9 boundaries have been crossed). According to one of the authors, Professor Steve Carpenter, "[i]t might be possible for human civilization to live outside Holocene conditions, but it's never been tried before. We know civilization can make it in Holocene conditions, so it seems wise to try to maintain them." WisLimnology, *Planetary Boundaries, Nutrient Pollution, and Human Civilization*, YOUTUBE (15 January 2015), available 13 January 2017 at https://www.youtube.com/watch?v=_8MUcaNPbL0.

² PETER A. VICTOR, *MANAGING WITHOUT GROWTH: SLOWER BY DESIGN, NOT DISASTER* 49 (Edward Elgar 2008).

threat to the world: climate disruption. Increasing human pressures on the environment, fueled by excessive consumerism in wealthy countries and an expansion of fossil fuel usage by rapidly growing populations in low-consuming countries, has brought us to the climate cliff. Climate change has revealed a fundamental weakness in environmental law, national and international: in the current system the law is doomed to be a weak antidote to correct the global economy's vast externalization of environmental costs. Ultimately, the law should be aimed at supporting the emergence of a new economic system deploying accurate measures of prosperity and progress and fully aligned with sustainability, wealth equity, and vibrant participatory democracies.

Societies tend to aim towards what is measured. For at least the last 50 years, the primary measure of prosperity, to the exclusion of all other considerations, has been the Gross Domestic Product (GDP). In the most simplistic of terms, GDP growth is seen as good and anything that impedes GDP growth as bad. For a measure that is simply the calculation of "the total unduplicated value of the goods and services produced in the economic territory of a country or region during a given period" to have achieved this level of shorthand for "progress" underlies some of the major problems the world faces with climate change and wealth inequity.³

"If we understand progress to mean an improvement in well being, then GDP is a poor measure. It includes many items that grow when things are or might be getting worse":⁴ for example, medical bills to treat cancer, building infrastructure that encourages people to use cars, cleaning up toxic waste, and home security, police forces and military expenditures. As far as GDP is concerned, it does not matter if a society invests more in prisons than education, the dollars are tallied the same way.

The elevation of such a crude and misleading measure to the role of the leading benchmark for progress is part of the reason environmental protection laws are less muscular than they need to be. Whenever the environment or better wages for the working class is pitted against GDP growth, the latter usually wins. As will be explained, GDP growth is now on a collision course with what countries around the world need to do to meet the climate imperative, which underscores the urgent need to use a measure of progress that tells us more about the well-being of the earth and the people who call it their home.

Economist Peter Victor explains in *Managing Without Growth* how to direct policies towards "far more specific economic, social, and

³ *Id.* at 9.

⁴ *Id.*

environmental objectives” – the triple bottom line – than the predominant GDP fetish currently allows.⁵ He argues for making the kinds of transitions contemplated in this book through a deliberate and thoughtful slowing of the rate of economic growth in rich economies rather than transitions driven by scarcity and high prices.⁶

While an in-depth analysis of climate change and its wide-ranging destructive and disruptive impacts is beyond the scope of this chapter, the major elements are outlined. The focus is on the long-term levels of atmospheric carbon dioxide and its stillborn baby, ocean acidification. The ocean absorbs carbon dioxide, and as levels of atmospheric carbon dioxide increase, the ocean absorbs more, thus changing ocean chemistry, making it more acidic.⁷ As acidity increases, it removes chemicals that are the basic building blocks of shelled organisms, corals, and more. Damage to such organisms poses a major risk to the marine food web. Such damage will have a global human impact, as currently more than a billion people rely on high-protein food from the ocean.⁸ According to the US National Oceanic and Atmospheric Administration:

Estimates of future carbon dioxide levels, based on business as usual emission scenarios, indicate that by the end of this century the surface waters of the ocean could be nearly 150 percent more acidic, resulting in a pH that the oceans haven’t experienced for more than 20 million years.⁹

Thinking in geologic time does not come naturally to many; so to put this into context, humans did not exist on earth 20 million years ago. So again, we are moving well beyond the conditions known to support human life.

The long-term trends in global temperature, carbon dioxide, and pH levels (a measure of acidity) in the oceans are shown in Figures 1.1 and 1.2.

Not shown in the temperature graph in Figure 1.1 is the most recent data: Each of the last 14 months prior to July 2016 has been the hottest month ever recorded and atmospheric carbon dioxide has exceeded 400 parts per million.¹⁰ In response to our clear departure from long-term trends, moving

⁵ *Id.* at 25.

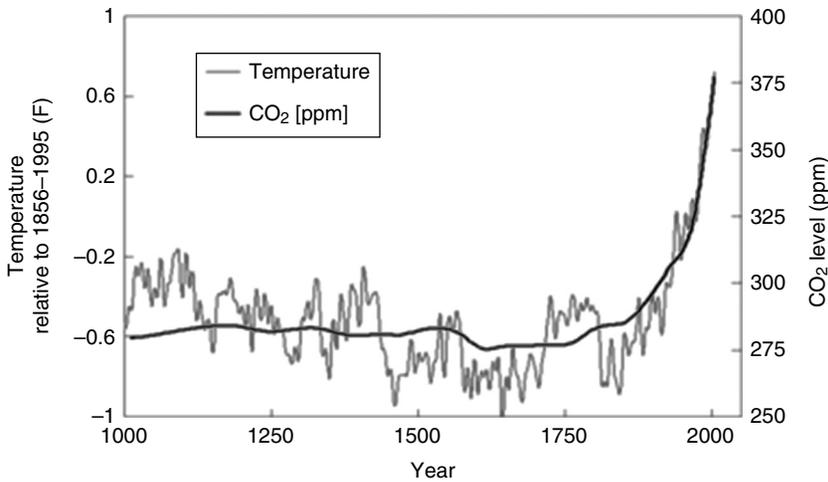
⁶ *Id.* at 69.

⁷ Ocean Acidification, Pac. Marine Env’tl. Lab., U.S. NAT’L OCEANIC AND ATMOSPHERIC ADMIN., available 13 January 2017 at <http://www.pmel.noaa.gov/co2/story/Ocean+Acidification>.

⁸ *Id.*

⁹ *Id.*

¹⁰ Robinson Meyer, *Not Doomed Yet: The Can of Fanta in the Marina Trench*, ATLANTIC (28 July 2016), available 13 January 2017 at <http://www.theatlantic.com/science/archive/2016/07/the-hottest-land-temperature-ever-recorded/493436/>.



Notes:

Data sources for CO₂: Vostok ice core, Law Dome ice core, and Mauna Loa air samples.

Data source for temperature: Vostok ice core.

Source: EDF, http://blogs.edf.org/climate411/2007/06/29/human_cause-3/.

Figure 1.1 Temperature and CO₂ for the last 1,000 years

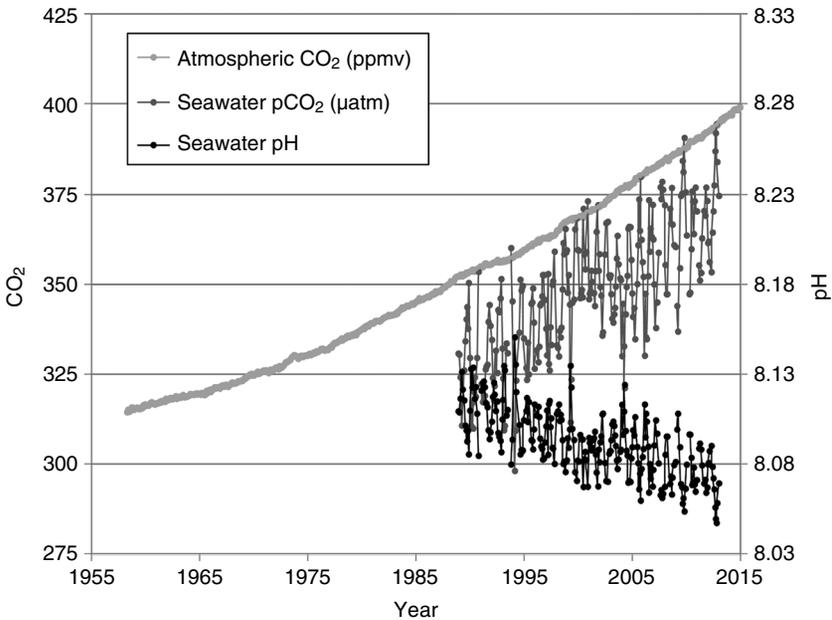
beyond levels of greenhouse gases (GHGs)¹¹ that are known to support human life and ocean pH levels known to support diverse marine life, the international community created the Paris Agreement.

Finalized at COP21 in Paris in December 2015, international leaders agreed to a goal of limiting global warming “to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels”.¹² World leaders recognized the Kyoto Protocol framework was inadequate to deliver on this global goal.¹³ So they negotiated the new Paris Agreement, which will apply from 2020 onward.

¹¹ GHGs include carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄), Sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs).

¹² Framework Convention on Climate Change, *Paris Agreement*, art. 2(1)(a), U.N. Doc. FCCC/CP/2015/L.9 (Dec. 12, 2015), [hereinafter Paris Agreement], available 13 January 2017 at <http://unfccc.int/resource/docs/2015/cop21/eng/109r01.pdf>.

¹³ INT’L ENERGY AGENCY, KEY TRENDS IN CO₂ EMISSIONS EXCERPT FROM: CO₂ EMISSIONS FROM FUEL COMBUSTION, xi (2015), [hereinafter CO₂ EMISSIONS FROM FUEL



Note: This graph shows the correlation between rising levels of carbon dioxide (CO₂) in the atmosphere at Mauna Loa with rising CO₂ levels in the nearby ocean at Station Aloha. As more CO₂ accumulates in the ocean, the pH of the ocean decreases. (modified after R. A. Feely, Bulletin of the American Meteorological Society, July 2008).

Source: NOAA, <http://www.pmel.noaa.gov/co2/story/Ocean+Acidification>.

Figure 1.2 Ocean acidification and CO₂ over 60 years

It bears emphasizing that even at current levels of GHGs, the earth is experiencing the hottest temperatures ever recorded; in July 2016, land temperatures in both Iraq and Kuwait registered 54 degrees Celsius (129 degrees Fahrenheit).¹⁴ Given the current situation, it is beyond undesirable to imagine living in a +2°C world. The problem is that at current GHG emission rates, societies will in just a few short years exhaust the emissions quota standing between today and a 1.5°C warmer world. In other words, although all the warming has not yet been “realized”, we have for all practical purposes already committed the planet to +1.5°C.

COMBUSTION], available 13 January 2017 at <http://www.iea.org/publications/freepublications/publication/CO2EmissionsTrends.pdf>.

¹⁴ Meyer, *supra* note 10.

However, for discussion purposes, we will use the Paris Agreement goal. In order to keep warming to +2°C this century, there is debate about how to achieve this, but there is recognition that global GHGs need to peak before 2020, with global emissions in 2050 being 50 to 60 percent below 1990 levels.¹⁵ A logical approach is to focus on the largest sectors of emissions and figure out how to rapidly transform those systems to reduce their GHG contributions. In the US, the two largest sectors for GHG emissions are energy (83.6 percent of 2014 total) followed far behind by agriculture (9 percent of 2013 total).¹⁶

The US numbers are consistent with a global assessment of where to focus attention for greatest reductions. The UN's 2014 Emissions Gap report identifies sectors and rates their overall emission reduction potential as well as the barriers to implementation. Renewable energy and sustainable agriculture are two sectors that have some of the higher emission reduction potentials globally.¹⁷

But even with that targeted focus on energy and agriculture, what does this mean for business as usual, and in particular, the function and goal of our current global economy? Before beginning to answer that question, one needs to understand the relationship between carbon dioxide emissions and economic growth, as measured by GDP. The graph in Figure 1.3 helps to show the troubling correlation.

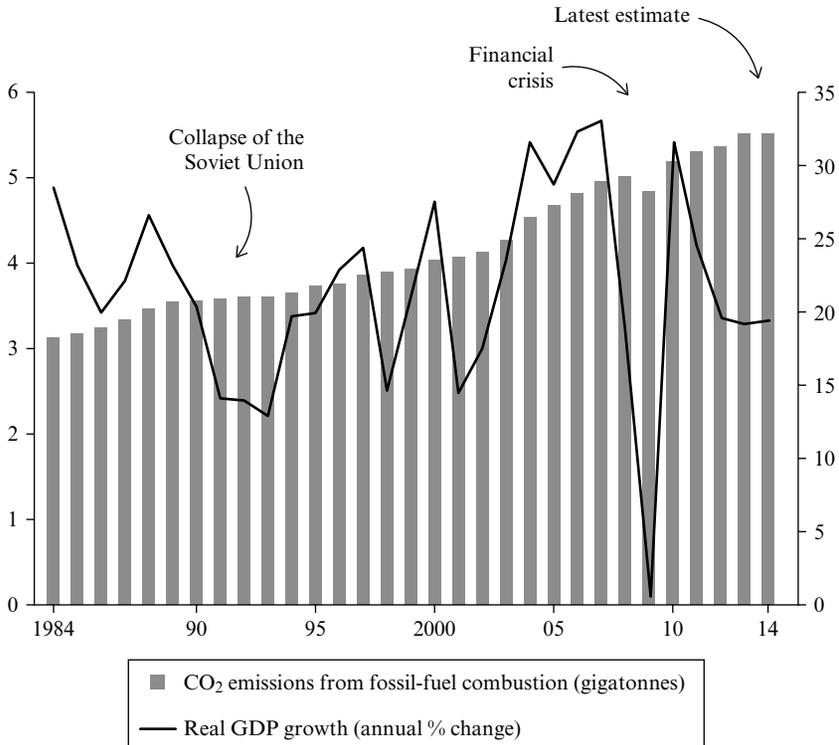
According to the International Energy Agency, the combined growth in population (35 percent) and in per capita GDP (60 percent) led to a dramatic increase in global carbon dioxide emissions (56 percent) between 1990 and 2013.¹⁸ The global economy doubled since 1960 and is projected to quadruple by mid-century. Our current economic system is very good at producing

¹⁵ Some argue we need to reach net zero emissions by 2050. The Paris Agreement leaves this open to interpretation: "Parties aim to reach global peaking of greenhouse gas emissions as soon as possible (. . .) so as to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty." Paris Agreement, art. 4.

¹⁶ U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2014 3-1 (2016), available 13 January 2017 at <https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2016-Main-Text.pdf>; U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2013 ES-23 (2015), available 13 January 2017 at <https://www3.epa.gov/climatechange/Downloads/ghgemissions/US-GHG-Inventory-2015-Main-Text.pdf>.

¹⁷ UNITED NATIONS ENVT. PROGRAMME, THE EMISSIONS GAP REPORT 2014: A UNEP SYNTHESIS REPORT tbl. 4.1 (2014), available 13 January 2017 at http://www.unep.org/publications/ebooks/emissionsgapreport2014/portals/50268/pdf/EGR2014_LOWRES.pdf.

¹⁸ CO₂ EMISSIONS FROM FUEL COMBUSTION, *supra* note 13, at ix.



Note: Based on International Energy Agency data from CO₂ Emissions from Fuel Combustion © OECD/IEA [2015], www.iea.org/statistics, License: www.iea.org/t&c; as modified by Yale Climate Connections, *Economic Growth Without An Increase In Global Emissions*, (June 2015), <http://www.yaleclimateconnections.org/2015/06/economic-growth-without-an-increase-in-global-emissions/>.

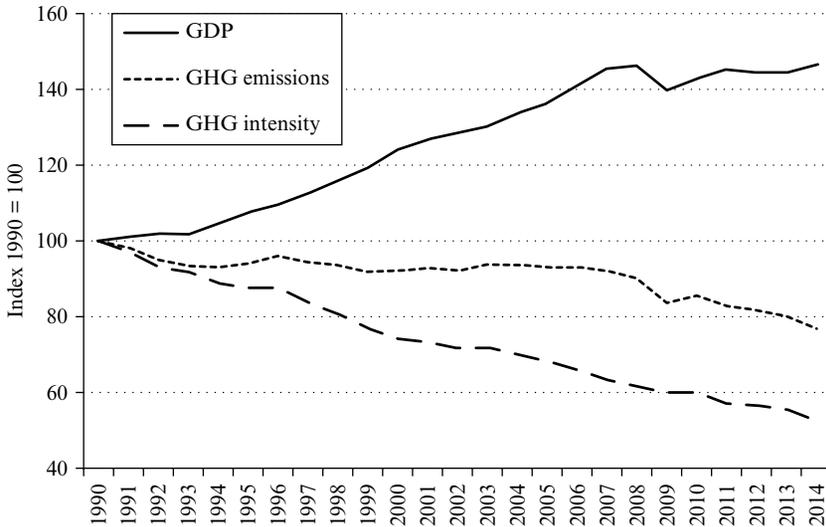
Sources: IEA; Thomson Reuters Datastream.

Figure 1.3 Global GDP and CO₂ emissions 1984–2014

GDP growth. However, as shown in Figure 1.3, since 1984 carbon dioxide emissions have generally risen with growth in GDP and population.

If the global economy is growing 5 percent per year, carbon intensity of the economy needs to decline dramatically to meet the Paris Agreement goals: some argue convincingly that the decline must be 9 to 11 percent per year until 2050.¹⁹ While there are those who do not think this level of

¹⁹ See, e.g., JAMES GUSTAVE SPETH, *AMERICA THE POSSIBLE: MANIFESTO FOR A*



Source: Report of the Commission to the European Parliament and the Council on Climate Action Progress, at fig. 2, COM(2015) 576 final (18 November 2015), <http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:52015DC0576>, © European Union, <http://eur-lex.europa.eu/>, 1998-2016.

Figure 1.4 European GDP and GHG emissions 1990–2014

carbon intensity reduction can be sustained while keeping the priority on GDP growth, others urge that global GDP growth can continue if we can successfully “decouple” carbon dioxide emissions; this means that emissions decline while GDP grows, as opposed to emissions growing but less than GDP.

Figure 1.4 shows that in the past decade the EU appears to have experienced a decoupling of carbon emissions from economic growth, with rising GDP alongside falling emissions. The EU economy grew by more than 46 percent between 1990 and 2014, while emissions fell by 23 percent. As a result, GHG emissions intensity in the EU (ratio of emissions per unit of GDP) was reduced by almost half. So does the EU experience provide a path forward?

Unfortunately, this decoupling may not be an accurate portrayal of what’s occurring in the EU with GHGs. Some argue the apparent

NEW ECONOMY 52–65 (Yale University Press 2012) (finding that carbon intensity = quantity of emissions released to produce USD\$1 economic output).

decoupling was only possible because the fossil fuel-based manufacturing and contingent energy use needed to fuel the consumption part of the EU's GDP growth was taken on by other countries, such as China.²⁰ The way in which emissions are counted towards a country's total support this argument. Emissions are counted for the country where a good is produced and not where it is consumed.²¹ Also emissions accounting does not attribute any emissions from the international shipment of goods to any country, and transport-related emissions have grown 90 percent (international aviation bunkers) and 64 percent (international marine bunkers) from 1990 to 2013.²² These factors allow de-industrializing, yet high consuming, wealthy countries to show emissions reductions even though they are importing those goods for consumption in their country. "As customers and consumers, we are tied to industrial production for our computers, PDAs, cars and trucks, and flat-paneled televisions. And we are dependent on the energy required to make them work, over 70 percent of which comes from burning fossil fuels, as it has for the past 150 years."²³ This is why we need to address consumerism in wealthy countries if we are going to begin to meet the climate challenge to rapidly reduce GHGs.

Furthermore, according to Speth's calculations, the annual rate of GHG emission reduction achieved by the EU between 1990 and 2014 (1.1 percent) is roughly a fourth of the rate needed to reduce EU emissions by 90 percent for the period 1990–2050, an estimate of the desired reduction for rich countries.²⁴ In other words, the EU may have decoupled GHG emissions growth from GDP growth but at a rate far, far too slow to meet the climate imperative.

Despite the uncertainties about the extent of effective decoupling of emissions and GDP growth in the EU, a move in the right direction is that

²⁰ Fiona Harvey, *Global Emissions Stall in 2014 Following Slowdown in China's Economy*, GUARDIAN (13 March 2015), available 13 January 2017 at <http://www.theguardian.com/environment/2015/mar/13/global-emissions-stall-in-2014-following-slowdown-in-chinas-economy>.

²¹ CO₂ EMISSIONS FROM FUEL COMBUSTION, *supra* note 13, at 10. See also BAPTISTE BOITLER, WORLD INPUT-OUTPUT DATABASES, CO₂ EMISSIONS PRODUCTION-BASED ACCOUNTING VS CONSUMPTION: INSIGHTS FROM THE WIOD DATABASES (2012).

²² CO₂ EMISSIONS FROM FUEL COMBUSTION, *supra* note 13, at xii, Table 1.

²³ PETER M. SENGE, ET AL., THE NECESSARY REVOLUTION: HOW INDIVIDUALS AND ORGANIZATIONS ARE WORKING TOGETHER TO CREATE A SUSTAINABLE WORLD 7 (Doubleday 2008).

²⁴ Calculation based on needed exponential rate of decline annually to reduce 23% in 24 years (minus 1.1%) and to reduce GHGs 90% in 60 years (minus 3.9%). (1.1 is 28% of 3.9.) Gus Speth email to author, 10 September 2016 (on file with author).

for the first time global emissions of carbon dioxide related to energy have remained flat for 2014 and 2015 while the global economy grew about 3 percent in each of those years. In the past, whenever emissions flattened or declined there was an associated economic downturn (see Figure 1.3). However, now electricity generated by renewables appears to have played a key role in this positive development.²⁵

Yet simply doing more of what has worked to keep energy-related emissions flat will not get us to the level of reductions per year needed to meet the Paris Agreement goals. Is the amount of needed decoupling between emissions and GDP growth achievable without deeper transformation of the political economy? It seems highly doubtful that societies can reduce GHG emissions at needed rates while giving top priority to high and steady growth in GDP and corporate profitability and to regular increases in income and consumption among the already well-to-do. And given that equity in GHGs puts a heavier burden of emissions decline on affluent countries, it is even clearer that the old economic priorities must yield to new economic thinking.

At the Earth Day 2016 signing of the Paris Agreement on climate change, the UN Secretary-General Ban Ki-moon stated, “We are in a race against time . . . The era of consumption without consequences is over.”²⁶

The stark reality is that even with the Paris Agreement, the commitments for national reductions will not meet the less than +2°C climate goal of the signatories.²⁷ The United Nations Environmental Programme (UNEP) analysis of the “carbon gap” concludes that current pledges “are most consistent with scenarios that limit global average temperature increase to below 3.5°C until 2100 with a greater than 66 percent chance.”²⁸

²⁵ *Decoupling of Global Emissions and Economic Growth Confirmed*, INT’L ENERGY AGENCY (16 March 2016), available 13 January 2017 at <https://www.iea.org/newsroomandevents/pressreleases/2016/march/decoupling-of-global-emissions-and-economic-growth-confirmed.html>.

²⁶ Doyle Rice, ‘175 Nations Sign Historic Paris Climate Deal on Earth Day’, USA TODAY (22 April 2016), available 13 January 2017 at <http://www.usatoday.com/story/news/world/2016/04/22/paris-climate-agreement-signing-united-nations-new-york/83381218/>. In addition to signing the agreement, each country must ratify it. The agreement will be in force after 55 countries representing at least 55% of global GHG emissions have formally ratified it. Once in force, countries set their own targets for reducing GHGs and these are not binding. *Id.*

²⁷ *Id.* The difference between what the individual countries have committed to do, if fully implemented, and what is required to keep the Earth under at least 2°C is referred as to Carbon Gap.

²⁸ UNITED NATIONS ENVTL. PROGRAMME, THE EMISSIONS GAP REPORT 2015: EXECUTIVE SUMMARY, available 13 January 2017 at http://uneplive.unep.org/media/docs/theme/13/EGR_2015_ES_English_Embargoed.pdf.

Thus, even with the Paris Agreement in place, much more is needed than the status quo to meet the climate imperative. We need to rapidly transform our energy sources from fossil fuels to renewables, reduce consumption levels in wealthy countries, make our food system more local and resilient and less carbon intensive, and reverse the trend in numbers of people living in poverty and the rapid growth of wealth inequality. At the core of these transformations, we need new measures of a prosperous society that do not rely on GDP as the sole measure of success. Modern society has been so fixated on GDP growth, that we have ignored critical factors like over-exploiting resources, climate impacts, and the gap between rich and poor.

Moreover, these changes require a different set of values, as described in Speth's chapter; and that people view nature as a commons and a partner rather than property to be commodified, as developed in Chapter 4 by Iorns and Sheehan. People across the world are realizing the extent of these global problems and starting to see that we are on the cusp: at the end of one age and the beginning of another. According to systems thinker Peter Senge,

Just as the Iron Age didn't end because we ran out of iron, the Industrial Age isn't ending because of the decline in opportunities for further industrial expansion. It is ending because individuals, companies, and governments are coming to the realization that its side effects are unsustainable.²⁹

The great challenge of our time is to change the operating instructions of our political economy so economic activity serves the common good. This level of change on the time scale needed (GHGs peak by 2020) calls for strategic systems analysis and rapid transitions.

III. SYSTEMS THINKING AND ITS IMPLICATIONS FOR BUILDING A NEW ECONOMY ALIGNED WITH THE CLIMATE IMPERATIVE

To solve these seemingly intractable problems will require system change because poverty, inequality, viewing nature as a commodity, and climate change are "deeply rooted in the fundamentals of our political-economic system".³⁰ There are different theories of system change upon which one can draw, and many decades of analysis across the disciplines. Since the

²⁹ SENGE ET AL., *supra* note 23, at 8.

³⁰ JAMES GUSTAVE SPETH, 'NEXT SYSTEM PROJECT, GETTING TO THE NEXT SYSTEM: GUIDEPOSTS ON THE WAY TO A NEW POLITICAL ECONOMY' 3 (2015), 3 avail-

1950s, people have incorporated systems theory into biology, physics, cognitive science, management, business,³¹ public health, evaluation,³² public schools³³ and economics.³⁴

People attracted to systems change sometimes misconceive that systems thinking makes things predictable and controllable, but “self-organizing, nonlinear, feedback systems are inherently unpredictable”.³⁵ Problems, such as the need to move our energy sources from fossil fuels to renewables or reducing the gap between the wealthiest and the poorest, are sometimes called “wicked problems” because they have numerous causes and no clear solutions, involve multiple stakeholders, and require lots of people, organizations, and even governments, to shift their mindset and behavior.

Systems theory is not a panacea; it is a lens through which to see the world. Like other lenses (microscopes, reading glasses, telescopes), it provides access to different perspectives.³⁶ In order to look through this lens, one needs to look beyond the short-term to long-term behavior and structure of a system.³⁷

Of the various systems thinkers, this chapter returns to Donella Meadows’ thinking, popularized and criticized since her 1970s *Limits to Growth*, because it is still suitable to the challenge before us. She explains simply that a “system” is a “set of things – people, cells, molecules, or whatever – interconnected in such a way that they produce their own pattern of behavior over time”.³⁸ These behaviors are often known as a system’s function or purpose and although a crucial determinant of a system, are often obscured.³⁹ Purpose comes from behavior, not from simply stating the goals.⁴⁰ The set of things in a system or its elements can change with very little impact on the overall system, but if the purpose

able 13 January 2017 at <http://thenextsystem.org/wp-content/uploads/2015/10/GettingToTheNextSystem.pdf>.

³¹ SENGE ET AL., *supra* note 23.

³² MARGARET B. HARGREAVES, MATHEMATICA POLICY RESEARCH, INC., EVALUATING SYSTEM CHANGE: A PLANNING GUIDE 13 (2010).

³³ John Kania and Mark Kramer, *Collective Impact*, 9 STAN. SOC. INNOVATION REV. 36 (2011).

³⁴ DONELLA MEADOWS, THINKING IN SYSTEMS: A PRIMER (Diana Wright (ed.), Chelsea Green Pub 2008).

³⁵ Donella Meadows, *Dancing with Systems*, DONELLA MEADOWS INST., available 13 January 2017 at <http://donellameadows.org/dancing-with-systems/>.

³⁶ Donella Meadows, *supra* note 34, at 6.

³⁷ *Id.* at 87. News is event level understanding, not behavior level understanding, unless it puts the event in a historical context. *Id.* at 88.

³⁸ *Id.* at 2.

³⁹ *Id.* at 2, 188.

⁴⁰ *Id.* at 14.

changes or the interconnections between the elements, this can result in major system change.⁴¹

The clear-thinking Peter Senge similarly asserts that “how people see the world, what they value, how society defines progress and organizes itself, and how institutions operate” open the possibility to large-scale system change.⁴² In other words, Senge is talking about paradigm change. This builds on one of the significant contributions Meadows has made to systems thinking in her *Leverage Points: Places to Intervene in a System*, which she describes as a distillation of years of working on systems.⁴³ In it she provides a list (in increasing order of effectiveness) of leverage points to change systems, with paradigm change at the highest level of potential leverage.

12. Constants, parameters, numbers (such as subsidies, taxes, standards).

Meadows identifies parameters as the least powerful intervention for system change. What she includes in “parameters” are things like setting air quality standards, electing new representatives, even changing campaign finance rules. She estimates that 99 percent of our attention goes towards changing parameters, but concludes there is not much leverage in them. Much of what we teach in US law schools regarding environmental law is focused on this level of change. “After decades of the strictest air pollution standards in the world, Los Angeles air is less dirty, but it isn’t clean.”⁴⁴

However, she observes that parameters can become leverage points “when they go into ranges that kick off one of the items higher on

⁴¹ *Id.* at 17. One exception to this is changing an element (person) who is a top leader (Bush to Obama), especially if that person has the power to change the purpose. *Id.* From their grounding in soft system methodologies and system dynamics, Foster-Fishman provide complimentary observations that system change happens through: “(1) understanding different perspectives concerning the problem situation [drawing the system boundaries]; (2) locating root causes to systemic problems by identifying system parts and their patterns of interdependency that explain the status quo; and (3) using this information to identify leverage points that will cultivate second-order change [paradigm shift].” Pennie G. Foster-Fishman, et al., ‘*Putting the System Back into Systems Change: A Framework for Understanding and Changing Organizational and Community Systems*’, 39 *Am. J. Community Psychol.* 197, 201 (2007).

⁴² SENGE, ET AL., *supra* note 23, at 5.

⁴³ Donella Meadows, *Leverage Points: Places to Intervene in a System*, Donella Meadows Inst., available 13 January 2017 at <http://donellameadows.org/archives/leverage-points-places-to-intervene-in-a-system>.

⁴⁴ *Id.*

this list. Interest rates, for example, or birth rates, control the gains around positive feedback loops. System goals are parameters that can make big differences.”⁴⁵ Electing an individual who has the power to move the mindset of a population would move this action towards the top of the effective leverage points hierarchy.

11. The sizes of buffers and other stabilizing stocks, relative to their flows.

You may be able to stabilize a system by increasing its buffer. Think here about the use of forests and fields as carbon sinks. These may act as buffers against climate change, but action here is relatively low on the list of effective measures for system change. These buffers will buy time so they are very important and we need to pursue them, but they are not transformative.

10. The structure of material stocks and flows (such as transport networks, population age structures).

This is often the slowest and most expensive kind of system change, and some structures are unchangeable (for example, populations age at a set rate, or once the ice sheets of Greenland or Antarctica melt sea level rises). Physical structures are not usually leverage points for change once they are designed so the leverage point is at the design stage or in the case of melting glaciers, at the prevention stage.

Technological change is something that can speed up the rate of adjustment in a system, but because the world’s physical capital (factories, roads, boilers, and so on) does not change instantly, technological advances are lower on her list of leverage points.⁴⁶ What Elon Musk and others have done to build an electrified transportation network in the US, however, challenges this concept of the rate of change possible with technology. In less than a decade, charging stations for electric vehicles have proliferated, with almost 30,000 electric vehicle charging stations and 681 Tesla Supercharger stations in the US in July of 2016 (compared to 168,000 gas stations for a technology that has existed since Henry Ford).⁴⁷ Given the increased rate

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ CHARGEPOINT, <https://www.chargepoint.com>; *Supercharger*, TESLA, <https://www.tesla.com/supercharger> (both available 13 January 2017).

of technological change possible today, this may be a much stronger leverage point for system change than Meadows thought.

9. The lengths of delays, relative to the rate of system change.

“Delays in feedback loops are critical determinants of system behavior. They are common causes of oscillations. If you’re trying to adjust a system state to your goal, but you only receive delayed information about what the system state is, you will overshoot and undershoot.”⁴⁸ GHGs present a significant information delay problem in that the climate disrupting effects of emissions are not immediately known, and by the time harm is manifest it may be too late to stop. Given long delays, foresight and applying the precautionary principle is essential.⁴⁹

8. The strength of negative/balancing feedback loops, relative to the impacts they are trying to correct.

When a “stock” grows or declines quickly, there is likely a control mechanism influencing this. These mechanisms, which create consistent behavior, operate through feedback loops.⁵⁰ “A negative feedback loop is self-correcting; a positive feedback loop is self-reinforcing.”⁵¹ Systems have numerous negative/balancing feedback loops, many of which are not often used because they only exist to allow the system to self correct when needed.⁵² For example, the human body sweats to cool off and regulate body temperature.

One needs to strengthen negative/balancing feedback controls to improve a system’s self-correcting abilities. Two significant balancing/negative feedback loops are democracy and the market. In an ideal democracy, “people, informed about what their elected representatives do, respond by voting those representatives in or out of office”. To function properly as a balancing feedback, democracy relies on “free, full, unbiased” information between the voters and elected officials.⁵³ So policies that promote that flow of information are critical to a functioning democracy. In an age of curated news

⁴⁸ Donella Meadows, *supra* note 43.

⁴⁹ Donella Meadows, *supra* note 34, at 104–5.

⁵⁰ *Id.* at 25.

⁵¹ Donella Meadows, *supra* note 43.

⁵² *Id.*

⁵³ *Id.*

and media consolidation along with lack of effective restrictions on financing political campaigns, this feedback mechanism is undermined. In *People Get Ready, The Fight Against a Jobless Economy and a Citizenless Democracy*, McChesney and Nichols call the current state of the US a “citizenless democracy” because “core political and economic decisions are made by the wealthy few for the wealthy few”.⁵⁴ The issue of strengthening democracy at multiple levels, from government to businesses and other organizations, is critical to laying the foundation for changing the political economy.

The market is another balancing feedback system with incredible potential for self-correction if the price is clear, timely, and truthful. The more the price fails to reflect the externalities of something, the more problematic it is in leading people to make decisions that are not in their or society’s best interest. So the leverage point is getting the price right. This has been the subject of intense study and debate since Adam Smith wrote *The Wealth of Nations* in 1776.

Pollution taxes provide a negative feedback in response to externalized public costs of private benefits, but the tax needs to be set at a level that it can improve the market’s ability to correct the externality. Carbon taxes could be a powerful component of correcting the market and aligning the economy with the imperative to rapidly reduce GHGs, if set at the right level. But there are so many conditions that must exist for prices to convey accurate information, such as homogeneity of products, numerous participants, and no externalities to name a few, that prices usually fail.⁵⁵ With small economies and minor environmental impacts this is not a big limitation. But with a global economy, massive climate disruption, and growing wealth inequality, the fact that prices – even with taxes and subsidies – are “seriously incomplete and misleading” means that this is not the strongest leverage point to drive needed system change.⁵⁶

7. The gain around driving positive feedback loops.

The more a positive feedback loop works, the more it gains power to continue working. These feedback loops are sources of a system’s growth, explosion, erosion, and collapse. These loops can be virtuous

⁵⁴ ROBERT W. MCCHESENEY and JOHN NICHOLS, *PEOPLE GET READY, THE FIGHT AGAINST A JOBLESS ECONOMY AND A CITIZENLESS DEMOCRACY* 151 (Nation Books 2016).

⁵⁵ Victor, *supra* note 2, at 39–46.

⁵⁶ *Id.* at 46.

or vicious.⁵⁷ A food and agriculture example of a positive feedback loop is soil erosion. “The more the soil erodes, the less vegetation it can support, the fewer roots and leaves to soften rain and runoff, the more soil erodes.”⁵⁸ If this positive feedback loop continues unchecked or speeds up rapidly, it may lead to chaos and the system collapses. In reality, this is rare, and a negative feedback loop will kick in to self-correct.

Economic growth and population are positive feedback loops. Meadows asserted that “[p]opulation and economic growth rates in the world model are leverage points, because slowing them gives the many negative loops, through technology and markets and other forms of adaptation, all of which have limits and delays, time to function”.⁵⁹ Controlling rapidly growing positive feedback loops involves slowing down their growth rates.⁶⁰

In addition to this hierarchy of leverage points for system change, Meadows gives us an analysis of system traps and opportunities that are useful here: these are situations that indicate system problems and places where change is possible and important.⁶¹ One such trap involves positive feedback loops that lack effective negative/balancing feedback loops and Meadows calls this “success to the successful”. This is a situation where people use wealth, privilege, special access or information to create more of the same for those who have it. One finds this trap whenever “the winners of a competition receive, as part of the reward, the means to compete even more effectively in the future”.⁶²

A readily known example of “success to the successful” is the game of Monopoly. Another common example is compounding earnings on stock investments. To use an agricultural example, we see this in the consolidation of farms into fewer and larger entities. The acceleration in income inequality also results from this system trap:

⁵⁷ Meadows, *supra* note 34, at 30.

⁵⁸ Meadows, *supra* note 43.

⁵⁹ *Id.*

⁶⁰ “The time it takes for an exponentially growing stock to double in size, the ‘doubling time,’ equals approximately 70 divided by the growth rate (expressed as a percentage). Example: If you put \$100 in the bank at 7% interest per year, you will double your money in 10 years ($70/7 = 10$). If you get only 5% interest, your money will take 14 years to double.” Meadows, *supra* note 34, at 33.

⁶¹ *Id.* at 6.

⁶² *Id.* at 126–7.

Because the poor can afford to buy only small quantities (of food, fuel, seed, fertilizer), they pay the highest prices. Because they are often unorganized and inarticulate, a disproportionately small part of government expenditure is allocated to their needs. Ideas and technologies come to them last. Disease and pollution come to them first. They are the people who have no choice but to take dangerous, low-paying jobs, whose children are not vaccinated, who live in crowded, crime-prone, disaster-prone areas.⁶³

Countering the “success to the successful” trap may come from diversification (for a business), by putting in feedback loops that prevent monopolies (for an industry), and by periodically leveling the playing field by rewarding success in a way that does not bias the next round of competition.⁶⁴

For income inequality there are many ways to break this cycle and create balancing feedback loops: progressive tax, charity, welfare, labor unions, universal high quality health care and education, and inheritance tax are some of the common responses.⁶⁵ Although these policies are beyond the scope here, Purdy’s chapter discusses the accelerating gap in wealth inequalities – this “success to the successful” trap, and its implications for environmentalism. He calls for environmental justice to be fully integrated into environmentalism, which will reorient environmental law and policy priorities. Further, Orsi’s chapter provides examples from her law practice on how to rethink organizational structures, management, compensation, and ownership, towards more environmentally favorable and wealth equalizing outcomes, thus building in balancing mechanisms to counter the “success to the successful” trap. Lastly, Baker’s chapter on making renewable energy ownership available to low and moderate-income people provides insight into the need for the law to break the success to the successful trap as we make this historic and necessary transition to renewables.

6. The structure of information flows (who does and does not have access to information).

Sharing information can create important feedback loops. The US Toxic Release Inventory and National Environmental Policy Act, or

⁶³ *Id.* at 129.

⁶⁴ *Id.*

⁶⁵ *Id.* at 130.

California's Prop 65, among other public disclosure laws can impact behavior quickly. The lack of crucial information in a feedback loop can cause a system to malfunction. To be effective, however, the timing and form of the information are important factors to consider and design into a system.

This does not have to come in the form of publishing an environmental impact report, but can be built into the structural design of a system. Imagine if the law required a factory's water intake pipe to be placed directly downstream from its waste discharge pipe: those producing the waste would know exactly what was going into the water they would very soon be taking back into the factory for reuse and would have a greater incentive to modify the content of the effluent.⁶⁶

Provision of information plays a role in bounded rationality, the concept that people make rational decisions based on the information they have, and when the information is quite limited this can lead to very negative outcomes.⁶⁷ The tragedy of the commons is an example of this.

Commons tragedy may occur when there is a commonly shared resource that is limited and erodible when overused, the users of the resource have reason to increase use, and people lack information about the condition of the commons (that is, there is delayed feedback).⁶⁸ One way to get out of the tragedy trap, according to Meadows, is to regulate.

The regulation option essentially creates a feedback loop between regulators and users about the condition of the commons; success here depends on regulators with the expertise to monitor, assess, and enforce restrictions, with the benefit of the whole as their goal.⁶⁹ In essence, the regulators should act as trustees for current and future generations of users of the commons. "[I]t's not enough to inform all the users of an aquifer that the groundwater level is dropping. That could initiate a race to the bottom. It would be more effective to set a water price that rises steeply as the pumping rate begins to exceed the recharge rate."⁷⁰

This has important implications for a wide variety of proposals to reform the political economy. Setting and adjusting a carbon tax to provide important information flows to inform economic activity, for

⁶⁶ Meadows, *supra* note 43.

⁶⁷ Meadows, *supra* note 34, at 106–7.

⁶⁸ *Id.* at 116–17.

⁶⁹ *Id.* at 119–21.

⁷⁰ Meadows, *supra* note 43.

instance. Establishing a trustee relationship to protect the climate is another where paying attention to information flows and setting an effective regulatory structure for this commons are crucial. Wood's chapter on the public trust doctrine explains the trust relationship and legal features in more detail. Of course, regulation is not the only counter to the tragedy trap. Bollier's chapter provides a wide variety of examples of how people are coming together in a diversity of commons without resort to state-generated regulations.

5. The rules of the system (such as incentives, punishments, constraints).

The rules of the system can be absolute and unchangeable by society, such as the law of gravity, or the rules can be human-created and normative, such as constitutions, statutes, regulations, court opinions, agency guidance, and private contracts. The rules of the system can be a powerful leverage point, as they influence human behavior.

"If you want to understand the deepest malfunctions of systems, pay attention to the rules, and to who has power over them."⁷¹ When the rules of a system result in the "success to the successful" trap – as exemplified by rapidly growing income inequalities – there is a strong indicator of a breakdown in the democratic system of rule making. Many of the chapters in this book explore ideas about bolstering participatory democracy in response to the many indicators of a breakdown in democratic rule making. Part of that involves a greater emphasis on subsidiarity, diffusing decision-making to the broadest and lowest possible level of an entity, organization, or government.

4. The power to add, change, evolve, or self-organize system structure.

Along the lines of subsidiarity, Meadows explains: "Self-organization means changing any aspect of a system lower on this list – adding completely new physical structures, such as brains or wings or computers – adding new negative or positive loops, or new rules."⁷² Meadows sees this as a powerful point of change, not because it is centrally controlled and directed towards a pre-determined end, but precisely because it is not. She advocates for experimentation, variability and diversity in a system.

⁷¹ *Id.*

⁷² *Id.*

This aspect of system change is more abundant when we have diverse and thriving local economies with business organizations that enhance democratic participation. Winters's chapter (Chapter 11) delves into this interplay between centralized and localized decisions, as reflected in law, related to food systems. Orsi's chapter (Chapter 6) gives ideas and examples of lawyers working in partnership with clients to diffuse power and decision-making. Ristino's chapter (Chapter 12) shows how legal design makes law and policy more accessible and interactive to many. And Taub's chapter (Chapter 8) explains how new rules facilitate connecting socially-minded investors to capitalize the proliferation of local business ventures, which increases variability and diversity in the economy.

3. The goals of the system.

The goals of the system are powerful leverage points that influence the lower ranked leverage points. Although there are intermediate goals for different pieces of a system, it is important to identify the hard to see goals for the whole system. Although Meadows identified electing individuals as a less powerful leverage point (she called it changing a parameter and ranked it last), she argues that some individuals have such a powerful position to set the goals of the system that these elections are strong leverage points. US President Ronald Reagan's push for a limited government demonstrates the "high leverage of articulating, meaning, repeating, standing up for, [and] insisting upon new system goals".⁷³ Speth's chapter (Chapter 2) highlights Reagan's leadership as a pivotal time for the environmental movement, one that was not met with an adequate counterweight, which he argues has influenced where we are today.

In 2016, the Brexit vote in the United Kingdom and the US presidential election provide a contemporary example. The goals that will be set by a UK that no longer automatically follows the EU's environmental laws or a US led by Donald Trump will reverberate widely. Already in early 2017, the election of President Trump is showing itself to be a significant leverage point in changing the goals of the system; he has identified cabinet members to lead key agencies with an influence on climate change who have financial ties to the fossil fuel industry, deny the existence of climate change, a history of litigating against the agency they will lead, or all three.

⁷³ *Id.*

A trap related to system goals is “policy resistance”, which arises when multiple entities are pulling a system towards different goals, and any new policy pulls the system in one direction resulting in the other entities pulling harder in the opposite. The policy resistance trap is evident in the policy gridlock we see today in the US on climate change and litigation challenging the Obama Administration’s primary policy tool to address it: the Clean Power Plan. Meadows argues that the way out of the policy resistance trap is to step out of the push and pull to seek mutually satisfactory goals.⁷⁴ The current situation with lack of alignment of goals between globalized capitalism and rapidly moving off of fossil fuels is an example of the policy resistance trap. Can we articulate aligned goals that move us out of this resistance dynamic? Are we seeing that occur with the rapid development of renewables and community solar in particular? or in the rise of the local food movement across America?

Another goal-related trap is “seeking the wrong goal”.⁷⁵ A common mistake in setting goals is confusing effort with results. Using GDP as a measure of economic health and prosperity falls into this trap. Since GDP measures all consumption, it lumps together the good with the bad, fails to reflect income distribution, and does not show environmental degradation. Growth in GDP can be driven by building roads instead of public transportation: GDP is agnostic about the type of activity it measures. GDP is simply a measure of throughput (flows of stuff made and purchased in a year).⁷⁶ So more resource use, fueled by consumerism, results in improvements to GDP. But as seen above, this directly conflicts with the climate goals of the Paris Agreement because over time GDP growth has correlated with growth in GHGs.

What if instead of GDP growth, the goal was:

- the highest per capita stocks of wealth with the lowest throughput of resources,
- the smallest gap between rich and poor,
- the rapidity with which an economy decarbonizes, and
- the country with the happiest people.

The key here is to define goals that articulate real societal wealth and prosperity and to use indicators that measure results towards those goals instead of simply activity level.⁷⁷ The ideal is to define the

⁷⁴ Meadows, *supra* note 34, at 115–16.

⁷⁵ *Id.* at 138.

⁷⁶ *Id.* at 139.

⁷⁷ *Id.* at 140.

correct goals in this way with an eye towards alignment rather than policy resistance.

2. The mindset or paradigm out of which the system – its goals, structure, rules, delays, parameters – arises.

Meadows identifies paradigms about the world (that is, people “own” land) as the source of the systems. Whether it was Copernicus and Kepler showing that the earth is not the center of the universe, or Einstein hypothesizing that matter and energy are interchangeable, or Adam Smith postulating that the selfish actions of individual players in markets wonderfully accumulate to the common good, people who have managed to intervene in systems at the level of paradigm have hit a leverage point that totally transforms systems.⁷⁸

Paradigm change is one of the hardest changes to achieve, but one of the most powerful. The path towards paradigm shift for a society, according to Meadows, is to emphasize repeatedly the failures of the old paradigm, while making people in the new paradigm highly visible to the public and in positions of power. Like Meadows, cultural theorists agree that significant system change takes hold and is sustained over time only by altering underlying beliefs and values that direct daily practices and behaviors.⁷⁹

The current paradigm, which shapes values and our overall policy orientation, is that the way to address social needs and achieve better, happier lives is to expand the economy as measured by GDP growth. “Productivity, wages, profits, the stock market, employment, and consumption must all go up. Growth is good. So good that it is worth all the costs.”⁸⁰

If meeting the Paris Agreement climate goals means reducing growth in these parameters of the global economy, it will not be seen as worth it and there will be continued and mounting policy resistance. Speth sketches the current political economy of American capitalism as a linked and mutually reinforcing system. He argues the primary features of this system are an:

unquestioning society-wide commitment to [GDP] economic growth at any cost; powerful corporate and banking interests whose overriding

⁷⁸ Meadows, *supra* note 43.

⁷⁹ Foster-Fishman, et al., *supra* note 41, at 205.

⁸⁰ JAMES GUSTAVE SPETH, *THE BRIDGE AT THE EDGE OF THE WORLD* 144 (Yale University Press 2008).

objective is to grow by generating profit, including profit from avoiding social and environmental costs and keeping wages low; a government beholden to corporate interests and thus not strongly inclined to curb corporate abuses; . . . a rampant consumerism spurred endlessly on by sophisticated advertising . . . [and a focus on projecting national military power].⁸¹

What would an alternative paradigm look like? The new economy movement articulates such an alternative, the major contours of which are described in the next section.

1. The power to transcend paradigms.

Ultimately, Meadows asserts that we should recognize that no paradigm is “true”. It is simply a limited understanding of an immense universe.

IV. THE NEW ECONOMY PARADIGM AND A FUTURE WORTH BUILDING

The new economy movement is advancing a transformative paradigm to the current dominant economic system, one focused on an overall goal of increasing the quality of life now and into the future and moving to an economy that truly sustains and restores human and natural communities. The new economy is one where ecological balance, wealth equity, and vibrant democracy are central.⁸²

In this new paradigm the way to address social and climate needs and achieve better, happier lives is with an economy powered by renewables, with resilient and vibrant local and regional food systems, and a goal of improving and strengthening our family relationships, our community and friends, our financial situation up to the point of meeting basic needs, our work, our health, our personal freedom, and our personal values.⁸³ This paradigm emphasizes quality over quantity. It focuses on reducing gaps between rich and poor. It imagines a different relationship with the natural world, one based on endowing nature with inalienable, enforceable legal

⁸¹ SPETH, *supra* note 30, at 3, 7–8.

⁸² *About*, NEW ECON. COAL., available 13 January 2017 at <http://neweconomy.net/about>.

⁸³ SPETH, *supra* note 80, at 135, (citing RICHARD LAYARD, *HAPPINESS: LESSONS FROM A NEW SCIENCE* (rev. ed., Penguin 2011)).

Table 1.1 Comparison of current economy to green economy

Current economy	Green economy
GDP growth: more economic activity the aim	'Beyond GDP': prosperity the aim
Focus on the near future (short-termism)	Long-termism
Maximisation of return	Safeguarding of long-term incomes
Shareholder value	Stakeholder value: benefit to society
Extraction of natural resources	Management of natural resources
Linear production systems	Circular production systems
Short-life products for sale	Long-life services: the 'performance economy'
Efficiency measured in monetary terms (e.g. cost-benefit analysis, CBA)	Multidimensional efficiency (e.g. multi-criterion analysis, MCA)
Micro- and macrorationality highly divergent	Micro- and macrorationality highly congruent

Source: Eva Alfredsson and Anders Wijkman, *The Inclusive Green Economy, Shaping society to serve sustainability – minor adjustments or a paradigm shift?* (April 2014), Table 1 at 7, http://mistra.org/download/18.2f9de4b14592a1589d172e2/1473225485133/Mistra_Prestudy_TheInclusiveGreenEconomy_April2014+%281%29.pdf

rights to exist, thrive and evolve. And it describes one role of government to serve as trustee with fiduciary, enforceable duties running to the public.

The movement has a clear emphasis on changing the economic system, and although exactly what “change” means is contested, there are consensus points: “an economy that is increasingly green and socially responsible, and one that is based on rethinking the nature of ownership and the growth paradigm that guides conventional policies.”⁸⁴

Table 1.1 highlights nine areas that contrast the current with the new economy to help provide shape to this paradigm shift.⁸⁵

This Table shows a wide gap between the current and new economy.

⁸⁴ Gar Alperovitz, *The New-Economy Movement: A Growing Group of Activists and Socially Responsible Companies Are Rethinking Business as Usual*, NATION (25 May 2011), <http://www.thenation.com/article/new-economy-movement/>.

⁸⁵ Eva Alfredsson and Anders Wijkman, *The Inclusive Green Economy, Shaping society to serve sustainability – minor adjustments or a paradigm shift?* (April 2014), Table 1 at 7, available 13 January 2017 at http://mistra.org/download/18.2f9de4b14592a1589d172e2/1473225485133/Mistra_Prestudy_TheInclusiveGreenEconomy_April2014+%281%29.pdf.

In a complementary explanation of envisioning the next system, Speth emphasizes common values that help define alternative systems as we move out of the Industrial Age. He focuses at the level of paradigm, the top of Meadows's hierarchy for change, but the hardest to achieve:

- ENVIRONMENT: sustainable, regenerative, resilient, stewardship
- PLACE: appropriate scale, decentralized, subsidiarity
- COMMUNITY: solidarity, caring, sharing, local and global
- COMMON GOOD: economic democracy, cooperative, maximize not growth but well-being, sufficiency
- JUSTICE: fairness, equality, human dignity, diversity
- DEMOCRACY: deliberative, participatory, people empowered⁸⁶

Speth outlines transformations on the path to the next system in major subsystems such as: the market, the corporation, economic growth, money and finance, social conditions, indicators, consumerism, communities, dominant cultural values, politics, and foreign policy and the military.⁸⁷ In Speth's chapter (Chapter 2), he calls for a new environmentalism that tackles systems change instead of relentlessly focusing on changes in parameters, changes that fall short in delivering a sustainable environment with broadly shared prosperity.

The new economy paradigm, which Speth calls the "Joyful Economy", describes a post-growth, conserver society that respects ecological limits and promotes its protection, that is democratic, and values tighter gaps between rich and poor. This requires a paradigm shift towards ecological sustainability and social well-being as fundamental requirements, and the economy is seen as a tool to get there and not an end in itself.⁸⁸ This is a shift from the goal of GDP growth to the goal of development.⁸⁹

But when we focus on development, do we ignore the rest of the natural world? What is the relationship between human development and ecological sustainability in a climate-constrained world? In order to ensure the economy is a tool that protects ecosystems, we need a paradigm that recognizes the inherent rights of the natural world to exist, thrive and evolve.

⁸⁶ Speth, *supra* note 30, at 4.

⁸⁷ *Id.* at 11–12.

⁸⁸ Alfredsson and Wijkman, *supra* note 85, at 5; TIM JACKSON, PROSPERITY WITHOUT GROWTH: ECONOMICS FOR A FINITE PLANET (Earthscan 2009).

⁸⁹ New Econ. Found., Growth Isn't Possible: Why We Need a New Economic Direction (2010), available 13 January 2017 at http://b.3cdn.net/nefoundation/f19c45312a905d73c3_rbm6iecku.pdf.

In our current paradigm, which is heavily focused on private ownership and talks about nature as “assets”, “services” and “resources”, we lack the vocabulary and related legal instruments to adequately protect collective, long-term and ecological interests in the commons, from groundwater to birds to global climate. In the next economy development needs to be fully aligned with ecological sustainability of the natural world while making opportunities for human development more equitable, and it is essential to develop legal instruments for this.

V. CONCLUSION: THE PATH FORWARD

“The real issue is whether it is possible to challenge the ‘growth-at-any-cost’ model and come up with an alternative that is environmentally benign, economically robust and politically feasible.”⁹⁰ Some would argue the path to a new economy is daunting or out of reach, as reflected in this quote. But, if we don’t chart a new path, we will follow the same worn path that has led us here. And as we take steps to build legal infrastructure to support a new economy, we are finding that what was previously unimaginable, starts to take shape.

Although some of the concepts discussed here strike chords that sound aspirational or like academic idealism, the chapters to come in this book include real-life examples to demonstrate where these fledgling transitions are starting to take place. Major shifts in the world are often unimaginable until they happen: recall the fall of the Berlin Wall in November 1989 that marked the end of the Cold War and the opening of Eastern Europe to the West or the stock market crash in October 1929 followed by US President Franklin D. Roosevelt’s New Deal in the 1930s. When the game changer happens that will mark the end of the Industrial Age and the current global fossil-fueled economy and the beginning of the new economy, this book aims to provide guidance about the new paradigm, goals, and rules that will help us achieve a more sustainable, equitable, and democratic future.

⁹⁰ Larry Elliot, *Can a Dose of Recession Solve Climate Change?*, GUARDIAN (24 August 2008), available 13 January 2017 at <https://www.theguardian.com/business/2008/aug/25/economicgrowth.globalrecession>.