**Climate Change as Economic and Political Opportunity**

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 This paper places food politics in wider perspective, linked to climate politics (with the shift to local food being less carbon intensive and the possibilities for organic agriculture to embed additional carbon in soil). It also envisions food politics as having a central place in the creation of a more distributed, greener ‘citizen’ economy. There is some tentative discussion as well about how we might get from a corporate-dominated here to there.

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Environmentalism emerged in the 1960s, building on the conservation movement. The new focus broadened environmental protection’s political appeal considerably. Conservation emphasized wilderness, habitat and nature and had continuing appeal to many, but most supporters of the conservation movement were drawn from prosperous segments of society, those who had the time and resources to travel to, and appreciate first hand, wild nature. Less prosperous, mostly urban, majorities did not oppose protecting wilderness, but only rarely made doing so a leading priority. Higher priorities included employment, wages, keeping a roof over one’s head, preserving family health and educating one’s children.

Early environmentalists brought much greater movement focus to urban settings where a growing majority lived their everyday lives. The leading new emphasis was on air pollution, safe food and drinking water and on potential shortages in key resources necessary for urban-based industries, jobs and products. A focus on air quality resonated in a way that concern regarding distant wilderness could not. The newer environmental concerns were all much more central to city people’s lives, including earning a living.

Environmentalist thinking, led by Rachel Carson and others, also introduced ecological and environmental science into everyday discourse. *Silent Spring* linked the threat of pollution to human health (especially regarding cancer and pesticide residues in food) and to the loss of familiar, everyday nature, songbirds and other species. Carson explained bioaccumulation and food chains in plain terms. A series of events then followed the widened acceptance of this scientific knowledge. Most notable were Love Canal, Bhopal, Three Mile Island, the Exxon Valdez and Chernobyl. The environmental movement became a mass movement in ways the conservation movement had not. Governments were effectively pressured to act regarding air and water quality.

This history in capsule form is important to recall in today’s political context, one that is in many ways more challenging for raising environmental concerns.[[1]](#footnote-1) Despite the recent visibility of today’s focus on climate change’s perils, this threat is still remote to many -- both geographically and in time. Droughts in California, fires in the Pacific Northwest and super-storms have significantly reduced that remoteness, but this sense of remoteness remains an impediment to environmental movement support and especially to decisive government action. As well, impediments to effective action are hardly needed given the political power of economic interests that oppose action and competition from other concerns like terrorism, deindustrialization, economic instability, and rising economic inequality.

Despite the breakthrough global treaty signed in Paris, effective and enduring regulation of greenhouse gases is far from assured. However, many civil society organizations, communities, businesses and individual citizens are actively contributing to an energy transition and, increasingly, environmental activists and economic actors dwell less on climate perils and more on solutions.[[2]](#footnote-2) Increasingly as well, even when national governments are all but paralyzed citizens, entrepreneurs and consumers are acting within core economic sectors including food, energy and urban infrastructure, actions that have considerable market appeal. That appeal would be advanced by policy supports in amounts that are at least in line with supports for businesses that negatively affect climate, but in key sectors (especially food and energy) seem able to advance, if unevenly, even in their absence.

In short, ‘citizenly activism within the economy’ is having a considerable effect. Over the past few decades food and agriculture production has shifted dramatically. Organic food is now almost universally available in North America, Europe and elsewhere and small entrepreneurs are increasingly growing local produce even in unlikely places: within large cities, on rooftops and year around in cold climates without the use of fossil fuels. Energy production and use is also being transformed rapidly, by large corporations and by citizens and communities, not just in wealthy nations but globally and dramatically in nations like Kenya, Morocco, Bolivia and Cost Rica. As electricity production from solar and wind increases rapidly, its cost of production is falling dramatically. Urban infrastructure is also being widely transformed especially with regard to increased residential living in downtown cores and separating bicycle traffic from automobiles. The result is a strong increase in cycling across Europe and North America.

I call this set of sectoral shifts the emergence of a citizen economy. A citizen economy is a new opportunity to broaden the political appeal of environmental ideas, much as they were broadened in the 1960s and 1970s. Before I elaborate that case I want to briefly characterize how environmental thinking has evolved in relation to economic issues from the 1960s and 1970s emerge of environmentalism until recently.

**The Evolution of Environmentalism: Hippies as Economic Analysts**

 A look at the decades-long evolution of environmentalism provides another perspective on the evolution of environmentalism’s political appeal. At the time that early environmentalism appealed to urban dwellers some environmentalists still had doubts regarding cities, and even industrial society. Back to the land had appeal in some environmentalist circles and many environmentalists had strong moral doubts about consumer society. In their view environmental protection required strong regulation, but it also required giving up consumerism and reducing both extraction and industrial production. This perspective probably restrained the broadened appeal of environmental ideas.

 In the longer work on which this essay is based there is a discussion of the evolution of environmental ideas. Suffice it here to simply list the main shifts from the 1970s forward. Many changes in perspective were triggered by negative responses to environmentalist objections to materials extraction and industrial output. Other objections to environmental ideas were expressions of concern regarding the uneven impacts of ‘doing with less’. The result was further evolution in environmental thinking that included: 1) demonstrations that a green economy would be more, not less, labor intensive; 2) showing that sufficient energy could be produced from renewable and thereby sustainable sources, including improved efficiency; 3) showing how goods of all kinds might be produced in greener ways and that many green products were really green; and 4) realizing that urban living is an environmentally superior option.[[3]](#footnote-3)

 The context in which Lovins’ soft energy path was introduced is instructive here. At the time, before much awareness of climate change, environmentalists objected to coal because of air pollution and miner health concerns, oil because of offshore spills and smog and nuclear for a myriad of reasons. It appeared that all viable options were excluded. The soft path sought to demonstrate that that was not the case and that renewables could support modern, prosperous lives.[[4]](#footnote-4) The jobs and the environment literature of the 1970s showed that renewables, recycling, transit and many other pro-environmental initiatives produced more, not fewer jobs.[[5]](#footnote-5) At the same time academic studies of the environmental impacts of urban living demonstrated that city life was environmentally superior to either rural or suburban life in dozens of ways, especially with regard to per capita energy use.

 Environmental thought thereby evolved considerably through the latter quarter of the 20th century. By the 2008 financial crisis it was clear just how much environmentalism, and societies perception of it, had changed. In terms of economic policy and prospects, the shift has been especially stunning. When the financial titans in investment banks and insurance companies took the global financial system to the edge of collapse, who and what would be called on to lead the way out of out of the ‘great recession’? Of all things, a *green* economic future.

In the end, the corporate and financial barons that had dismissed environmentalists as naïve enemies of prosperity had to be bailed out with trillions of public dollars. Unemployment soared, mortgages were defaulted, savings were vaporized, pension funds teetered and stock markets fell off a cliff. Economic stimulus was urgently needed and many nations quickly proposed *green* stimulus plans. Think about that for a minute. In one of the more amazing ironies in history, those who had only recently entered the world of ideas expressing moral doubts about excessive consumption, who were widely perceived as enemies of industrial society, had become the best bet to save the economy from the egregious errors of that economy’s leading managers and champions.

In many Asian countries investments in solar were accelerated. In the US, despite Congressional resistance, public buildings were renovated to be more energy efficient and high speed rail was funded. In Europe offshore wind got a boost and already good transit systems were improved. In Canada water and sewage systems were upgraded and in Ontario solar and wind energy projects proliferated under a German-style feed-in-tariff program. The evolved ideas of anti-consumption hippies helped save industrial society from itself. One almost expected to see penitent derivatives brokers weeding long rows of organic vegetables in neighborhood gardens.

 The evolved environmental movement, in effect, laid the groundwork for not just selective green products, but a green economy. I call the potential contemporary version of this a citizen economy, an option that is in fact emerging within an old economy that it is increasing apparent is unsustainable. The post-2008 recession made that reality clear to many. In addition, it is clear that the globalized economy is untrustworthy in other ways. In wealthy nations, even when times are good, industrial and jobs continuously disappear in the face of offshoring, automation, digitalization and robotics.

Even essentials like food, clothing and energy are imported, even into places physically well-suited to food or (renewable) energy production. As well, doubts have increased that imported food is often unhealthy and global food supply chains are unreliable. Moreover, most imported clothing and other goods are produced under working conditions that have been morally unacceptable for more than a century.

 The citizen economy addresses broad concerns regarding globalization in several ways. I will mention two. One, it would return some production to advanced economies creating jobs and reducing the energy consumed in the transportation of goods. Citizen economy job creation would be significant in food and energy production (since renewables are more labor intensive than fossil energy), but also might increase as a result of making manufactured goods more repairable.[[6]](#footnote-6) Two, and at least as important, a core principle of a citizen economy is that citizens will carry their concerns regarding fairness, inequality and the environment intothe marketplace as entrepreneurs, investors, employees and consumers. Politics, in effect, becomes a part of everyday economic life and work is no longer *exclusively* about making money. This implies a shift to greater localization of production of many things.[[7]](#footnote-7)

**The Citizen Economy and Post-carbon Economic Opportunities**

Rapid change in production methods has been the norm since the beginning of industrialization. So has been the expansion of markets from community to nation to regional to global. However, some recent changes run counter to the continuing transition toward global markets and the ever greater concentration of capital. Three vital economic sectors (food, energy and media) are moving toward smaller production units, decentralization of ownership and an inclination to motivations other than profit.

In time other sectors may adopt these shifts to some extent. I call this shift a citizen economy for two reasons: one, the scale of production is entrepreneurial and small (and in food and energy the market is individual or local and face-to-face) and two, many new producers are doing so with social, environmental and even political change in mind (along with finding ways to earn a living while doing something worth doing in a larger sense). *Citizens* are acting within the market, as citizens.

There are now tens of thousands of new food entrepreneurs (growers, producers and restaurant operators) that understand that our food system is non-sustainable for many reasons including overdependence on monocultures, herbicides, antibiotics, pesticides and fossil fuels. As well, they know that food that travels thousands of miles is not fresh. Indeed long-distance food often must be treated with additional doses of chemicals, as preservatives. Moreover, few of us today are sure how reliable our long-distance food chains are, especially in the face of climate change. Nor do we as eaters have any real sense of how carefully food production in regulated in every corner of the planet. We are more comfortable knowing the actual person that produced our food and the rules under which they operate. As well, shelf life is a key watchword in an industrial food system and thus yet another kind of food insecurity is added.

All of this is familiar to food policy analysts and those who pay close attention to the quality of what they eat. Happily, both groups are growing. The study of food policy in universities is burgeoning, as is the number of people, including people living in dense inner city neighborhoods, who grow some of what they eat. Also increasing are the numbers of people buying food directly from local producers in farmer’s markets or through the direct delivery of produce by growers. In the United States there recently were 8,268 farmers markets, up 180% since 2006.[[8]](#footnote-8) Millions as well are shifting to organic produce and less meat-oriented diets.[[9]](#footnote-9)

These changes also include the 100-mile diet and the rise of notable chefs advancing organic and local foods, starting with California’s own Alice Waters.[[10]](#footnote-10) The changes in food delivery and the ethos of food are a citizenly response of both consumers and producers to multi-dimensional food insecurity in the midst of global plenty. It is also a frontal challenge industrial food. A global food system limits the capacity for any locale to meet basic food needs in the face of climate change. We need to learn to adapt to climate change everywhere and to produce enough collectively to aid those locations that are overwhelmed by especially severe change.

In a global food system crop failures anywhere put food security at risk almost everywhere through declining supplies or rising prices. The global impacts of recent climate related wheat crop failures in Russia and elsewhere and the resulting grain prices were an underlying factor in the overthrow of Arab governments. On a micro-scale, individuals cannot make deals to delay paying or barter their labor in a global system as they might when dealing with local farmers with whom they have personal relationships. Further, local farmers do better financially when selling directly to consumers and thus can better afford to adapt production techniques.

Food insecurity in an industrial food system runs deep in other ways too. The further food travels the less likely one is to know what one is eating or how it was produced. Indeed consumers often do not even know *where* their food is produced.[[11]](#footnote-11) Even local craft production of beer and fresh small batch roasting of coffee (using some ingredients from distant locations) is increasing in popularity and supplying local jobs. People are increasingly willing to pay more for favorite beverages and foods that taste better as a result of non-industrial approaches to production and being more freshly prepared, having no added ingredients, and being made by producers that consumers know and trust.

Food is different than other products, it literally becomes a part of our being. As noted, industrial/global agriculture creates monocultures that increase the use of pesticides and herbicides. Compounding the insecurity both climate change and measures to reduce GHG emissions can lessen the reliability of long-distance food. In contrast, organic agriculture fights climate change by increasing the carbon content of soils and local agriculture does so by reducing the energy intensity of production. As well, small scale production for local markets is more often hand-tended and thus more adaptive to variable weather. Some urban food production is now indoor, water efficient production that is all but immune to climate variance. Longer production chains can still, of course, be brought into play in climate emergencies.

In the energy sector, increasing renewable energy and breakthroughs in energy storage have pushed some large electric utilities to wonder about their future. Germany, Denmark, Spain, Italy and other European nations have led the way, but the wealthy-nation renewable energy boom is also underway in locations as politically varied as Texas, California, Ontario and elsewhere. Globally, the shift is even more dramatic.

As of 2014, there was more new installed solar in the prior 18 months than in the preceding thirty years and growth has only increased since. Some of this new production is large scale, but a great deal comes one roof, one small corner of a farmer’s field or a few wind turbines at a time. Joining in with big advances and even bigger intentions are China, India, Japan and many smaller nations including Saudi Arabia, Morocco, Costa Rica, Bolivia, Peru and Kenya. Citizens are frequently involved in this process as purchasers or renters of solar panels and the number of employees, and the level of investment and innovation, in solar and wind has grown spectacularly throughout the world over the past decade.

Media is also in the process of transformation toward greater citizen participation (in this case within a highly monolithic and monopolistic industry). In 2003-4 individual Americans who doubted their nation’s foreign policy felt isolated. American mass media was, at the time, systematically hostile to their way of thinking. Outside of America’s urban centers and university towns, citizens with doubts about the Bush administration’s neo-conservative ethos and propensity for launching wars frequently felt alone in their views and isolated from their neighbors and families. When finding that those around them had opposing views some isolated doubters came upon and joined (or founded their own) *virtual* communities.

Millions were soon participating in thousands of online sites. Citizens, in effect, created their own media. Most new blogs in the early days were critical of the government and criticized established media, especially television news. The citizens involved could utilize technologies that did not require massive capital (or corporate advertisers) to launch. Individuals of modest means realized that they now had means of communicating with global, national or local audiences. Some sites quickly gained more participants than some television stations or newspapers.[[12]](#footnote-12) Some now have millions of user-participants and multiple millions of monthly page hits.

These new citizen media voices have not generally been considered in relation to the shifts in food and energy sectors, but there are several similarities and some important differences. One similarity is a decentralization and, to some extent a democratization of, economic (and political) power, an opposition to big media that parallels the challenge launched to counter big agriculture and big energy. Another similarity is the broad citizenly intents and purposefulness of the new entrepreneurs in all three sectors, the seeing through of socio-political concerns and objectives within the marketplace rather than (or in addition to) the electoral or protest arenas.

The differences include the reality that shifts in food and energy production are clearly rooted in environmental, especially climate, concerns while the shift in media is more technologically rooted and broader-based politically. Another difference is that food and energy shifts are net job producers and digitalization and new media is probably reduces net employment as it allows both print media and other journalistic forms and communication generally to reduce staff.

Can these shifts reasonably be seen as a single transition? What indeed is a citizen economy, does (or will) it actually exist?

As Karl Polanyi long ago made clear, there is no ‘free’ market, politics and economics have all along been inseparable.[[13]](#footnote-13) The market cannot be set aside from society and functions best if embedded within it. Rising inequality makes that embedding difficult, if not impossible. Political democracy is too flawed and weak to control markets through public policies because concentrated wealth dominates government. The citizen economy is a potential counterforce acting politically through the market, as customers, entrepreneurs, communities, and, less consistently, as employees and investors. It is about incorporating values other than making money (or saving money on cheap but harmful goods). It is in effect a politics of non-authoritatively expressing and enabling one’s values within society.[[14]](#footnote-14)

The green product and investment decisions that climate change requires include post-carbon energy sources, local food, food produced without (fossil fuel-based) pesticides, plant-based foods replacing animal-based foods, public transit, bicycles, cycling infrastructure and electric vehicles. It also includes goods made from recycled materials, low material and energy demanding products that replace high material and energy products (including services that supplant product purchases) and vintage and other re-used goods of all kinds.

There are of course limits to how far we can proceed to a post-carbon future through market-based political actions. Indeed there are three distinct sets of limits. The first is the obvious begged question: can we shop our way to a greener economy? Suffice it to say that renewable energy, local, organic, more vegetable-based diets and more use of active transportation would make a big difference, but there are also many things we would need to do with much less of (air travel, globally shipped, less-durable goods and over-sized houses, for example). The challenge is to find policies (opportunity structures) and means of advancing citizenly understanding that would advance both kinds of shifts.

Second, an effective economic transition cannot be achieved without changes in government policies. Such changes might include the removal of subsidies to the fossil fuel industry and big agriculture, carbon pricing and/or feed in tariffs, infrastructure investments especially in public transit and, in some cases, public support for new farmers and mindful citizen-entrepreneurs. In the longer text I call these interventions opportunity structures because they level the playing field for or provide start-up supports for new technologies and innovative entrepreneurs – those that will demonstrably help move society towards a post-carbon future. Initiating such supports will require, but also help to generate growing, supportive constituencies for change.

**Building Constituencies**

 In a world where wealth is increasingly concentrated, especially where it permeates politics and the media, countervailing power is urgently needed. Back before lobbying dominated to the extent it does today and, in the United States, *Citizens United* removed any effective limits on money in electoral politics, Charles Lindblom made clear the political effectiveness of economic power. Corporate power was implicit in their power to employ people and to increase GDP to the credit of political incumbents.[[15]](#footnote-15) Lindblom, of course, also wrote before the threat of global corporation’s exiting nations for tax advantages was commonplace, or moving production facilities to the other side of the word was a normal response to the possibility of regulation.

 Without necessarily being familiar with the details, today’s underemployed, over-indebted young people have concluded that governments are rarely interested in their situations or their needs. Indeed, many millennials are relatively uninterested in traditional forms of political activism. Many prefer to attempt to initiate change as part of their everyday lives. They see better prospects for change associated with producing, consuming and behaving differently – eating differently, buying secondhand (vintage) goods, living in downtown cores and not owning a car, and imagining a future in a post-carbon, net zero dwelling. Politics are practiced, and citizenly values are sought, within the economic realm as well as the political and policy realms.

This is a defining aspect of the emerging citizen economy.[[16]](#footnote-16) Even with limited policy support, this economy is expanding rapidly within some key sectors. Renewable energy employment and urban and more sustainable local food production are growing and as they create sectoral economic change, they build constituencies for policies that support the new economy. Bike and bike repair shops and their customers will lobby for protected bike lanes and producers of organic food press for pesticide regulations, water quality and opportunities for direct farmer-to-customer sales. Solar panel arrays are a visible advertisement for a post-carbon energy future.

Interestingly strong policy constituencies for a post-carbon economy have emerged in politically unexpected places: Texas and Iowa, for example. Indeed renewable energy has broad uptake among political conservatives attracted by the sense of security, personal freedom and entrepreneurship renewable energy and household (or small business) energy independence engenders.[[17]](#footnote-17) Natural conditions in some locations (high winds, frequent sunny days) now assure profit for homeowner-producers and installers, even with minimal policy support. This is increasingly the case as hardware and installation costs drop.

The rapid growth of renewable energy and local, organic foods may build support for a broader-based citizen economy. Further, digital media are effective in promoting and facilitating a citizen economy. For example, transit is more attractive when arrival times are readily known in advance (and neither cash nor tokens are needed). The same applies for car and bike rentals that can be engaged via smart phones or cards, and, when combined with transit, can be so widely available that they now replace automobile ownership for many urban dwellers. New media can also narrowcast the availability of detailed social and environmental effects of new economy products and services to those that want them. In the book I offer numerous examples of how new media have enabled citizen economy innovations.

 As noted, sustainability oriented citizen entrepreneurs incorporate environmental and social objectives as core business goals. Benefit corporations may also operate in this manner. Benefit corporations, now a legal designation in a majority of states, generate better wages and working conditions and enhance business by adopting sustainability and social fairness as core objectives.[[18]](#footnote-18) This works to the extent that citizens make their consumer and investment decisions with these factors in mind. The challenge for very large firms in this regard is that they are often held by their shareholders to task, or are even sued, for not maximizing profits at all costs to employees and/or the environment. More than that they may lose market share to competitors who can cut prices by paying less or cutting corners by minimizing environmental protection efforts.

On the other hand, if more benefit corporations (or public-minded, forward thinking large corporations), and smaller citizenly entrepreneurs are created and grow, the prospects for government policies that support legislation and regulations that support sustainability and social equity increase and, more important, the power of the fossil fuel industry, media conglomerates and industrial agriculture to block such policies declines. Organic farmers do not oppose pesticide regulation as corporate farmers might and solar panel producers will oppose disproportionate subsidies to fossil fuels.

 Beyond that, it is important that face-to-face market interactions are more common within the citizen economy. Customers know the person they are buying from and often who made or grew what they are buying. Unlike Walmart and Chinese manufacturers, many citizen economy producers know their retail customers by name. Customers in turn have a sense of the working conditions and environmental impacts associated with products. Consumer discretion is thus more meaningful and socially and environmentally informed choices more readily engaged. Crucially in the longer term, these factors can help to build *political* as well as economic constituencies. That possibility is not there for distant global corporations and is not easily conjured through the wizardry of advertising.

Other dimensions of the citizen economy, such as pedestrian and cycling infrastructure and grid connections for household renewable energy production require the political engagement of municipal citizens. The citizen economy in effect grows its own constituency and can bring more balance into a political realm dominated by large corporations and the wealthy. Building a broad economically rooted constituency for sustainability and a post-carbon economy clearly takes environmentalism into new territory politically.

Will that constituency growth provide sufficient pressure and political will to resolve the climate challenge? What might help to make that outcome more likely?

**There Isn’t Enough Time to Change Everything**

Naomi Klein makes the case that a post-carbon future will be dramatically different in what we produce and how we produce it, but also in the rules and structures through the economic system operates.[[19]](#footnote-19) It is useful to begin here with the likely changes to everyday life.[[20]](#footnote-20) As we have seen many changes to everyday life follow from reduced energy use and a shift to renewable energy. Reducing total energy demand is necessary to getting near to 100% renewable energy (or to a combination of renewables and nuclear). Appreciating the range and character of everyday changes is needed to understand the social, economic and political changes that might also come with energy transition.

Both sets of changes will likely be wide ranging. As Klein puts it “this (climate change) changes everything.” I concur that some very large industries will contract dramatically and quickly, fossil fuel production being the most obvious. To achieve that end mass air travel will likely decline and total miles traveled *by any means* will also contract. Communications (low energy use) will replace transportation (high energy use) in many contexts. Cities will become more compact, encouraging greater use of active transportation and transit and diminishing automobile use. Most cars will be electric. Suburbs will infill to support new transportation choices.

More fundamentally, globalized goods production could decline given the energy use associated with long-haul shipping. Heavy goods (such as building materials) and high volume goods (especially food) will be shipped less (with obvious exceptions in food like spices and tropical fruits). Where competitive advantages are large these generalizations may not apply. Light weight, high value, labor intensive manufactured goods are likely remain in global production though, ideally, they would be more repairable. Increasingly, infrequently used goods will be shared (distributed rental cars, tool libraries) and words, data, images and music will only rarely exist in physical form. These changes will allow living spaces to be smaller, a trend also spurred by more people residing downtown.

 At the same time robotic devices will proliferate. Robots can work 24x7 in the dark with limited heating or cooling. They will assume more manufacturing, delivery and information processing functions. As well, fewer employees will be needed in retail. More goods will be ordered on line and orders processed in highly automated depots and delivered autonomously. Brick and mortar retail will continue to contract, but community spaces, including neighborhood restaurants and pubs, may increase (in response to smaller living spaces). Work in renewable energy, human services, the arts, repair and restoration, and local agriculture may increase somewhat, but total work time is nonetheless likely to decline. Therefore changes in the basis of income distribution are implied.[[21]](#footnote-21)

In sum, if we and our governments remain committed to the Paris targets, what we produce, consume and use will change. Everyday life will thus change dramatically. The changes will not necessarily be unpleasant. We will re-establish walkable neighborhoods, neighborhood pubs, locally sourced food, and other public gathering places. The separation of work, commerce and residences that may have made sense in the era of coal-fired industry are in any case unneeded and inconvenient today. Sprawl is both unhealthy and ill-suited to a post-carbon age.

This capsule only identifies a few of the changes necessary to meet the Paris goals (or are likely to change in any case). In addition are obvious changes like the reductions in energy intensive industries like mining.

All of these changes taken together do not necessarily mean that economies will contract. Indeed, a 2016 report by the International Renewable Energy Agency (IRENA) projected that doubling the share of renewables within total energy use by 2030 would increase global GDP by up to 1.1% and create (net) 24 million jobs.[[22]](#footnote-22) The larger challenge lies in the realm of political process and that is what I want to focus here. As in the early days of the environmental movement we need to build the constituency of environmental change. The potential constituency-broadening today lies in expanding local and organic food production, public participation in planning, redesign of cities, and rapid adoption of distributed renewable energy. All these changes can begin as activities within the economic and community realms.

Klein’s *Everything Must Change* was an apt title, but it is arguable that the changes we need do not necessarily best begin in the political realm, especially at the national level. The urgency of climate change implies to me that we should not seek transformative institutional change in the first instance. It might be faster to utilize existing institutions (virtually all of them) largely as they are: civil society organizations, markets, corporations, small businesses, universities, churches, municipalities, to create new firms and pressure old ones as citizen-consumers and use diverse policy tools from subsidies (for renewables) to spending (on infrastructure), taxation (on carbon), subsidy removals (on fossil fuels, big agriculture and extraction), regulation and procurement (of, for example, energy efficient buildings and local foods for schools and hospitals).

Clearly changes to everyday production and consumption will continue to provoke political resistance from oil companies, utilities, suburban land speculators as well as investors and employees linked to the old economy. Perhaps the best chance to counter that resistance is through building new constituencies that are vested in a post-carbon economy: solar panel installers, local food producers, bicycle shops, windmill producers and firms that invest in sustainable materials and processes. The lessons of early environmentalism are relevant here: broadening the appeal and the base of the environmental movement are effective – the legislative and regulatory achievements of the 1970s were as significant as the movement has achieved.

As Klein points out capitalism was born in tandem with fossil fuels, but she, and many others, seem to assume that this system has limited adaptive capacity. I am finding in my recent explorations to my surprise, it does, even in the face of anti-transition political and economic pressures. New economy firms (mostly small) are emerging without broad political support or supportive policy action. In food and energy especially these pioneering initiatives can grow (especially in number) to the point where inflexible firms begin to fade.

Historically, few mourned the makers of buggy whips and horse drawn carriages, fossil fuels could be taken to that point as well. Thus, given this potential, if it is real, means that taking on capitalism *per se* might not speed transition. As well, successfully undoing capitalism would remove a useful tool, entrepreneurship. As well, prioritizing doing so makes political enemies of many potential allies.[[23]](#footnote-23)

Klein eloquently makes the case that a political movement is needed to alter extractivism and fossil fuel dependency. I agree with that view. Where I differ is with an exclusive emphasis on political resistance rather than a mix of political and economic action. I feel that EPT analysis can usefully add what is *not* there. Klein is also not sufficiently clear about what institutional changes are needed. I think that a transformation of *all* economic organization and rules (along with so much of our everyday life) is not possible within the time frame that energy transformation is needed. We need to be clear regarding what must and can be changed within the time frame that climate science establishes with reasonable precision.

We can begin by distinguishing between corporatist forms of capitalism and a capitalism that emphasizes mindful entrepreneurship, a system that embeds market transactions in society, prioritizing societal rather than individual needs. This could be characterized as ‘corporatist capitalism versus entrepreneurship’ or, in a more social science sounding ‘corporatist capitalism versus a market system embedded in society’.[[24]](#footnote-24)

In the end, public policy intervention with market behavior is needed, but not fewer entrepreneurs -- indeed some policy interventions should be designed encourage and support locally created new businesses serving local markets.[[25]](#footnote-25) There is a very real theoretical and practical political difference between rejecting capitalism and distinguishing between corporatist/extraction-oriented capitalism and entrepreneurial capitalism oriented to localism and sustainability.

Entrepreneurship on a small scale is crucial to a sustainable food system, renewable energy and many other components of a sustainable society. Within a market system change can happen quickly and progress can be accomplished locally by one or a few people. In an internet age local successes can be replicated rapidly elsewhere. Individuals can launch purposeful enterprises or potential customers can urge them to do so and support them when they do. Government is crucial as well. It must alter the incentive structures from those favored by the entrenched corporations of the old economy to those that *use the market as a tool* for the creation of the post-carbon economy. Other dimensions of energy transition that originate with government include planning and infrastructure changes (especially transit) and new zoning rules.

Drawing this sharp distinction between forms of capitalism has implications regarding the political strategy of transition. Participants in the transition do not need to sign on to an assumption that ‘the system’ must be overturned. Nor are they required to focus most of their energy and attention on the political realm. This point came home to me in meeting with residents of Samsø Island in Denmark (where 100% of electricity now comes from renewables). Many active supporters of the transition got actively involved in part because they wanted to do the right thing and in part because they could make or save money by doing so.[[26]](#footnote-26)

Not needing to change everything quickly will bring more participants into this collective human undertaking. It allows for a more broad-based movement that helps to grow a political constituency through economic change. We need case studies and empirical research that will confirm whether this is the case. Entrepreneurial and community initiatives before governments are on side can demonstrate what is possible by doing it. This will get citizens on side with climate action who might not support the green political outlook of climate activists.

Klein, by paying little attention to distinguishing the variations in market systems, is prone to implicitly reject using the market as a tool to achieve energy transition. That excludes both useful tools and useful allies. The film version of *This Changes Everything* does show renewable energy initiatives of Native American communities in South Dakota and local government initiatives in Germany. However, most of the focus of the film is on resistance to negative energy extraction and emissions rather than on positive initiatives and possibilities. Thousands of those positive possibilities are already underway widely within existing markets and institutions and are now increasingly supported by public policies and opportunity structures.

**EPT: Addressing Tough Questions regarding Climate-driven Transition**

 I will conclude with reflection on the potential for transformative political change arising from resolving the climate crisis. To begin, the act of moving to 100% post-carbon energy might well be, in itself, the greatest conscious collective transformation in human history. This is the case because this transition requires near to universal, globally coordinated, and rapid, economic, political and policy action. Such things do not happened very often, if ever. Global policy cooperation of any kind rarely happens other than with regard to far more minor matters.

Change in this case is at once technological, economic, cultural and political. It is on the scale of the shift to settled agriculture, but far more urgent, deliberate, collective and rapid. A post-carbon transformation is not just about changing energy sources, it must involve changing how most of us live, what we make (and do not make) and how we make and use almost everything. In this Klein’s phrase is apt. But what is and is not likely to change comprehensively?

Consider first the long history of energy production and use. All previous energy transformations were triggered by the emergence of technologically and/or economically superior energy sources. Adoption was accelerated as well by the incapacity of existing energy sources to meet a rising energy demand associated with new industries (and to keep burgeoning urban populations warm and mobile). The shifts from wood and water to coal and from coal to oil and gas did not involve a conscious societal choice of the sort we now face. Earlier shifts happened one consumer or industry at a time and the choices were made as energy needs exceeded the capabilities of the old energy source.

The post-carbon shift is different. We have not exhausted fossil fuel supplies or even, yet, exceeded their ability to meet our needs (or our foolish indulgences). Indeed renewables are *less* energy intensive and it is not certain that they can do all that we presently do using energy. Outside of certain political circles, people do, however, finally accept that fossil energy threatens the climate and that that is important. Most even understand that we can never burn all the fossil energy that remains. Nor can we continue to deforest the planet or reduce the amount of carbon stored in the soil.

Currently renewables are less energy intensive while all previous transitions were to more energy intensive than the sources they replaced. Nor are renewables cheaper in all locations. It is thus challenging to make the needed global decision to switch energy sources. Indeed, it is far from certain that even if such a decision is made that we can stick to it for as long as we will need to. At some point during the transition oil will get very cheap, posing a great temptation for desperate sellers and buyers. Making a *global decision,* and abiding by that decision near-universally, makes this transition unlike any previous energy transition. For *this* decision to succeed we need to 1) prove ourselves capable of global governance and 2) establish a widespread sense of global citizenship with most people thus supportive for the long haul.[[27]](#footnote-27)

 Again, we do not know how, without fossil energy, to do everything we now do. Much has been made of experimental solar-powered flights. But note the number of humans on such planes and the absence of baggage. Solar airplanes of the sort being tested will never provide mass, long distance transportation.[[28]](#footnote-28) It is also unclear that we will still be able to extract and refine the amount of raw materials that we presently do, or to ship anything approaching the quantity of goods around the planet that we presently ship, at least at the speeds we ship them.

Even if much manufacturing continues to require highly intense energy sources, we could learn to make do with less of those products. People can enjoy life with less travel (indeed we did with much less one or two generations ago). We can also utilize more recycled material, find more sustainable raw materials or simply make everyday goods with less material (as in the shift from large stereo systems and physical embodiments of recorded music to cell phones and cloud storage).

The great challenge, however, is time. The post-carbon transition must be achieved *rapidly*. Avoiding a greater than 1.5 degree increase in global average temperature, the strong target established in Paris, means that change must come very quickly indeed, far faster than all but a few nations have proceeded thus far. That goal also locks in the *permanent* reduction in fossil fuel use that requires leaving more than half in the ground (or at least never burning it).[[29]](#footnote-29) This in turn will challenge the global financial system. We can no longer afford squandered wealth. It is needed for new infrastructure, research and new energy sources.

##One piece of good news is that the transformation does not necessarily require 100% renewables as some assert (more like 80% or 90%). The remaining proportion could be met by nuclear or, better, offsets for carbon emissions. Offsets might include increased carbon storage in soil or plant life. Nonetheless, achieving the target remains the greatest economic and technological transformation in human history. Tall order is not the half of it. To put the challenge in perspective Denmark has moved as decisively as any nation and currently produces 50% of its electricity (and thus a far smaller proportion of its energy). Denmark also has only six million people and is very windy.

Again, the speedy change is key. Few analysts have fully faced the challenge. There is little time for deep recessions and in some places little hope of using limited capital for other purposes.[[30]](#footnote-30) Most cities need to be fundamentally altered and a significant proportion of production needs to be re-localized rather than increasingly globalized. Both are capital intensive, as are renewables themselves. Moreover, if we want to maintain food production *and* wilderness, most roofs, canals, roads and parking lots must be restructured to accommodate solar panels.

Political transformation comes into the equation when we get to the next two implications. First, for the next three of four decades there will be less money for war. Even more challenging and politically transformative: as noted the post-carbon shift may require that most of us, especially in wealthy nations, relearn how to live our everyday lives.[[31]](#footnote-31) We urgently need to consider these issues within EPT.[[32]](#footnote-32) I think that we have a real opportunity to contribute by imagining the political, economic and social processes that might make the change possible. I will try to set out here some things we need to consider in doing so.

There are, of course, challenges associated with sustainability and a post-carbon transition that EPTers and others of our ilk have already considered. One burgeoning inquiry is degrowth, a concept related to earlier inquiries such as limits to growth and steady state economies.[[33]](#footnote-33) Today’s degrowth debates can be traced back to W. Stanley Jevons, Thomas Malthus and John Stuart Mill.

There is a truism underlying this discourse: namely that endless economic growth on a finite planet with finite resources may be impossible. A counter argument is that economic growth can be decoupled from growth in energy use and materials extraction, if not necessarily forever at least for a good time longer. One variation on this latter view is eco-modernism.

There are several things that both sides here might agree on.[[34]](#footnote-34) One is that a post-carbon, or a sustainable, economy would be impossible if all nations consumed energy and resources at the rate that North Americans consume them. The approximate proportion of global energy and materials consumption of the rich, post-industrial nations (North America, Europe, Japan and Australia) taken together is 70-80%. The United States and Canada consume a disproportionate per capita share within that group. Greater energy and materials efficiency in North America helps the cause, but global economic equality likely still implies political acceptance of slow economic growth in wealthy nations. This will not be easily achieved (though it is an easier sell than degrowth).

Second, we might also agree that it is not just a matter of the quantity of economic growth, it is the manner in which wealth is produced. The limit sustainability requires is not a monetary limit, it is a limits on land use, energy use, energy form and the quantity of raw materials extracted from nature. Durability is a crucial factor here: a table can be centuries old, prized for its design, workmanship and rarity, and be priced at ten or a hundred times the price of a new table. The exchange counts towards GNP, but involves almost no materials extraction or energy use (other than for delivery). Another example: over time solar panels produce far more energy than is used to make them. There are limits to this dollars/throughputs distinction, but in broad terms Europe has roughly the GNP per capita of North America with roughly half the energy use.[[35]](#footnote-35) Moreover, Europe can significantly improve its GNP/energy and extraction ratio (and is committed to doing so).

Third, there is likely wide agreement in both degrowth and eco-modernism that economic growth should not be the core objective of public policy to the extent that it has been in the past. Indeed, most environmentally-aware economic analysts would agree that raw growth should not be the leading economic policy goal. Sustainability is about maximizing the dollar-efficient, and especially the material-and-energy-efficient, creation of well-being (or in some analysts’ perspective, happiness).[[36]](#footnote-36) Some economic expenditures (cigarettes or unhealthy food to state the obvious) reduce well-being. Others have positive effects, but even higher opportunity costs (buying marginally better cellphones, rather than healthier food or improved public amenities for all to enjoy).

Finally, largely unrelated to the intellectual efforts of degrowth advocates, economic growth is getting harder to generate. Ironically, this outcome results in large measure from the economic policies of fervent growth advocate. Reductions in corporate taxation, social programs, infrastructure spending, low wages and low taxes fuel austerity and inequality to the point where the prosperous need nothing more and those who might spend money cannot afford anything, nor can government. At the same time those who now have work in poor nations can afford modest homes and more food, but few manufactured goods. Rising wages, government spending or basic income guarantees would spur economic growth, but are all but impossible politically in Anglo-American democracies.

I am still enough an old school leftist to believe that economic growth, if it can be achieved while simultaneously making the economy more sustainable and less carbon intensive, would be a net positive. For me, one reason that this is the case is political, and a second is ethical. Such policies are also what might drive genuine political change as we move to a post-carbon economy.

Politically, the cost of leaving fossil energy in the ground combined with fallout associated with degrowth would make majority constituencies for the transition difficult to achieve. As well, historically, economic contractions in wealthy nations have been associated with very dangerous political outcomes. We are even now seeing the rise of extreme (frankly, neo-fascist) parties in both the United States and Europe in the face of merely slow growth. As well, some growth may be necessary to maintain capital for a rapid transition (if it is a *citizen* economy that emerges that capital must be widely distributed).

Morally, a way must be found to allow developing economies to continue to grow. Politically, it is difficult to imagine that wealthy nations would eagerly shrink their economies to allow poor economies to grow. Wealthy nation majorities might, however, accept slow growth domestically while poor nations gained a bit of relative ground since it is already widely believed that that is just normal or at least unavoidable. Developed economies have grown more slowly for decades now. But, bottom line, poor nations need adequate transportation, modern communications, lighting, refrigeration, clean water and adequate food and they will flatly reject policies that slow, or advocacy that urges, such an outcome.

To end on a positive note, given the accelerating shift to renewables and stunning technological advances in solar panel and wind turbine efficiency I am convinced that we can learn to live well with little or no fossil energy while still achieving at least modest economic growth where it is most needed. Some key political changes are necessary for this process to continue to take hole, but they are doable, if challenging. It is hard to imagine progress on climate change action without two key political shifts. One is reducing the power of concentrated wealth, including fossil energy money, in electoral politics. The second is a widespread rejection of blaming on foreign countries or minorities when economies lag. Neo-fascism is a real threat to everything but, mercifully, most young people reject the politics of hate and understand that climate change is real and new approaches to production and consumption are essential. We do not need to comprehensively transform our political and economic systems and norms to build a post-carbon economy, we just need to avoid lurching radically backwards in the short-term.

Cell phones and solar chargers are increasingly available in rural Africa. Between 1990 and 2014 the German economy grew (one might say, slowly but surely) by 40% while GHG emissions declined by 26%. We would not be worshiping growth were the global economy to grow slowly while a transition from fossil fuels progressed. The IRENA report also noted that getting to 36% of electricity from renewables globally by 2030 would get us half of the reductions needed to hold global average temperature increases to 2 degrees.[[37]](#footnote-37) We need to change many things to achieve a citizen-based, post-carbon economy, but we do not need to change all things. We do not have the time, nor the political wit, to do that, but we can do what we have to do.

1. For a more detailed account of this history see Robert Paehlke, *Environmentalism and the Future of Progressive Politics* (New Haven: Yale University Press, 1989). Today’s context is more challenging politically in part because the issues cannot be resolved without changing most products, processes and even aspects of the structure of the economy. See also the discussion of Naomi Klein *This Changes Everything* below. [↑](#footnote-ref-1)
2. See David R. Boyd, *The Optimistic Environmentalist* (Toronto: ECW Press, 2015). [↑](#footnote-ref-2)
3. Regarding the fourth point see Peter Newman and Jeffrey Kenworthy, S*ustainability and Cities* (Washington, DC: Island Press, 1999). Other points are elaborated and footnoted below. [↑](#footnote-ref-3)
4. Amory Lovins, *Soft Energy Paths* (Cambridge, MA: Ballinger, 1977). [↑](#footnote-ref-4)
5. See Robert Paehlke, “Work in a sustainable society,” in Roger Keil, et al, eds., Political Ecology (London: Routledge, 1998), 272-291. [↑](#footnote-ref-5)
6. Requiring (or demanding in the marketplace) that goods be more durable would increase jobs, but it would also relocate some jobs nearer to their point of purchase and use. [↑](#footnote-ref-6)
7. This change, essentially a politicization of market behavior, is detailed in five chapters in the book: food, energy, media, shelter and ‘stuff’ (manufactured goods). It is perhaps most dramatic in the food sector where there are many thousands of entrepreneurs growing food for local consumption on principle for reasons related to both human health, pesticide use and climate change. Many food retailers and restaurants everywhere support this shift and participate in it by sourcing locally. [↑](#footnote-ref-7)
8. Sarah McColl, “The Reasons Why We Shop at Farmers Markets Are Bigger than Local Food,” [www.takepart.com/article/2015/08/28/why-we-shop-farmers-markets](http://www.takepart.com/article/2015/08/28/why-we-shop-farmers-markets). [↑](#footnote-ref-8)
9. The source of this shift is both instinctive and intellectual, the latter led by writers such as Michael Pollan and, earlier, Francis Moore Lappe. See Michael Pollan, *Omnivore’s Dilemma* (New York: Penguin, 2006) and on climate and food see Anna Lappe, Diet for a Hot Planet (New York: Bloomsbury, 2010). [↑](#footnote-ref-9)
10. See Thomas McNamee, *Alice Waters and Chex Panisse* (New York: Penguin, 2007). [↑](#footnote-ref-10)
11. There are few rules governing national origin regarding ingredients in food produced in any nation. Often ‘produced’ is merely a matter of repackaging or blending imports from undisclosed locations with small amount of locally produced ingredient. [↑](#footnote-ref-11)
12. Some participant-subscribers donated to keep the blog going, but most simply accessed or participated without payment. In the early days few who created these media made much, if any, money on the undertaking. [↑](#footnote-ref-12)
13. Karl Polanyi, *The Great Transformation* (Boston: Beacon Press, 1957). [↑](#footnote-ref-13)
14. David Easton notably defined politics as the authoritative allocation of values. See David Easton, *The Political System* (New York: Knopf, 1953). [↑](#footnote-ref-14)
15. Charles Lindblom, *Politics and Markets* (New York: Basic Books, 1977). [↑](#footnote-ref-15)
16. Local food and renewable energy are crucial to the emergence of a new economy. New approaches to food can self-start with limited government intervention because people are wary of global and industrial food and many are willing to pay more for local, organic food. Energy can self-start because there is now a price advantage in some places for renewable sources. A successful post-carbon politics and policy, and other economic sectors, hopefully will follow this lead. [↑](#footnote-ref-16)
17. In Georgia there is even an organization called Green Tea which is a cooperative effort by members of environmental organization and Tea Party supporters. It works against legislation and utility regulations that discourage solar installations. [↑](#footnote-ref-17)
18. For basics on benefit corporations see [www.fourthsector.net](http://www.fourthsector.net) or [www.benefitcorp.net](http://www.benefitcorp.net). [↑](#footnote-ref-18)
19. Naomi Klein, This Changes Everything New York: Simon & Schuster, 2014). [↑](#footnote-ref-19)
20. One place to get a feel for the likely changes and the reasons for them is George Monbiot, *Heat* (Toronto: Doubleday Canada, 2006). [↑](#footnote-ref-20)
21. Basic income programs for all citizens are being adopted or considered in several European countries including the Netherlands and Finland. [↑](#footnote-ref-21)
22. The IRENA report is available at www.irena.org/publications. It is dated January, 2016. [↑](#footnote-ref-22)
23. Some large corporations, such as Tesla, General Electric, Siemens, Apple and Google, for example, are taking real steps and are seriously invested in the transition. [↑](#footnote-ref-23)
24. It would be easier to say corporatism, but some would take that to be equivalent to fascism. [↑](#footnote-ref-24)
25. Such efforts would offset decades of obsessive devotion to what might be called cargo cult capitalism, endlessly seeking to lure business investment from afar to serve global markets. [↑](#footnote-ref-25)
26. The latter point was contained in recent interviews on CBC Radio. It confirmed what I found in my earlier visit to the island, elaborated at: [www.alternativesjournal.ca/community/blogs/aj-editorial-board/denmark-happy-healthy-prosperous-and-low-carbon](http://www.alternativesjournal.ca/community/blogs/aj-editorial-board/denmark-happy-healthy-prosperous-and-low-carbon). [↑](#footnote-ref-26)
27. See Robert Paehlke. *Hegemony and Global Citizenship: Transitional Governance for the 21st Century* (New York: Palgrave Macmillan, 2014). [↑](#footnote-ref-27)
28. Unless solar energy is converted to some portable fuel, likely a very expensive proposition. Plant-based alcohol in the quantities we use jet fuel could take up a great deal of agricultural land and/or habitat. There are other possibilities, like algae converted to alcohol, but it is the mass part of mass air travel will still be a great challenge. [↑](#footnote-ref-28)
29. Mike Berners-Lee and Duncan Clark, *The Burning Question* (Vancouver: Greystone Books, 2013). [↑](#footnote-ref-29)
30. Recessions cut energy use, but prices also drop. Both trends will restrain investment in many alternatives. To show how the shift away from progress might ensue be, see Marc Gunther, “Can Large Companies Lead the Low-Carbon Revolution?” [www.e360.yale.edu/feature/can\_large\_companies\_lead\_the\_low-carbon\_revolution](http://www.e360.yale.edu/feature/can_large_companies_lead_the_low-carbon_revolution). Accessed February 9, 2016.. [↑](#footnote-ref-30)
31. For a discussion of the need to consider the role of basic neural science and relearning in relation to sustainability see Peter Sterling, “Why We Consume: Neural Design and Sustainability,” [www.gtinitiative](http://www.gtinitiative) (February, 2015). [↑](#footnote-ref-31)
32. John Meyer, *Engaging the Everyday: Environmental Social Criticism and the Resonance Dilemma* (Cambridge, MA: MIT Press, 2015). [↑](#footnote-ref-32)
33. See, for example, Peter Victor, Managing Without Growth: Slower by Design, Not Disaster ( Cheltenham: Edward Elgar, 2008). [↑](#footnote-ref-33)
34. I was privileged to participate in the discussion of two recent essays on degrowth. The essays and discussion are available at [www.greattransition.org/publications](http://www.greattransition.org/publications) -- see Herman Daly (“Economics for a Full World” June 2015) and Giorgos Kallis (“The Degrowth Alternative” February 2015). [↑](#footnote-ref-34)
35. That comparison is even more valid for the Nordic nations which are both richer *and* more energy and materials efficient than North America or the rest of Europe. [↑](#footnote-ref-35)
36. See Robert Paehlke, “Sustainability as a Bridging Concept,” *Conservation Biology* 19 (February, 2005), 36-38. [↑](#footnote-ref-36)
37. No one expects that we will not need more time than that or believes that there aren’t other things that can be done before 2030, especially to reduce energy demand in wealthy nations or energy waste in poor ones. [↑](#footnote-ref-37)