

Needed: A Better Story

L. Hunter Lovins¹

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Abstract The paper argues that if humanity is to survive looming system collapse we need a new narrative of what it means to be human, how to organize our economy and how to create a world that works for everyone. The report outlines the challenges created by our current neo-liberal economic narrative. It provides corporate and leadership solutions that can craft a new story of an economy that works for 100% of humanity. It describes the regenerative economy that is emerging through a common commitment to entrepreneur a finer future. Behaving in ways that are more responsible towards people, planet and profit, a concept known as the integrated bottom line, enhances every aspect of core business values. Ensuring well-being and dignity for all of humanity is core to creating an economy in service to life.

Keywords Regenerative Economy · Humanistic Management · Well-being · Sustainable Business Management · Climate Change · Inequality · Dignity · Collapse · Energy · Integrated Bottom Line · Holistic Management · Biomimicry · Cradle-to-Cradle · Circular Economy · Economy in Service to Life

“You walk into the future by laying the runway out in front of people. You clear the impediments littering the ground, smooth the surface, and enable people to see the route. If you want to change a paradigm, you have to tell a better story” (A.J. Grant, Environmental Communication Associates, <http://teameca.com/>)

The Problems

The global economy rests on a knife-edge, based on the unsustainable assumptions and business practices of Cheater Capitalism. (ASAP 2013) The current paradigm subsidizes incumbent

✉ L. Hunter Lovins
hlovins@equatornetwork.com

¹ Natural Capitalism Solutions, 11823 N. 75th St., Longmont, CO 80503, USA

technologies and corporate profits and bails out too-big-to-fail banks and companies, while socializing losses and privatizing commons. It impoverishes citizens, communities, and countries, driving societies and ecosystems into successive collapses. Palliative “fixes” can delay collapse—but only for a time.

Change WILL happen because ecosystems and economies are already collapsing at the same time because a finer future is being entrepreneured. Both are important. We’re in a horse race with catastrophe, but the good news is that we’re in the race. A healthy economy—what John Fullerton calls a Regenerative Economy—is emerging. The science fiction writer William Gibson said that the future is already here; it’s just not widely distributed. The key principle is that this new economy is embedded within, and depends on, a healthy ecosystem.

Global Biodiversity Outlook 3, (2016) building on the 2005 Millennium Ecosystem Assessment,² warned that climate change and other assaults are tipping coral reefs, the Amazon, the acidifying oceans and other ecosystems into collapse³ The Planetary Boundaries report⁴ set scientifically agreed safe boundaries for human impacts, showing how humankind has already exceeded four of these, and is fast approaching others. Dr. Kate Raworth’s Doughnut Economics shows that, despite the excesses by which our current economy extracts and quickly throws away resources, we are failing to meet minimum requirements to ensure well-being and dignity for all of the world’s people.⁵

Developing nations struggle to lift from poverty the half of the world’s population that lives on less than \$2.50 a day. Millions of drought-driven refugees across the north of Africa join people threatened by too much or too little glacial melt water and monsoon floods from the Himalaya to Columbia. (Spotts 2006) It is clear that climate change will hit the most vulnerable hardest.⁶ Yet, these poorest three billion emit only seven percent of emissions. The richest seven percent [about half a billion people] spew out 50 percent. (Alternet 2011)

Issues of inequality are not only immoral, but threaten economic stability. (Angus and Butler 2011) Dr’s Richard Wilkinson and Kate Pickett have shown that health and social problems are worse in more unequal countries. Their book, *The Spirit Level*,⁷ shows that people in more equal societies live longer, have better mental health, and have better chances for a good education regardless of background. Community life is stronger where the income gap is narrower, children do better at school and they are less likely to become teenage parents. When inequality is reduced, people trust each other more, there is less violence, and rates of imprisonment are lower.⁸

Conventional wisdom says that the way to alleviate poverty is to drive the economy harder: to grow evermore. The folly of this approach was first shown in the 1972 report to the Club of Rome, *Limits To Growth*. (Meadows 1972) The fact that the world has largely ignored its warning does not mean that its validity has gone away. In 2012, the Smithsonian published graphs showing that humanity was squarely on course following the collapse scenario. Graham Turner’s report, “Is Collapse Imminent,” verified that humanity was continuing on the Business As Usual (BAU) trendline, warning that, “The BAU scenario results in collapse

¹ “Global Biodiversity Outlook 3.” <http://www.cbd.int/doc/publications/gbo/gbo3-final-en.pdf>

² <http://www.maweb.org/>

³ Rockstrom, Johan. “A Safe Operating Space for Humanity : Article : Nature.” <http://www.nature.com/nature/journal/v461/n7263/full/461472a.html>.

⁴ Raworth, Kate. “Doughnut Economics.” Center for Humans & Nature. <http://www.humansandnature.org/economy-kate-raworth>.

⁵ “ICT4D with OneWorld.” ICT4D with OneWorld. Accessed May 24, 2016. <http://us.oneworld.net/article/361990-climate-disasters-threaten-overwhelm-aid-systems>.

⁶ “The Spirit Level.” The Equality Trust. <https://www.equalitytrust.org.uk/about-inequality/spirit-level>.

⁷ <http://www.equalitytrust.org.uk/>

of the global economy and environment (where standards of living fall at rates faster than they have historically risen due to disruption of normal economic functions), subsequently forcing population down. Although the modeled fall in population occurs after about 2030—with death rates rising from 2020 onward, reversing contemporary trends—the general onset of collapse first appears at about 2015 when per capita industrial output begins a sharp decline.”⁹

Much of the threat derives from the global dependence on fossil fuels. This drives the climate crisis, which, in turn, endangers the economy. Unregulated manipulation of derivatives and unwise mortgage practices clearly contributed. But the rise in oil and other commodity prices in the spring of 2008 that forced U.S. homeowners to choose between paying for gasoline to drive to work or paying their mortgages, clearly played a role, as well. The financial crash of 2008 had a complex cocktail of causes, but it is not a coincidence that it came six months after the record height in global oil prices. When gasoline in the inefficient U.S. exceeded \$5 a gallon (far below prices in Europe), the housing market collapsed. (NRDC 2010) The collapse evaporated \$50 trillion dollars and 80 million jobs, (Lee-Brago 2011) and made job creation the global political currency. It is worth noting, however, that this will be difficult in the face of accelerating automation. (Muehlhauser 2013) Few analysts believe that the drivers of that collapse have been alleviated. Most believe that, absent fundamental shifts in how we govern, another, far bigger economic disaster looms.

Price spikes did not inflict uniform damage. Between 2005 and 2010, Exxon, Chevron, Shell and BP reduced their U.S. workforce by 11,200 workers (Leber 2012) but pocketed \$4 billion a year in tax subsidies. Globally, subsidies to the fossil fuel industry top \$550 billion every year, and are at least 12 times any subsidies given to energy efficiency and renewable energy. (Morales 2016)¹⁰ In 2011, Exxon made \$5 million in profit every hour, or over \$41 billion, but paid lower taxes than the average American. In 2012, as oil prices hit \$120 a barrel, oil companies made an additional \$5 billion from American workers. When the U.S. fracking glut, and Saudi politics, collapsed the oil price, ordinary oil users rejoiced (the drop added \$500 a year to American households, which then bought record numbers of SUVs¹¹) but imperiled the economies of Iran, Russia, Nigeria and Venezuela. The impact is welcome in India and other developing nations, where governments subsidize fuel prices to avoid revolution. But this continues consumers’ tendency to treat the cheaper good as plentiful, and the dance goes on.¹²

In 2015, oil prices again threatened the economy, but this time it was because they fell too low for the stability of the banks that hold debt paper for the oil majors.¹³

Higher volatility, climate instability, and the shift of food to fuel all drive food insecurity and hunger. (Heinberg 2007) To some extent, the primary crisis the globe faces is created by the over-consumption in the North, and both fairness and math dictates that the richer countries lead in transforming their investments to a regenerative economy. But the rapid conventional

⁸ Graham Turner, Is Global Collapse Imminent?, 4 August 2014, http://sustainable.unimelb.edu.au/sites/default/files/docs/MSSI-ResearchPaper-4_Turner_2014.pdf.

⁹ “Energy Subsidies: Getting the Prices Right.” International Energy Agency. http://www.iea.org/files/energy_subsidies.pdf.

¹⁰ “Gas Price Fallout: People Trading in Hybrids for SUVs.” CNNMoney. Accessed May 24, 2016. <http://money.cnn.com/2015/04/21/autos/electric-car-hybrid-for-suv/>

¹¹ “Winners and Losers of Oil Price Plunge.” Financial Times. <http://www.ft.com/intl/cms/s/2/3f5e4914-8490-11e4-ba4f-00144feabdc0.html#axzz3Y59QW9yi>

¹² Ahmed, Nafeez. “We Could Be Witnessing the Death of the Fossil Fuel Industry-Will It Take the Rest of the Economy Down With It?” Alternet. <http://www.alternet.org/environment/we-could-be-witnessing-death-fossil-fuel-industry-will-it-take-rest-economy-down-it>.

development in the Global South cannot be sustained, either. Billion dollar investors such as Jeremy Grantham warn that a major restructuring of global financial flows will be necessary to deal with a world of soaring commodities costs, waning natural capital, and the challenges described above.¹⁴ Lester Brown's *Full Planet, Empty Plates: The New Geopolitics of Food Scarcity* warns, for example, that "grain stocks have dropped to a dangerously low level, while the World Food Price Index has doubled in a decade....We are only one poor harvest away from chaos in the world grain markets."¹⁵ Remember, it was a food riot that touched off the Arab Spring in Tunisia. And, as Lester Brown points out, the real concern is not only peak oil, but peak water. (Brown 2013) Or in Richard Heinberg's term, "Peak Everything." And it only takes one look at the ratios of the percentage increase in capex of the oil majors exploration to the percentage increase in proven reserves to tell anyone mathematically literate that cheap oil prices will not long endure.

These "drivers of change"¹⁶ mean that business as usual is actually the *radical scenario* for the future. Books such as Dimitry Orlov's *Five Stages of Collapse*¹⁷ and such websites as the Collapse of Industrial Civilization,¹⁸ or the Dark Mountain (Kingsnorth 2010) are only a few of the growing number of collapse merchants arguing that it is already too late. Unless countered, this narrative will become a self-fulfilling prophecy. Many young people already believe that there is no future for them. Teen suicide is increasing,¹⁹ as are fears of climate change and other environmental harm.²⁰ Teilhard de Chardin said that the future belongs to those who give hope to the next generation.²¹ We are the result of 3.8 billion years of evolution. Perhaps it is time that we acted like it.

Solutions²²

Overlooked by the proponents of collapse is the strong and increasing business case for sustainability. There is also a rapid rise in global entrepreneurship creating companies that deliver the needed solutions. The tipping point at which renewable energy becomes cheaper than building more dirty technologies has arrived. (Lovins 2015a) Perhaps most exciting, a vast array of groups around the world are framing the principles of a new economy. ([Humanistic Management Network Humanistic Management](#))

¹³ "Charlie Rose: Jeremy Grantham on Our Debt Solution: Video." Bloomberg.com. <http://www.bloomberg.com/video/investment-strategist-jeremy-grantham-rBP3CUZJS9mPRsuWLXpSRA.html/>.

¹⁴ "Full Planet, Empty Plates: The New Geopolitics of Food Scarcity." Bookstore. <http://www.earth-policy.org/books/fpep>.

¹⁵ This is a term Royal Dutch Shell uses when it does scenario planning. If you can identify Drivers of Change you know things are going to change. You can establish strategies to deal with the predictable consequences.

¹⁶ "The Five Stages of Collapse." <http://cluborlov.blogspot.com/p/the-five-stages-of-collapse.html>.

¹⁷ "Collapse of Industrial Civilization." Collapse of Industrial Civilization. <http://collapseofindustrialcivilization.com/>.

¹⁸ Neal, Meghan. "1 in 12 Teens Have Attempted Suicide: Report." NY Daily News. <http://www.nydailynews.com/life-style/health/1-12-teens-attempted-suicide-report-article-1.1092622>.

¹⁹ "Youth Anxiety on the Rise amid Changing Climate." The Globe and Mail. <http://www.theglobeandmail.com/life/health-and-fitness/health/youth-anxiety-on-the-rise-amid-changing-climate/article18372258/>.

²⁰ "A Quote by Pierre Teilhard De Chardin." Goodreads. <http://www.goodreads.com/quotes/481614-the-future-belongs-to-those-who-give-the-next-generation>.

²¹ For many more solutions see the Solutions Journal, <http://www.thesolutionsjournal.com/> and Natural Capitalism Solutions, www.natcapsolutions.org

Our job is to forestall collapse long enough that these durable solutions can come to dominate. This will require a combination of strategies, buying time with a suite of market-based measures that solve such threats as the climate crisis, combined with the international leadership to install durable transformation, and implementation of the Sustainable Development Goals. Individuals can encourage good policy at the national level, action by states and provinces, and a commitment by corporations and communities to create the future we want. And contrary to conventional wisdom, doing this is better business.

More than 54 studies from the likes of the wild-eyed environmentalists at Goldman Sachs and all of the big management consulting houses show that the companies who are the leaders in environmental, social, and good governance policies have 25 % higher stock value, the fastest growing stock value, deliver superior financial performance, and are better investment risks.²³

This means that arguing over which should go first, the North or the South is silly. (Lovins 2015b) Harvard Business Review put it this way: “Sustainability isn’t the burden on bottom lines that many executives believe it to be. It can lower your costs and increase your revenues. That’s why sustainability should be a touchstone for all innovation....In the future, only companies that make sustainability a goal will achieve competitive advantage. (Nidumolu et al. 2009) That means rethinking business models as well as products, technologies and processes.”

In an age of gridlocked parliaments, inability of international leaders to frame solutions to Greek bankruptcy or the flow of refugees, the loss of trust in governments following the 2008 collapse, the ensuing Euro-zone crisis, and the “jobless recovery,” corporate leaders are realizing that if government won’t act, they will have to. The business sector may be the only institution on the planet big enough, well enough managed, and resourceful enough to tackle the challenges facing it. Companies like Unilever²⁴ and DNVGL²⁵ are making significant commitments to behave in more sustainable and regenerative ways.

This is good, but insufficient.

International leadership is needed, and is starting to emerge from countries large and small. Costa Rica’s commitment to become carbon neutral, and China’s effort to implement the Ecological Civilization²⁶ are examples.

The biggest enabler of a transformation is the rapid rise of renewable energy. In April 2015, Bloomberg announced that, “Fossil Fuel Just Lost The Race with Renewables.”²⁷ This echoes the “Energy Darwinism”²⁸ report released June 2014 by Citi Group, which warned of the “alarming fall in the price of solar.” Alarming to whom? It predicted that within 10 years unsubsidized solar would be the cheapest way to generate electricity. The 2015 National Bank of Abu Dhabi report found that

²² “Sustainability Pays: Studies That Prove the Business Case for Sustainability” <http://natcapsolutions.org/businesscasereports.pdf>.

²³ “Sustainable Living.” Unilever Global Company Website. <http://www.unilever.com/sustainable-living-2014/>.

²⁴ “The Road Less Travelled.” DNV GL. <http://roadlesstravelled.pit.as/?page=journey>.

²⁵ Managing the Environment: <http://www.detaoma.net/news/show/181591>

²⁶ “Fossil Fuels Just Lost the Race Against Renewables.” Bloomberg.com. <http://www.bloomberg.com/news/articles/2015-04-14/fossil-fuels-just-lost-the-race-against-renewables>.

²⁷ “ENERGY DARWINISM.” CITI GPS. <https://www.citivelocity.com/citigps/ReportSeries.action?recordId=21>.

solar energy is on track to achieve grid parity in 80 % of countries within the next 2 years.

The world's green power is China.²⁹ Likely already the world's largest economy, China plans to become the world's renewable energy powerhouse.³⁰ With only 0.3GW of installed photovoltaic capacity in 2009, China added 3.3GW in 2011 and 13GW by 2013. It installed 50GW of wind and solar in 2015. (Henderson and P. Joffe 2016) China continues to burn a lot of coal, but has committed, as part of its Green Horizon's program, to cut its carbon intensity 40 to 45 % from 2005 levels by 2020, and clean the air in its cities. In the first three months of 2015, coal imports fell by 42 % from a year before in a transformation that has only begun. (The Guardian 2015) "China 2050 High Renewable Energy Penetration Scenario and Roadmap Study" from the China National Renewable Energy Centre found that renewable energy could economically provide China the majority of its energy by 2050.

National policies like Germany's Feed-in-Tariff (FiT) have unleashed that country's renewable energy industry, created jobs, and underpinned prosperity. (Davidson 2012) In their first 4 years, FiTs created almost 500,000 new jobs and cut the unit cost of solar panels enough that they will reach grid parity (costing the same as grid electricity) by 2013. (Roney 2016) The program added only two to three Euros per month to electricity bills in Germany, roughly \$50 to customers' electricity bills each year, for a total of €8.6 billion. Deutsche Bank found that far from costing the economy, the savings outstripped the total cost of payments made by households. Had customers bought electricity from conventional coal generation, Germans would have paid an additional €9.4 billion.³¹ In 2014 renewables supplied more electricity to Germans than any other source, reaching 27 %. Germany's annual carbon emissions fell to their second lowest levels since 1990 and wholesale power prices fell to a record low as Germany's economy expanded 1.4 %.³² One challenge of this is that the energy sector, which has long denied that such outcomes are possible, is ill-prepared for them, now that they are happening.

E.ON and RWE, two of Europe's biggest utility companies, are now undergoing profound business transformations. RWE, after its profit dropped \$5.8 billion (60 %) in a year, opted to transform its business model to become a distributed utility, shedding its fossil and nuclear holdings. E.ON similarly spun-off its fossil fuel, nuclear, and hydropower assets, but too late to prevent its profits from dropping 91 %.³³

Tesla has twice the market capitalization of General Motors, despite selling 300 times fewer cars. But Tesla is not only a car company; it's a battery company, and as it brings on lower-

²⁸ "China to Approve over 17.8GW of PV in 2015 - Bloomberg New Energy Finance." Bloomberg New Energy Finance. <http://about.bnef.com/landing-pages/china-approve-17-8gw-pv-2015/>.

²⁹ "IBM Helps China Become Greener & Cleaner with Green Horizon." IBM News Room. <http://www-03.ibm.com/press/us/en/pressrelease/44202.wss>.

³⁰ "Paying for Renewable Energy: TLC at the Right Price - Achieving Scale through Efficient Policy Design," Deutsche Bank, December 2009, "Corporate Responsibility Report 2015." Home – Deutsche Bank Responsibility. Accessed May 24, 2016. http://www.dbcca.com/dbcca/EN/investment-research/investment_research_2144.jsp.

³¹ "The Energiewende in the Power Sector: State of Affairs 2014." Accessed May 24, 2016. https://www.agora-energiewende.de/fileadmin/Projekte/2014/Jahresrueckblick-2014/Agora_Energiewende_Review_2014_EN.pdf.

³² Power Outage, 24, Ap 2015, "Power Outage - Handelsblatt Global Edition." Handelsblatt Global Edition. 2014. <https://global.handelsblatt.com/edition/53/ressort/companies-markets/article/power-struggle>.

cost, modular batteries at scale, it will solve the so-called intermittency problem of renewables. At that point it really is over, and renewables sweep the economy. Companies from Unilever³⁴ to Apple³⁵ and Google³⁶ to Ikea³⁷ and dozens others are already becoming 100 % renewably powered. Indeed, many share Stanford Professor Tony Seba's prediction that by 2030 the world could run on 100 % renewable energy (Seba 2015).

Bill Clinton pointed out that if the U.S. transitioned to a similar renewables-based energy system it would create 2.5 million jobs.³⁸ Jobs have become the currency of politics, worldwide, and the typical prescription of growth at any cost turns out not to be the best way to create durable, well-paying jobs. Renewable energy and energy efficiency deliver 10 times the jobs created per dollar invested as fossil fuel or nuclear plants. (Kammen et al. 2006) The economy of the future is the green economy (Lovins and Cohen 2012).

The results of the transition away from dirty, dangerous forms of energy are becoming visible at the global scale, as well. In 2015 the International Energy Agency³⁹ reported that the world's efforts to limit carbon emissions are working. For the first time in 40 years, global carbon emissions from the energy sector stalled and began to decline. During years of failure of global leadership at climate summits at Copenhagen, Cancun, and Durban, local successes were all that climate activists could cling to. Coupled with growing climate disruption and an unprecedented global citizen-action campaign, they finally brought the nations of the world to agree, at the global summit in Paris in 2015 to a binding accord to limit global warming to well below 2 degrees C. The world actually agreed to strive for a much more sensible 1.5 degree C warming over pre-industrial levels (Peeples, Lynne 2015).

Achieving this will unleash a new energy economy, now projected to be a \$10 trillion suite of industries by 2020. (Shah 2013) But as with all solutions, it is emerging best at the local level, as people realize that they must build their own resilience in the face of an unaccountable global economy.⁴⁰ Denmark's Samso Island is 100 % renewably powered. (Burund 2008) The German town Wildpoldsried is as well, producing 321 % more energy than it uses and selling the excess for \$5.7 million each year. (Allen 2011) Over half of Germany's renewables are owned not by utilities, but by farmers and citizens. (Gipe 2012) San Francisco and Scotland are on track to be 100 % renewable by 2020, and Germany by 2050, while closing its nuclear industry.

Community-based strategies to protect intact ecosystems and resilient human communities are now proving to be more economically attractive to the majority of people than the current systems that concentrate wealth at the top. For example, coastal communities in South East Asia, which will be disproportionately impacted by rising sea levels driven by climate change caused by emissions from the global north would be far better served by investing in restoring

³³ Unilever USA. <http://www.unileverusa.com/media-center/pressreleases/2014/NRG-Unilever-Form-Strategic-Partnership-Renewable-Energy.aspx>.

³⁴ "Apple Says Data Centers Now Use 100% Renewable Energy." Bloomberg News. <http://www.bloomberg.com/news/articles/2013-03-21/apple-says-data-centers-now-use-100-renewable-energy>.

³⁵ "Google Green." Renewable Energy. <http://www.google.com/green/energy/>.

³⁶ "The 100% Club." Sierra Club. 2015. Accessed May 24, 2016. <http://www.sierraclub.org/sierra/2015-2-march-april/feature/100-club>.

³⁷ The Daily Show with Trevor Noah." Comedy Central. Accessed May 24, 2016. <http://www.thedailyshow.com/watch/tue-november-8-2011/bill-clinton-pt-2>.

³⁸ "Global Energy-related Emissions of Carbon Dioxide Stalled in 2014." March: <http://www.iea.org/newsroomandevents/news/2015/march/global-energy-related-emissions-of-carbon-dioxide-stalled-in-2014.html>.

³⁹ Transition Network. <http://www.transitionnetwork.org/>

mangroves and sustainable aquaculture than in asset-based tourism economies.⁴¹ In another example, Dr. David Orr has shown that Oberlin College can leverage its commitment to sustainability to drive economic development in the adjacent town of Oberlin, and throughout a rust-belt region of Ohio.

Tools like Natural Capitalism's LASER (Local Action for Sustainable Economic Development)⁴² have helped communities from Kazakhstan, to South Africa, to New Zealand to Newburg, New York, implement renewable energy and a whole array of measures to build stronger locally based economies. Programs like CDP's Cities initiative⁴³ are helping major cities to implement climate protection in ways that drive their economies, create jobs and cut costs.

From Seattle, to now thousands of towns the world around, citizens are developing locally appropriate sustainability indicators to enable them to judge whether they are gaining or losing, and adjust policies to deliver greater well-being.⁴⁴ These metrics enable towns and cities to know that their sustainability investments are enhancing quality of life, helping to meet citizen-framed goals while building resilient local economies.

This is good news, as already half of the world's people live in cities, three quarters by 2050. Projections warn that in the next decade or so China will seek to move more people than there are in the United States into cities yet unbuilt. (Johnson 2013) Just the copper wire this would require is more than current world copper production. (Hilderson and Lasalle 2012) Business as usual, by 2030 China will want more oil than the world now lifts, and more cars, cotton, concrete, and essentially all other commodities (Kauffman 2006).

A Different Way to Do Business

Economist Robert Reich, former U.S. Secretary of Labor, in such books as *Beyond Outrage* and *Aftershock*,⁴⁵ analyzes the drivers of the 2008 collapse. He sets forth sensible prescriptions for local organizing, reaching across ideologies to build the coalitions that can use federal policies to level inequalities. There are many across the political spectrum⁴⁶ alarmed at the challenges facing us, but the demise of common channels of information dissemination has spawned an Internet empowered world of ideological bubbles where people only talk to those of similar perspectives.

A tireless advocate for economic policies that advance the common good, Reich proposes returning tax rates to where they were under such Republican administrations as Eisenhower, and Reagan, restoring the ability of government to provide education and social services to those now slipping into poverty trying to pay for them in a privatized economy. He calls also for a return to the banking regulations that kept economic stability for the 80 years since the

⁴⁰ "Turning Natural Landscape and Resources into Material Wealth." De Tao Group. February 2, 2015. <http://58.68.227.24/news/show/1734328>.

⁴¹ Hallsmith, Gwen, Lovins, Hunter, Fawbush Wayne, Juniper, Christopher. *Local Action for Sustainable Economic Renewal, Global-Laser*. <http://www.global-LASER.org/>.

⁴² "Wealthier, Healthier Cities: How Climate Change Action Is Giving Us Wealthier, Healthier Cities." Carbon Disclosure Project. <https://www.cdproject.net/CDPResults/CDP-Cities-2013-Global-Report.pdf>.

⁴³ "We Are What We Measure. It's Time to Measure What We Want to Be." Sustainable Measures. <http://www.sustainablemeasures.com/>.

⁴⁴ Robert Reich. <http://robertreich.org/post/21277269422>.

⁴⁵ "Building a Transpartisan Movement - Background." Mediators Foundation. <http://mediatorsfoundation.org/background-2/>.

Great Depression, and whose removal allowed the excesses that triggered the Great Recession. He prescribes forcing banks to restructure underwater mortgages, but perhaps most importantly calls for getting big money out of politics, and in the U.S., overturning the Citizens United case that categorizes corporations as persons with First Amendment rights of speech (read: spending money on politicians.) He describes the ideological conflict as between social Darwinism and the public good.

Reich's logic is impeccable, but a deadlocked Congress in the U.S. and ossified legislatures abroad ignore it. What then? Smart companies are beginning to interact with local stakeholders to develop locally appropriate initiatives. For example, approaches like Allan Savory's Holistic Management (Itzkan 2012) takes carbon from the air and returns it to the soil while increasing grazing output. Organic farming, which the UN's Food and Agriculture Organization now admits will do a better job of feeding the world's people, is coming to be recognized as a better alternative than industrial agriculture. (FAO 2007) Companies like Mondelez International are linking their work with happiness initiatives, committing to supply 100 % of their coffee sustainably.⁴⁷

Retail companies are also implementing more sustainable practices. When Walmart asked its global supply chain of 60 – 90,000 companies to measure their carbon footprint and report it to the Carbon Disclosure Project (CDP),⁴⁸ it did more to drive sustainability into even very small companies than years of government regulations. The 2014 CDP report showed that Standard and Poors companies that build sustainability into their core strategies are outperforming companies that fail to show such leadership. The companies actively managing their carbon emissions and planning for climate change enjoy 18 % higher return on investment than companies that aren't, and 67 % higher than companies that refuse to disclose their emissions. (Confino 2014)

Companies like Puma, Novo Nordisk, Baxter Health care and many others are beginning to count the costs and risks of unsustainability in their financial reporting. Perhaps most impressive is Unilever's commitment not to report its financials quarterly to Wall St analysts, chiding them that trying to manage a company on a 90-day return on investment precludes the sort of long-term value creation that grows shareholder value. They have committed to implement the Unilever Sustainable Living Plan, cutting their environmental impact in half while doubling revenues, sourcing all feedstocks from sustainable agriculture and improving the lives of a billion people. They are finding that behaving in ways that are more responsible enhances every aspect of core business value. As regulators realize that these are material numbers, efforts like the Sustainability Accounting Standards Board in the U.S.⁴⁹ and the International Integrated Reporting Council⁵⁰ will require that companies implement integrated bottom lines, transforming how companies track and implement more responsible behavior.

This Natural Capitalist⁵¹ approach is taking hold in companies in three ways, forming an arc of transition that is the foundation of any new economy. First, companies are eliminating waste and implementing more efficient use of resources. This drives profitability and buys

⁴⁶ "Coffee Made Happy." Mondelez International. <http://www.mondelezinternational.com/~media/MondelezCorporate/uploads/downloads/CoffeeMadeHappyFactsheet.pdf>.

⁴⁷ "Wal-Mart Announces Partnership with Carbon Disclosure Project to Measure Energy Used to Create Products." Newsroom. September 24, 2007. <http://walmartstores.com/pressroom/news/6739.aspx>.

⁴⁸ "Sustainability Accounting Standards Board." Sustainability Accounting Standards Board. <http://www.sasb.org/>.

⁴⁹ "Integrated Reporting." Integrated Reporting. <http://integratedreporting.org/>.

⁵⁰ "Natural Capitalism" Natural Capitalism Solutions. <http://www.natcapsolutions.org/>.

time, helping to solve the climate crisis, resource constraints, and many other challenges.⁵² The building sector, for example, benefits enormously from resource productivity. Buildings are one of the heaviest consumers of natural resources and account for a significant portion of the greenhouse gas emissions that drive climate change. Buildings account for 40 % of raw material use globally, use 74 % of all electricity, emit a similar percentage of greenhouse gasses, and can be made dramatically more efficient while becoming more profitable.⁵³ The U.S. Green Building Council⁵⁴ reports that owners of existing buildings enjoyed a 19.2 % return on investment for efficiency improvements. One conservative report (Lebard 2010) calculated that investing \$400,000 on efficiency in a 100,000 square-foot building would deliver \$1.50 per square foot in reduced energy costs over a similar building without the efficiency. That \$150,000 per year savings would pay back the extra costs in little over 2.5 years.

Efficiency is the cornerstone of any smart resource policy, but is only the beginning. Second, Natural Capitalist companies are redesigning how they make and deliver everything, using sustainable approaches such as biomimicry,⁵⁵ Cradle to Cradle design,⁵⁶ and the circular economy,⁵⁷ profitably transforming their businesses.⁵⁸ The circular economy, introduced in the 1970s by Walter Stahel,⁵⁹ became the basis of Chinese development policy in the 11 Party Congress.⁶⁰ Stahel points out that 75 % of impact comes from extraction of raw materials, most of which are quickly thrown away, but that 75 % of jobs come from remanufacturing, reusing, and recycling materials. A report from the Ellen MacArthur Foundation describes how doing this would net the European manufacturing sector \$630 billion by 2025. (Ellen-MacArthur Foundation 2013) A new Swedish report (Wijkman 2015) profiles the societal benefits of moving towards a circular economy. Energy and all materials would be used much more efficiently and products designed for ease of recycling, reuse, disassembly and remanufacturing. This would replace the traditional, linear 'take, make & dispose' model that has dominated the economy so far. Using a traditional Input/Output model, it simulates that a higher degree of resource efficiency, renewable energy replacing fossil fuels, would cut carbon emissions by 70% as employment increases by more than one hundred thousand jobs (three percent of the Swedish work force). This approach of returning useful materials to the economy and eliminating the concept of waste, as many Japanese factories are implementing, is a foundational element of any strategy to defeat collapse.⁶¹

The third principle would manage all institutions to be regenerative of human and natural capital. These are the forms of capital that underpin all life and the global economy, even if

⁵¹ "WBCSD - World Business Council for Sustainable Development." WBCSD - World Business Council for Sustainable Development. <http://www.wbcd.org/home.aspx>.

⁵² "Green Building Facts." U.S. Green Building Council. <http://www.usgbc.org/articles/green-building-facts>.

⁵³ "The Business Case for Green Building." U.S. Green Building Council. <http://www.usgbc.org/articles/business-case-green-building>.

⁵⁴ "Inspiring Sustainable Innovation." Biomimicry Institute. <http://biomimicry.org/>.

⁵⁵ Stahel, Walter, and Bill McDonough. "Cradle to Cradle." The Product-Life Institute. <http://www.product-life.org/>.

⁵⁶ "Towards the Circular Economy." Ellen-MacArthur Foundation. 2013. <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>.

⁵⁷ "Interface Global." Interface Global. <http://www.interfaceglobal.com/>.

⁵⁸ Stahel, Walter, and Bill McDonough. "Cradle to Cradle." The Product-Life Institute. <http://www.product-life.org/>.

⁵⁹ "Chinese Leaders Join Lawmakers, Political Advisors in Panel Discussions." Consulate General of the People's Republic of China in New York. March 08, 2012. <http://newyork.china-consulate.org/eng/xw/t912428.htm>.

⁶⁰ Zokaci, A. Keivan. *Creating a Lean and Green Business System: Techniques for Improving Profits and Sustainability*.

currently uncounted. An approach that would be labeled heresy by such proponents of neo-liberal economics as Milton Friedman, is being embedded in innovative business schools, and is becoming the management philosophy of a whole new generation of business people.⁶² The principles of how to do this are laid out in the paper, *Regenerative Capitalism*, released April 2015 (Fullerton 2015)

It is important to recognize, however, that we cannot consume our way out of our problems. Patagonia, long a leader in more sustainable practices, has been growing at 25 to 30% a year, even in a recession. One of the first companies to become certified as a B Corp,⁶³ a rapidly growing movement of companies committed to behaving responsibly, Patagonia has made a pledge to minimize its footprint and to implement radical transparency in the impacts that it has. This became the inspiration for the Apparel Coalition's Higgs Index,⁶⁴ which helps companies implement sustainability throughout their supply chain.⁶⁵ Their legendary founder Yvon Choinard prides himself on doing the right thing, even—especially—when it seems unreasonable. The first company to commit to 100 % organic cotton, well before the supply was sufficient or the price right, famously ran a full page ad in the NY Times telling shoppers, “Don’t buy this jacket!” but to buy fewer things that last longer. Yvon observed, however, “If all these companies are doing all these great sustainability things, why is the world still going to hell? It’s the obsession with growth! Companies that have been in business for 500 to 1000 years focus on three priorities: quality, innovation, and controlled growth.... There’s no difference between a pessimist who says ‘We’re doomed, why bother?’ and an optimist who says ‘We’re fine, why bother?’ Nothing gets done.... If you want to change government, change business, because business runs government. If you want to change business, change consumers. Make consumption uncool!”⁶⁶

Asking what we want more of rather than counting only the flow of money and stuff through the economy—gross domestic product—was the basis of the French Commission on the Measurement of Economic Performance and Social Progress,⁶⁷ the Chinese Green GDP,⁶⁸ the UK’s Happy Planet Index,⁶⁹ and the Genuine Progress Indicator.⁷⁰ Nations and the UN must revise the metrics that they use to determine if their policies are succeeding. The release in March 2012 of the 40 years update to *Limits to Growth*,⁷¹ Demos’s report, *Beyond GDP*,

⁶¹ “Bard Sustainability MBA.” Bard College. <http://www.bard.edu/mba/>.

⁶² B Corporation. <https://www.bcorporation.net/>.

⁶³ “The Higgs Index.” Sustainable Apparel Coalition. <http://www.apparelcoalition.org/higgindex/>.

⁶⁴ “Corporate Responsibility.” Patagonia. <http://www.patagonia.com/us/patagonia.go?assetid=67372>.

⁶⁵ Makower, Joel, The company as activist. GreenBiz. <http://www.greenbiz.com/video/2013/03/01/patagonia-responsible-company>.

⁶⁶ “Documents Du Site De La ”Commission Sur La Mesure De La Performance Conomique Et Du Progrs Social Insee. http://www.insee.fr/fr/publications-et-services/default.asp?page=dossiers_web/stiglitz/documents-commission.htm.

⁶⁷ “Life Beyond Growth.” Alan AtKisson. 2012. <http://alanatkisson.wordpress.com/2012/02/29/life-beyond-growth/>.

⁶⁸ “Nef: New Economic Forum.” New Economics Foundation. <http://www.neweconomics.org/>.

⁶⁹ All of this stems from Herman Daly’s work in the 1970’s on the Index of Sustainable Economic Welfare. In 1995, Clifford Cobb, Ted Halstead and Jonathan Rowe proposed a the Genuine Progress Indicator, taking Daly and Cobb’s work further to factor in the value of volunteer work, cost of crime and family breakdown, the cost of underemployment, ozone depletion and the loss of old growth forests. They calculated the GPI from 1950 comparing it to the GDP, to find that we’re not even breaking even. This same finding by the Chinese green GDP project resulted in its being consigned to an academic exercise, but it now appears to be re-emerging.

⁷⁰ “Perspectives on Limits to Growth: Challenges to Building a Sustainable Planet.” Smithsonian. March 1, 2012. <http://si.edu/Content/consortia/limits-to-growth.pdf>.

(Daly and Posner 2012) and a 2014 report to Nature,⁷² challenge the myth that growth is necessary for prosperity, and outline the sort of metrics that must accompany any economic transition.⁷³

Such mental shifts are critical. The economy is, in Herman Daly's phrase, a wholly owned subsidiary of the environment, not the other way around.

As John Fullerton of the Capital Institute⁷⁴ points out, we need to shift flows of finance into the productive assets that will transform the economy to what he calls Regenerative Capitalism. These investments include renewable energy,⁷⁵ sustainable agriculture,⁷⁶ radically sustainable manufacturing,⁷⁷ and creating resilient communities.⁷⁸ Fullerton's Regenerative Capitalism paper is the foundation for a fundamental rethinking of the economy, and the basis for creating an economy in service to life.

Crafting a New Story

Buckminster Fuller, the great designer, once said that the best way to predict the future is to invent it. Indeed, 36 men created the economic mental model that has delivered the mess we're in. Meeting in 1947 at the Mont Pelerin hotel outside Monteux, Switzerland, they built the intellectual architecture of an economy of small government and individual decision-making in an unfettered free market.

They went on to place three of their members as heads of state, nine as Nobel Laureates in Economics—a prize they created to legitimize neo-liberalism—and their members as advisors to essentially every head of state in the world.⁷⁹

In 1971 Lewis Powell, who went on shortly to become U.S. Supreme Court Justice, wrote a memorandum to the head of the U.S. Chamber of Commerce, setting out a strategy to enable the corporate sector to dominate policy formulation.⁸⁰ As a result of the memo, a group of foundations put millions of dollars into creating and endowing such neo-liberal think-tanks as American Enterprise Institute, Cato Institute, Hoover Institution, Manhattan Institute and others. They hired the best marketers to massage their message.

With the rise to power in 1980 in the United States of Ronald Reagan and Margaret Thatcher in the UK, they won. Their value structure had become the dominant economic model in the world.

Their campaign to delegitimize government as an instrument of delivering human wellbeing and protecting vulnerable people and ecosystems grows stronger daily, as heads of state like Angela Merkel in Germany preside over the social ruin of Greece and the other

⁷¹ "Development: Time to Leave GDP behind." Nature.com. January 15, 2014. <http://www.nature.com/news/development-time-to-leave-gdp-behind-1.14499>.

⁷² "Beyond GDP." European Commission: Environment. <http://www.beyond-gdp.eu/>.

⁷³ Capital Institute. <http://www.capitalinstitute.org/>.

⁷⁴ "Library." Center for Climate Strategies. <http://www.climatestrategies.us/library/library/view/972>.

⁷⁵ "Holistic Land Management - Ranching For Profit." Savory. <http://www.savoryinstitute.com/>.

⁷⁶ Lovins, Hunter. "The Future of Industry in Asia." Natural Capitalism Solutions. http://www.natcapsolutions.org/UNIDO/UNIDO_TheFutureofIndustryinAsia_NCS.pdf.

⁷⁷ Transition Network. <http://www.transitionnetwork.org/>.

⁷⁸ Mirowski, Philip, and Dieter Plehwe. "The Road from Mont Pèlerin." Harvard.edi. <http://www.hup.harvard.edu/catalog.php?isbn=9780674033184>.

⁷⁹ "The Powell Memo (also Known as the Powell Manifesto)." Reclaim Democracy. 2004. http://reclaimdemocracy.org/powell_memo_lewis/.

Southern European states. (Krugman 2014) The tough love program that was supposed to lift Greece's economy, shrank it by a quarter, lifting youth unemployment to 60 %. (Mason 2015) The situation in Italy and Spain is not as dire, but could become so. Globally, the doctrine of austerity, privatization, and destruction of social safety nets has resulted in the richest 0.1 % adding \$10 million every year to household wealth, while the number of children on food stamps in the U.S. increased 70 % from 2007 to 2014.⁸¹

Such poverty, both material and spiritual, is, Nelson Mandela said, "...not an accident. Like slavery and apartheid, it is manmade and can be removed by the actions of human beings."

This is our job.

The challenge facing the world is a question of story. Thomas Berry put it: "We are in trouble just now because we do not have a good story....The Old Story – the account of how the world came to be and how we fit into it sustained us for a long period of time. It shaped our emotional attitudes, provided us with a life purpose, energized action. It consecrated suffering, integrated knowledge, guided education....We need a [new] story that will educate man, heal him, guide him"⁸²

David Korten says that Americans (all people?) want three things: prosperity, security and meaning. The Mont Pelerin narrative, the old story, tells individuals precisely how it is that they will get these outcomes:

Prosperity: don't give money to the poor; they're poor; they don't spend money well. Give it to the rich; they will invest it on behalf of us all, thereby driving your personal prosperity. Statistically wrong, but plausible. And so working people the world around vote for conservative governments that then cut the safety nets that ensure they will not sink into absolute poverty. "Progressives" cling to the old narrative of increase taxes and give the proceeds to the poor. That story was discredited when Margaret Thatcher won in the UK and Ronald Reagan won in the U.S. It won't persuade anyone.

Security: it's the movie star, the big man on the white horse who will keep you safe. So we elect movie actors to political office, and spend trillions on "coalitions of the willing" to protect access to what we like to think is "our oil." The progressive response? Make love not war; cut defense spending. Not plausible in what is a manifestly dangerous world.

Meaning? "My President speaks to God on Fridays." People sigh and say, "Thank God someone does." The response? Separate church and state: don't talk about religion and spirituality. In a world hungry to belong, to feel part of something bigger than themselves, this stance loses the audience. Disaffected young men flock to ISIS and the mega-churches grow larger.

What is our story⁸³ of a world that delivers prosperity, security and meaning; a world that works for 100 % of humanity?

Marketers know it's much easier to build on something in the brain than to butt in and try to find room in the cranial real estate for a new idea. Successful marketers, says media expert A.J. Grant,⁸⁴ build on something that's already in there, something familiar that the audience is comfortable with. They can then say that the product is new and improved, satisfying people's craving for the familiar, a desire powerful enough to induce people to stay even in relationships that, while abusive, are at least familiar.

⁸⁰ "Four Numbers That Show the Beating Down of Middle America." Common Dreams. <http://www.commondreams.org/views/2015/03/16/four-numbers-show-beating-down-middle-america>.

⁸¹ Berry, Thomas. "The New Story." Teilhard Studies. 1978. http://static1.1.sqspcdn.com/static/f/558814/15477548/1323199778867/The_New_Story.pdf?token=V4H09K97gTSrleF7C+9ERuLLryo.

⁸² "Winning the Story Wars." Winning the Story Wars. <http://winningthestorywars.com/>.

⁸³ A.J. Grant, Environmental Communication Associates, <http://teameca.com/>.

From Grant's perspective, the way to manage a transition to a new paradigm is to announce the obvious, describe what we all know about the industries that are dying, and at the same time, point out the new industries that are emerging, the telltale signs of the transformation all around us.

We know this. And if it is true that the story precedes change, our real task is to tell a new story that stitches together the challenges and the changes in such a compelling way that it invites all the necessary stakeholders to participate in the transformation.⁸⁵

The task ahead needs this new story, but it also needs a strategy of how it is we are going to go forward. The Powell Memorandum⁸⁶ set forth the strategy of change needed to enable the intellectual architecture of neo-liberalism (Mirowski) that came to dominate global economic discourse.

What is our strategy of change? Who is going to do what? How are they going to do it? By when? How is it that we are going to supplant the dominant narrative with a new one of an economy in service to life? (Berry 1978).

Imagine a pool of muck. This is not far off where humanity is now. Survival requires getting our nose above water—sustainability. This is, however, not our desired destination, merely a rung on the ladder we must build to crawl up out of the mess we're in, as we climb to a truly regenerative economy. What are the other rungs? All the magnificent work around the planet to keep people alive by groups from Human Rights Watch, Avaaz, Oxfam, the UN's World Food Program must be seen as foundational. As is work to keep little bits of intact ecosystems alive. Other rungs include all of the work for efficiency—foundational to any strategy of survival. And the alphabet soup of the metrics work, from CSR to SRI, to GRI, SASB and IIRCC. All of these are underpinning our ability to climb out to a system that can endure. There is also much work to restore all of the damage to systems, human and natural. Ultimately we reach a regenerative system, in which sustainability is an outcome, as it is in nature.

We need now this story, this ladder, the new map, and a coherent strategy to get us to this finer future. A team at Leading for Well-Being is crafting this new narrative and strategy.⁸⁷

You in?

References

- Humanistic Management Network. Humanistic Management. <http://www.humanetwork.org/>.
 Global Biodiversity Outlook 3. Global Biodiversity Outlook 3. Accessed May 24, 2016. <http://www.cbd.int/gbo3/>.
 Allen, C. 2011. German village achieves energy independence...and then some. *BioCycle*. <https://www.biocycle.net/2011/08/16/german-village-achieves-energy-independence-and-then-some/>.
 Alternet. 2011. Millions of African climate refugees desperate for food, water.. Accessed May 24, 2016. http://www.alternet.org/food/151578/millions_of_african_climate_refugees_desperate_for_food.
 Angus, I., and S. Butler. 2011. *Too many people?: population, immigration, and the environmental crisis*. Chicago: Haymarket Books.
 ASAP. 2013. Rethinking society from the ground up. <http://www.asap4all.com/rethinking-society-from-the-ground-up/>.
 Brown, L. 2013. The real threat to our future is peak water | Lester Brown. The Guardian. <http://www.guardian.co.uk/global-development/2013/jul/06/water-supplies-shrinking-threat-to-food>.

⁸⁴ "Winning the Story Wars." Winning the Story Wars. <http://winningthestorywars.com/>.

⁸⁵ "The Powell Memo (also Known as the Powell Manifesto)." Reclaim Democracy. 2004. http://reclaimdemocracy.org/powell_memo_lewis/.

⁸⁶ "Leading For Wellbeing." Leading For Wellbeing. <http://www.leading4wellbeing.org/>.

- Burund, M. 2008. Living a green dream on Danish Island. Planet Ark. August 19, 2008. <http://www.planetark.org/dailynewsstory.cfm/newsid/49847/story.htm>.
- Confino, J. 2014. Sustainable companies are more profitable, report finds. *The Guardian*. <http://www.theguardian.com/sustainable-business/2014/sep/23/business-companies-profit-cdp-report-climate-change-sustainability>.
- Daly, L., and S. Posner. 2012. Beyond GDP: New measures for a new economy. *Demos*. <http://www.demos.org/publication/beyond-gdp-new-measures-new-economy>.
- Davidson, O.G. 2012. *Clean Break*. InsideClimate News. Kindle.
- Ellen-MacArthur Foundation. 2013. Towards the circular economy. <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>.
- FAO. 2007. International conference on organic agriculture and food security. <ftp://ftp.fao.org/docrep/fao/meeting/012/ah952e.pdf>.
- Fullerton, J. 2015. Regenerative capitalism. *Capital Institute*. <http://capitalinstitute.org/wp-content/uploads/2015/04/2015-Regenerative-Capitalism-4-20-15-final.pdf>.
- Gipe, P. 2012. Citizen power conference to be held in historic chamber where worlds first feed-in law was enacted. *WIND-WORKS: News Article on Community Power*. <http://www.wind-works.org/cms/index.php?id=61>.
- Heinberg, R. 2007. *Peak everything: waking up to the century of declines*. Gabriola: New Society Publishers.
- Henderson, G., and P. Joffe. 2016. China's unveils plan for low-carbon growth. *GreenBiz*. <https://www.greenbiz.com/article/chinas-unveils-plan-low-carbon-growth>.
- Hilderson, P., and J.L. Lasalle. 2012. Asia pacific, and energy. global sustainability perspective. Jones Lang LaSalle. <https://www.jll.com/GSP/Documents/gsp-sp2013/archive-pdf/Global-Sustainability-Perspective-February-2012.pdf>.
- Itzkan, S. 2012. Reversing global warming with livestock?: Seth Itzkan at TEDxSomerville. YouTube. <http://www.youtube.com/watch?v=IOPoRdpvlh0>.
- Johnson, I. 2013. China's great uprooting: moving 250 million into cities. *The New York Times*. <http://www.nytimes.com/2013/06/16/world/asia/chinas-great-uprooting-moving-250-million-into-cities.html?nl=todaysheadlines>.
- Kammen, D.M., K. Kapadia, and M. Fripp. 2006. *Putting renewables to work: how many jobs can the clean energy industry generate?: report of the renewable and appropriate energy laboratory*. Berkeley: University of California, Berkeley.
- Kauffman, R.J. 2006. China: forcing world to rethink its economic future. *Earth Policy*. earthpolicy.org.
- Kingsnorth, P. 2010. Why i stopped believing in environmentalism and started the dark mountain project. *The Guardian*. <http://www.theguardian.com/environment/2010/apr/29/environmentalism-dark-mountain-project>.
- Krugman, P. 2014. Mad as hellas. *The New York Times*. <http://www.nytimes.com/2014/12/12/opinion/paul-krugman-greece-economy-mad-as-hellas.html?hp>.
- Lebard, E. 2010. Return on investment for green / LEED projects. *The Green Economy Post Green Careers Green Business Sustainability*. <http://greeneconomypost.com/return-on-investment-for-green-leed-projects-10962.htm>.
- Leber, R. 2012. ExxonMobil made \$41.1 billion in 2011, but pays estimated 17.6 percent tax rate. ThinkProgress RSS. <http://thinkprogress.org/green/2012/01/31/415242/exxonmobil-made-411-billion-in-2011-but-pays-estimated-176-percent-tax-rate/>.
- Lee-Brago, P. 2011. ILO: recession, massive job loss threaten global economy. *The Philippine Star*. <http://www.philstar.com/Article.aspx?articleId=743718&publicationSubCategoryId=>.
- Lovins, H. 2015. The triumph of solar in the energy race - UNREASONABLE. <http://unreasonable.is/triumph-of-the-sun/>.
- Lovins, H. 2015. Countries that lead the switch to clean energy will reap the financial rewards. *The Guardian*. <http://www.theguardian.com/environment/2015/apr/29/countries-that-lead-the-switch-to-clean-energy-will-reap-the-financial-rewards>.
- Lovins, L.H., and B. Cohen. 2012. *The way out: kick-starting capitalism to save our economic ass*. New York: Hill and Wang.
- Mason, P. 2015. Greece shows what can happen when the young revolt against corrupt elites. *The Guardian*. <http://www.theguardian.com/commentisfree/2015/jan/25/greece-shows-what-can-happen-when-young-revolt-against-corrupt-elites>.
- Meadows, D.H. 1972. *The limits to growth; a report for the club of Rome's project on the predicament of mankind*. New York: Universe Books.
- Mirowski, P., and D. Plehwe. The road from Mont Pèlerin. Harvard.edi. <http://www.hup.harvard.edu/catalog.php?isbn=9780674033184>.
- Morales, A. 2016. Fossil fuel subsidies are twelve times renewables support. *Bloomberg.com*. <http://www.bloomberg.com/news/2010-07-29/fossil-fuel-subsidies-are-12-times-support-for-renewables-study-shows.html>.

- Muehlhauser, L. 2013. *Facing the intelligence explosion*. Berkeley: Machine Intelligence Research Institute, Kindle.
- Nidumolu, R, C.K. Prahalad, and M.R. Rangaswami (2009) Why sustainability is now the key driver of innovation. *Harvard Business Review*. <https://hbr.org/2009/09/why-sustainability-is-now-the-key-driver-of-innovation/>.
- NRDC. 2010. Location, location, location efficiency: can smart growth help beat the mortgage crisis? <http://www.nrdc.org/media/2010/100127.asp>.
- Peeples, and Lynne. 2015. Historic climate change agreement adopted in Paris. Huffington Post. December 12, 2015. http://www.huffingtonpost.com/entry/climate-change-paris_us_566c2048e4b0e292150e169b.
- Roney, J.M. 2016. solar cell production climbs to another record in 2009. - *Renewable Energy World*. <http://www.renewableenergyworld.com/rea/news/article/2010/09/solar-cell-production-climbs-to-another-record-in-2009>.
- Seba, T. 2015. Clean disruption: why conventional energy and transportation will be obsolete by 2030. Youtube. Accessed May 24, 2016. <https://www.youtube.com/watch?v=8xy1EDY7Ruw>.
- Shah, J. 2013. *Creating climate wealth: unlocking the impact economy*. Denver: ICOSA Pub.
- Spotts, P.N. 2006. Little time to avoid big thaw, scientists warn. the christian science monitor. <http://www.csmonitor.com/2006/0324/p01s03-sten.html>.
- The Guardian. 2015. China's coal imports fall nearly half in 12 months as anti-pollution drive bites. <http://www.theguardian.com/world/2015/apr/13/chinas-coal-imports-fall-nearly-half-in-12-months-as-anti-pollution-drive-bites>.
- Wijkman, A. 2015. Circular economy could bring 70 percent cut in carbon emissions by 2030. *The Guardian*. <http://www.theguardian.com/sustainable-business/2015/apr/15/circular-economy-jobs-climate-carbon-emissions-eu-taxation>.