# go green GET RICH

*Your Path to Economic Independence*

THOMAS ADDAQUAY

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# Background:

## THE GREEN X PRIZE

Over the course of several years leading up to 2008, I conceived of an idea to help develop green communities that would be completely self-sustaining. The project sought to revolutionize the real estate market and change how people used and valued their homes. Unfortunately, the Great Recession placed that project on hold. To redirect myself toward a new enterprise focusing on sustainability, I immediately began in-depth research into the causes of the Great Recession—primarily the meltdown of the real estate market.

*Go Green, Get Rich* is one outcome of my years-long research. Its thought-provoking insights provide a plethora of knowledge about the history of wealth generation. It reframes and revitalizes the urgent quest to build a sustainable economy. This chronicle also aims to inspire immediate action readers can take to help solve society's most pressing sustainability challenges. Incentivizing this goal is the Green X Prize, a series of ongoing cash awards individuals and teams can earn by submitting winning innovative, sustainable solutions to advance this mission.

As Bill Gates highlights in an article by James Bennet in the November 2015 issue of The Atlantic,

> **"The only reason I'm optimistic about this problem [of sustainability] is because of innovation…I want to tilt the odds in our favor by driving innovation at an unnaturally high pace."**

The Green X Prize promises to further Gates' vision as it promotes sustainable innovation and encourages and rewards responsible social entrepreneurship.

### What is the Green X Prize?

The Green X Prize is a unique platform bringing together sustainability enthusiasts, inventors and investors into one coalescing group, to usher in a new era of "social interest" while promoting ethical standards.

The Prize awards entrepreneurs and businesses which produce sustainable systems and communities. It effectively outpaces an economic system that has been slow to respond to the world's most pressing environmental problems due to issues ranging from a lack of corporate

ethics to bureaucratic sluggishness about environmental stewardship, income inequality, and the slow migration to a fossil fuel-free economy.

Green X Prize awards stress a new social-interest imperative. They recognize consumers' immense power—built on a vast knowledge base and thanks largely to mobile technology in our information age. Consumers are now a part of corporate business intelligence; they demand, and deserve, a greater share of power with leadership. This new relationship can and should drive sustainable innovation for the greater good of all, rather than be focused solely on the organization's self-interest.

Green X Platform innovators will help repair our society's ethical framework, which has been badly fractured. They will help redirect our moral compass, whose off-course journey has led increasingly to rampant economic, legal and religious injustices. For society to get back on the path of sustainable progress, we must challenge the existing order and recommit ourselves to "others'-centered" standards. Only then can society truly flourish and usher in an era of transformation and profitable growth.

The Green X Prize Platform represents an extraordinary forum for independent thinkers ready to challenge the status quo through groundbreaking advances in sustainable products and services. These individuals and groups will come from all walks of life. They represent a socially responsible cadre of leaders sacrificing self-interest for the greater good of society. They do this not because they do not believe in capitalism (indeed, one objective of the Prizes is to help them enjoy greater financial success), but because they recognize the deficiencies of the old economic model based solely on self-interest.

What good is wealth when the air we breathe is unclean? Can we enjoy financial comfort, or ever feel truly free, in a society threatened by ever-growing terrorism? Is there true merit in starting a business or inventing a new product if it merely creates wealth yet doesn't somehow reduce social oppression, injustice, or poverty?

Who are these innovative thinkers embracing social enterprise to solve society's toughest problems? Look no further than the socially conscious businesses exploding onto the scene: Uber, Facebook, Airbnb, Lyft, and Tesla. These are the kinds of companies inspiring the Green X Platform and Green X Prizes!

Aspiring entrepreneurs are invited to join the GXP community to share their sustainable products and ideas. Through an open and transparent competition, the GXP community selects a monthly winner. That individual, team, or company is awarded a cash prize generated from the sales of *Go Green, Get Rich.* Thus, each sale of or subscription to this chronicle brings us closer to achieving a truly sustainable civilization.

Welcome to the movement called "sustainability."

**Let's go green! Let's get rich!**

Thomas Addaquay
Creator, Green X Prize
www.greenxprize.com

# Introduction:

## THE NEW IT

***E.T. – Energy Technology – will have an even greater impact than I.T. – Information Technology.***

***—Thomas Friedman***

Every great invention comes from a single epiphany—perhaps not even an epiphany, but a simple yearning for something more. Throughout history, life has been changed by individuals who dared to dream of something more and had the courage to construct something new. When new ideas were shared, they may have been laughed at, or even disparaged. People tend to resist new ways of thinking or being; it can be uncomfortable to push comfort zones. But that is one cost of progress.

Thousands of years ago, humans lived in what were essentially huts. These lightless dwellings were quite limiting for productivity, but electricity had not been invented. So, man first invented windows. Early windows were crude holes in the hut wall. As time passed, people covered them with animal skin or wood for protection from the elements and wildlife. But then it was dark again! Gradually, things like hammered-thin pieces of animal horn or paper were employed to let light back inside the hut. Around 100 A.D., the Romans were the first to innovate glass windows. While it wasn't like today's crystal clear glass, it was a significant improvement.

Thus, people could now close their windows with something transparent and insulating. It allowed sunlight to pour in while simultaneously barring the elements from entering their living space. This revolutionized daily life. Man had approached a problem that had plagued him and his kin for millennia and, by the careful application of a new way of thinking, changed the world forever for the better!

In this book, I share with you the benefits of new technologies that will change the world on a similar scale. As Thomas Friedman contends, this innovation falls into the realm of Energy Technology (ET). ET (also known as clean or green technology) uses environmental science such as wind power, environmental monitoring, and electronic devices to conserve and maximize our natural resources, while minimizing the detrimental effects of human beings. Sustainability is a core factor in ET. To understand its impact, we must first examine the numbers and trends behind a series of modern problems.

Again, addressing Friedman's assertion, it is perhaps bold to assume that ET could surpass IT in terms of profitability. Consider the fact that worldwide IT revenue for services and software

totaled over a trillion dollars in 2012 (Lovelock, 2013). Meanwhile, only $244 billion was invested in renewable energy (Frankfurt-School-UNEP Centre, 2013). The market forecasts for renewable energy predict a nearly 30 percent increase by 2018.

Speaking at the 10th Annual Renewable Energy Finance Forum in New York City, International Energy Agency Executive Director Maria van der Hoeven said the global outlook for renewables is "robust," with total renewable generation capacity expected to grow to nearly one-quarter of the global electricity generation capacity by 2018 (Wogan, 2013).

If that prediction prevails, the future of ET is remarkably bright and Friedman's bold prediction would hold true—and that is only from an economic standpoint. The development of new ET will not only spur financial growth, it will also advance IT, medicine, industry, food production, and virtually every other aspect of modern civilization. ET will also minimize the possibility of a war over oil and help mitigate the human impact on our environment and climate. It is quite possible that ET "will have an even greater impact than IT" on civilization (Friedman, 2008).

This book explores the economic, cultural, and environmental advancements possible with a refocused investment in the ET sector. Readers will be encouraged to imagine ideas that have the power to revolutionize the way we think about wealth creation, economics, job creation, $CO_2$ emissions, home valuation, taxation and national security, to make a reality of initiatives that, today, seem like distant dreams—to truly change the world. Going forward, I will refer to these technologies and innovations as the "Green X Platform."

Whatever your current beliefs about energy technology, we can safely agree that modern economies across the globe are in dire need of reform. Some suggest that having emerged from the economic mud and dark days of the Great Recession, the bad times are over. They contend that all is well, both now and forever. I would ask these optimists: what exactly has changed? What makes them think that this time we'll not revert to society's unsustainable ways? What is different from a policy, technology, or even an economic perspective? For the skeptic, the answer is simple: not much. The cold reality of the coming economic winter and the next recession is ever present. The economic imperatives that gird the global economy and commerce are in need of a major overhaul.

The underlying issues that have driven the global economy to this point in the first place have simply not been addressed. As a society, we have applied plenty of bandages to the wound and developed temporary fixes to stop the bleeding, but the root problems remain. The bulk of the industrialized world continues to wallow in staggering levels of debt. Many countries attempt to remedy the situation by spending their way out of the hole. Meanwhile, real unemployment and underemployment remain high, the financial markets continue to demonstrate unsettling volatility, and key industries, such as manufacturing, continue their grind into seemingly inescapable slowdowns. Even if we can glimpse a few positive signs in the near term, it still feels as though we are destined to continue sitting in the dark for the long term.

If we are standing at the low point of the business cycle, it stands to reason that it will eventually turn upward. Economic history has taught us that short-term policy fixes may help recovery, but we need true innovation and revolutionary change to affect the cycle in a profoundly positive and lasting way. We need another New Deal era. We need innovation in taxation. We need a new business frontier, similar to the level of the 1990s IT explosion.

We need one of those eureka moments that generate inventions which alter our lifestyle and upend our understanding of economics and the environment.

## The Economic Case for ET

Countries currently experiencing the largest economic expansion, regardless of the global downturn, are those that lead investment in Energy Technology. For instance, China and

South Korea are two of the best economies. It is no coincidence that each of these countries invests a full 3 percent of their annual GDP in the ET sector. Rounding out the top five are Saudi Arabia (1.7 percent), Sweden (1.3 percent), Australia (1.2 percent), and Japan (0.8 percent). The United States stands in sixth place, spending only 0.7 percent of its annual GDP on ET. A country is generally considered environmentally conscious if it invests at least 1 percent of its annual GDP in green technology (Barbier, 2010). For all of the United States' advancements, we have a lot to do in this area.

I use the term "green" in this book with some trepidation. It is my intention, however, to not only demonstrate the potential for positive impact on energy consumption and a sharp reduction in $CO_2$ emissions, but also to stimulate the economy and create additional household earnings—a supply-side stimulus. The kind of supply-side stimulus that I refer to here has a parallel to the tax rebate stimulus that was employed to soften the effects of past recessions.

Consider the tax rebates of 2008, when most US taxpayers received a rebate check totaling somewhere between $300 and $1,200. The economic and political underpinning was that this one-time cash infusion would allow average Americans to spend money on new products and help to stimulate the economy. The intention was good, however this one-time cash influx was not enough to permanently alter the economic situation. Although the Bush Rebate delayed the onslaught of the Great Recession, a longer-term solution was needed.

What would happen if we could take that short-term benefit and make it perpetually recur?

Although the benefits of the Green X Prize contest start with wealth generation, the additional benefits are virtually limitless. If we could lower fossil fuel consumption across the board, we could:

1) Reduce the amount of $CO_2$ released into the atmosphere each year, improving air quality and, subsequently, individual health.

2) Revolutionize home valuation methods, increasing homeownership, which is the primary means of wealth creation for many people.

3) Lower the cost of financing a home loan.

4) Reduce homeowner taxes through energy creation and efficiency subsidies and credits.

5) Increase the value of the average home.

6) Create new jobs, new paths of education, and an entirely new growth industry.

7) Improve national security by drastically reducing dependence on foreign sources of fuel and energy.

8) Marshal research and development resources toward sustainable energy development, giving the United States a distinct edge over other industrialized nations.

9) Reduce the human carbon footprint on the environment.

We could do all this by turning every home into a generator of individual and national wealth through the use of green technologies.

This utopia is well within reach. Enacting this kind of change is entirely possible, and some of these technologies already exist. Solar, wind, and geothermal are all viable energy sources for the average home, and they are becoming more affordable each day. In terms of the economy, environment, and national security, the ramifications of the broad adoption of these energy

systems will have significant implications for society—similar to the way the need for a window so long ago evolved into the windows we know today.

## The "Green" Hurdle

To make our new Green X ideal a reality, we'll have to overcome a longstanding obstacle: the lack of political will. In the United States, for various reasons, many politicians shove environmental concerns to the back burner. We are not alone on this front; this inertia seems to dog the international community.

In 1994, the *United Nations Framework Convention on Climate Change* (UNFCCC) came into being. Its goal was to:

> **"Stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic [human-induced] interference with the climate system (United Nations, 2014).**

It would have been most efficient for member states to establish mandatory greenhouse gas (GHG) emissions limits for participating countries, to say nothing of establishing enforcement mechanisms, at their first Conference of the Parties. Due to a lack of political will, however, at the time of the writing of this book—17 conferences later—there are still no concrete standards in place.

It sounds nice to commit to reducing GHG emissions, but there is a difference between lip service to this goal and actual reduction. In fact, since 2005, GHG emissions have *risen.* According to the UN Environmental Programme, GHG emissions were 45 $GtCO_2e$ in 2005 (a unit of measure of greenhouse gases expressed in billions of metric tons of equivalent $CO_2$), rising to 49.5 $GtCO_2e$ in 2009 (United Nations Environment Programme, 2011). As we know, human-induced GHG emissions contribute to global warming. It is telling that since the Kyoto Protocol was adopted in 1997, we have experienced the ten warmest annual global temperatures in history: 2010, 2005, 1998, 2003, 2002, 2006, 2009, 2007, 2004, and 2012, from the warmest to the tenth warmest (National Oceanic and Atmospheric Administration, 2012).

Regardless of differing opinions on the science or the political quagmires that have plagued these Conferences of the Parties, one point is clear: most countries are reluctant to make changes to their emissions standards because such changes could adversely impact their fragile—or in many cases, *perceived* fragile—economies. The argument is often made that stipulating an across-the-board reduction in annual emissions could potentially reduce the bottom lines of many industrial corporations and sectors that drive both the developed and developing worlds. As President Bill Clinton once stated,

> **"It's the economy, stupid".**[1]

When it comes to political will, money drives the train.

We have not seen any measurable political will to reduce emissions simply because there was no apparent money in it—at least until now.

## Conclusion

As of today, the enigma has been lifted. This book will provide evidence for the contention that, although there are tax incentives for solar panel users and for electric car buyers, the government could increase these incentives by expanding grants, rebates, subsidies for investments, and production tax credits—similar to the ones that car buyers enjoy as a result of the *Energy Improvement and Extension Act* (2008). This could help improve the economics of solar power for the homeowner, while also helping to support our domestic solar industry, create jobs, and improve the overall economy. But there is no substitute for the drive that is generated by personal interest. The lure of creating personal wealth will certainly be a very important driving force.

Energy-centric technologies have the strength to make true economic turnaround a reality, on both a micro and macro level. Here we have new technologies at a low cost. They will lead to dramatic economic change invigorating a supply-side argument like no other that has come before. These innovations could once and for all make it possible to achieve the emissions standards set in place by the currently unenforced protocols, accords, treaties, and whatever else the international community has attempted to develop to address global warming.

These technologies can and finally will turn the entire gambit of sustainable energy into a bipartisan cause. A vibrant Green X Platform is truly a triple win.

As we shift the economic engine in a dynamic way, Green X innovations will allow the United States to vault itself into the 21$^{st}$ century in terms of its energy policies. With environmentally smart homes, the United States can rise to be on par with countries that have established more progressive energy policies. Brazil, for instance, has made a great economic as well as ethical investment in green policies. The country has tried to wean itself off dependence on other countries' natural resources for fuel, while simultaneously using a clean method to produce their own fuel. Using sugarcane to produce ethanol, Brazil has become the largest ethanol exporter and a biofuel industry leader. From a moral perspective, Brazil is upholding its duty to "do the right thing" while the US seems mired in merely talking about it.

Green X innovations will help bridge ethical and emissions gaps. They will lower emissions and stimulate the economy with an influx of cash and an increase in household revenue and equity. These new technologies will enrich individuals' health and dramatically streamline taxation and property valuation. Perhaps most importantly, these energy-friendly innovations can even help improve US national security. The coming chapters will explain all this, and more.

As Victor Hugo once quipped,

> **"There is one thing stronger than all the armies in the world, and that is an idea whose time has come" (*The History of a Crime*, 1877).**

Today, with an out-of-control economy, political stagnation, rising $CO_2$ emissions, and a widening chasm between rich and poor, Green X advancements shall prove that the ideal is well within reach.

Environmental technologies are real, measurable, and achievable. Read on to discover exactly how dramatically we can change the world, starting at the household level.

# Chapter 1:

# A BRIEF HISTORY OF WEALTH

***Empty pockets never held anyone back. Only empty heads and empty hearts can do that.***

***—Norman Vincent Peale***

Consider the Occupy movement. What began as a peaceful demonstration against Wall Street on September 17, 2011, grew into massive protests in more than 600 communities across the country. Given these numbers, politicians and business leaders should count themselves lucky, as protests today look far different than they did at the time of the American Revolution, when public beatings, imprisonment, and wanton destruction of property were the norm. The substantial turnout of the so-called "99-percenters" represents what I believe to be a sign that the US and the world must brace for dramatic change. This is no blip in the economic cycle. We are on the cusp of a new epoch of wealth creation which we have not seen before, at least not since the Industrial Revolution.

With this chapter, through the wisdom of Adam Smith and his seminal economic treatise *The Wealth of Nations (*1776), I will demonstrate the parallels between the economic and social upheaval that led to the collapse of empires, and the rise of industry and the new frontier of individual wealth creation rendered possible by recent advancements in consumer technology. In short, if we examine the sum of American economic history, what we will find is that this country has experienced three distinct eras of wealth generation:

1) The first period saw the creation of wealth solely at the nation-state level. This was the age of empires, wherein sovereign nations used their military advantage to amass economies steeped in gold and silver.

2) The second era would be known as the Industrial Revolution, a time when the dynamics of wealth creation were increasingly privatized due to changes in economic thinking and the development of mass production.

3) The third and latest era has been borne of technological advancement, as key developments of consumer technology have led directly to substantial wealth creation. What was once attainable only for a nation-state became possible for a powerful corporation. What was once only possible for a titan possessed of a massive workforce and tremendous control over raw materials became possible for any basement programmer with a great idea. King George became John D. Rockefeller, who became Mark Zuckerberg.

As with Smith's *Theory of Moral Sentiments,* first published in 1759, and the concept of assembly-line labor, the current model of wealth creation is in need of a new and powerful idea to render it stable. We need an idea that will make individual wealth creation more accessible to the common man, an idea that will take this tumultuous world economy and turn it on its head for the better.

This chapter introduces that idea.

## Wealth of Nations

The story of the three economic epochs is rooted in the theories of Adam Smith. Smith was a Scottish economist, professor, and philosopher who many consider to be the originator of free market economic theory. I will discuss several of his theories in this section. Most important is the notion that in a free market, economic well-being comes from rational self-interest. In the same way that private enterprises are driven by the need to maximize profits and preserve their self-interest, households are also motivated by the opportunity to create cash flow and income streams. The economic strength that develops when firms and individuals set out to create new sources of profits and cash flow can be revolutionary.

The year was 1776. America had proclaimed its independence from the Kingdom of Great Britain, and Adam Smith had just published the book commonly referred to as *The Wealth of Nations* (originally bearing the rather clunky title, *An Inquiry into the Nature and Causes of the Wealth of Nations*). Within it, he suggested it might not be so prudent for the British Empire to retain control over the colonies by military force. His conclusion was that the military power, required to protect British investments in the colonies, was becoming an increasingly unsustainable burden on the treasury.

Based on the theory of marginal analysis initially proposed by Pierre Raymond de Montmort in his *Essay d'analyse sur les jeux de hazard* (1708), and supported by Daniel Bernoulli[2], and by Smith's own *Theory of Moral Sentiments*, the additional benefits of taxing the colonies were substantially outweighed by the costs of maintaining control by military force. The return was not worth the expense (Montmort, 1708; Smith, 1759). Now, amassing and maintaining territories by military force was the only thing these powerful nation-states knew about economic theory, so this concept may have seemed laughable at the time.

The Industrial Revolution created new opportunities for the development of short- and long-term profits while increasing people's wealth creation potential. For most, getting a job in a factory meant more reliable and predictable wages and the chance to build a family and establish neighborhoods where homes would become one indicator of wealth. For long-term lenders, mortgage loans became less risky, more widespread, and better collateralized, strengthening their portfolios.

Smith's theories seem to be validated by the next generation. By 1830, the American colonies had held their independence for over a half century. They and much of Britain's remaining empire were free from the odious trade restrictions that ensured a trade surplus for the motherland. Great Britain's GDP was equal to almost 12 billion British pounds in today's figures (Mitchell, 1988). With 31 formal colonies spread across every continent of the world, Great Britain exercised sovereignty over a full fifth of the globe, but the new free trade was not in such favorable terms. Total exports amounted to 1.9 billion British pounds, while imports checked in

at 1.7 billion (Mitchell, 1988). The advantages of controlling trade with its colonies were, as Smith had theorized, no longer worth the expense and trouble.

Britain also had several competitors in the game of empire acquisition. The Spanish Empire was considerable, both in terms of military forces and colonial territory. Italy, France, Germany, and Portugal also amassed substantial stocks of gold and silver through imperial conquests. It was not simply enough to control its colonies, but also protect them, adding to the expense and problems.

Smith's *The Wealth of Nations* proposed a revolutionary change in the economic paradigm, one that suggested a nation's wealth was not a matter of their holdings in gold and silver, but rather, their supply of labor. In other words, it is not the money a nation possesses that makes it wealthy. It's the manpower. It's the capacity to create goods and services.

Whenever the subject of Smith's theories on manpower is broached, an unfortunate topic tends to rear its ugly head. Certainly the theory of labor's contribution to wealth generation was a necessary preamble for the Industrial Revolution, but it also provided a strong argument for the continuation of slavery. When an economy is steeped in agriculture, massive and cheap labor is necessary during planting and harvesting seasons. Farming labor has always been difficult to secure. Slavery became the answer, replacing the cash needed to pay short-term labor with the capital assets of the slaves themselves, and the cost of their families, homes, food, clothing, etc.

The formula for wealth evolved from:

$$\textbf{\textit{Wealth = Land + Labor + Animal Power + Cash}}$$

to

$$\textbf{\textit{Wealth = Land + Labor + Animal Power + Capital}}$$

Here, capital is defined as fixed and liquid assets, where the slaves become a capital asset which offsets the cash needed to run the operation.

*The New Empire*

During the late 1700s, the primary debate in Great Britain was whether formal colonization had become too expensive. In an attempt to cheapen the process, the British unleashed a propaganda campaign, suggesting to the colonists that their 14 colonies were only sustainable because they belonged to the Empire.

Similarly, modern businesses often attempt to mask failing to offer a decent living wage by promoting campaigns about the "corporate family" or the "corporate culture." Many of these same companies let the government pay for their workers' health care, retirement, and childcare needs. Anything else the average worker may need is then readily available to be purchased on credit. This compromises the worker's freedom to secure wealth.

Corporations become empires; workers become slaves to the financial system.

*The New Slavery*

At the time of the American Revolution, the slave owners were required to provide everything for their slaves, including housing, basic medical care, tools for the job, transportation, food, and clothing.

Compare that to the conditions of our current economic system, where so many millions of workers are underemployed, receiving only so much salary and benefits that may, or may not, cover housing, basic medical care, transportation costs, food, and clothing. Add to that the financially crippling expense of credit card interest. Have things really changed for the average American worker? Have we gone from slavery to neo-slavery?

There is, of course, plenty of wealth being created in this country, on both the national and individual level, but at whose expense?

**Figure 1: The New Empire**

The more important idea proposed by *The Wealth of Nations* was not the furtherance of marginal analysis, but the revelation that prosperity could be advanced through a more careful and reasonable division of labor. In a famous anecdote, Smith illustrated the production of pins as evidence of his theory's power.

As the story goes, if you task a single worker to manufacture pins, you might be able to expect him to produce only one pin per day. After all, to generate one pin on his own, he must master the careful arts of smelting the materials, forming the molds, shaping the pin to perfection, and the other 15 tasks that went into the fabrication of a pin. More than the amount of time and effort this would take, the worker himself would also have to be tremendously skilled, and tremendously skilled workers tend to cost more to employ.

Now, what happens if you employ ten workers who are far more narrowly skilled when compared to the single pin-maker? What if you trained each of those ten workers to specialize in one or two specific tasks related to pin-making? Their labor then becomes a matter of quick and simple repetition. Rather than having to craft an entire pin, they need only perform one rudimentary task that furthers the pin's creation. As Smith suggested, if one were to divide the labor in this way, one could expect the production capacity of a single pin-maker to jump from 1 to 4,800 pins in a single day.

With *The Wealth of Nations,* the concept of assembly line industry was born. Not only had Smith demonstrated that imperialism was not a sustainable enterprise in terms of national wealth, he had also laid the groundwork for a new economic era.

## Wealth of Industry

During the Industrial Revolution, corporations became the primary generators of wealth. Where once imperial nation-states served as sole drivers of the economy, power steadily shifted to emerging industrial companies: steel makers, textile mills, machine builders, railroad builders, and other key sectors of industry. The wealth, power, and influence of kings became the wealth, power, and influence of men like John D. Rockefeller, Cornelius Vanderbilt, Andrew Carnegie, and the other titans of industry.

By the turn of the 19$^{th}$ century, though they had seen much advancement in the areas of labor, and methods for reaping the benefits of labor, nations had come to understand that land was a fixed resource. Agriculturalists learned that it did not matter how many workers they crammed onto their land; the output of crops would only slightly increase. Indeed, there came a point when the number of workers became too many, and production capacity of the labor force actually diminished. The concept that labor is a resource subject to diminishing returns first found its

expression in the Law of Diminishing Returns, as postulated in David Ricardo's *The Principles of Political Economy and Taxation,* published in 1817.

The LDR states that if one input in the manufacturing process is increased while all other inputs remain fixed, there will come a point when continuing to increase that input will result in a decreasing output for each additional input unit. Imagine a small plot of land cultivated by one man producing 100 pounds of tobacco. If you add one more man to the operation (an increase in workforce of 100 percent), production does not tend to increase by the same 100 percent as one might expect, but rather, it increases to only 120 pounds (or 20 percent). As you add more workers to the picture, their incremental productivity tends to diminish. However, this economic concept can be applied to any aspect of the production of a good—not just the number of workers.

To maximize profits generated from a given plot of land, one must create an assembly structure that can produce as much as possible, in the smallest possible space. This realization lay behind the development of the assembly line and the many factories that championed them. As these corporations rose to power, the labor force became increasingly mechanized, and animal power was replaced by machinery, which was primarily driven by steam or water. The industrial revolution had changed the wealth formula from:

$$\boldsymbol{Wealth = Land + Labor + Animal\ Power + Capital}$$

to

$$\boldsymbol{Wealth = Land + Labor + Machinery + Capital}$$

The Industrial Revolution started in England in 1760, and became globalized by 1830. What started as a revolution in manufacturing eventually came to affect every part of daily life. Over the two centuries that followed, the world's population grew six-fold, while the per capita GDP grew ten-fold (Madison, 2003). As the economic engines of growth became more and more sophisticated, new inventions began to surface. These inventions both maximized profit potential and also necessitated *skilled* labor. One example of this phenomenon was the Spinning Jenny, an invention developed by James Hargreaves that accounted for dramatic increases in the productive capacity of textile mills, but also required workers to be educated in its intricacies. While there were plenty of workers skilled in the traditional spinning wheel, operating the Spinning Jenny required a more educated hand. The formula for wealth generation changed once more to:

$$\boldsymbol{Wealth = Land + Labor^{(Education)} + Machinery + Capital}$$

The next major shift in the paradigm was brought about by the invention of electricity. This innovation single-handedly propelled the Industrial Revolution into a tremendously specialized second stage, as electricity allowed for the mass production of steel and its byproducts. This facilitated key cultural developments like railways, oil and gas pipelines, bridges, skyscrapers, and, most importantly, the internal combustion engine.

These developments simplified the average American's life and increased the average household's purchasing capacity. It further enabled most families to expand their size at an unprecedented rate. This gave people more leisure time, more to spend, and more people on whom to spend it. Many of these new purchases, especially homes, were made with borrowed money, creating a nation of debtors. These developments generated a climate under which

financial institutions became more amenable to risk, and entrepreneurs were more likely to get their projects funded. This changed the formula for wealth to:

$$\textbf{\textit{Wealth = Land + Labor}}^{\textbf{\textit{(Education)}}} \textbf{\textit{+ Machinery + Capital + Credit}}$$

This formula transformed both the state and the individual into virtual slaves. The availability of credit has led to a degree of indebtedness in which the worker and the state have lost the ability to generate discretionary spending, as capital is lost to repay the interest on the debt. In many cases, excessive debt and usurious interest rates mean borrowers are forced to apply all available resources merely for debt service—thus eliminating discretionary spending. This means that the efforts of labor are lost and no economic advancement is possible, effectively creating a slave class.

The formula illustrates the reality created by a new economic imperative for nations where economic development became a priority, especially from the mid-1800s through the 1960s.

The belief that nations could only create wealth by increasing and diversifying their productive capacity gave rise to a large number of government-owned enterprises in many developing nations. These countries lacked a private sector and a class of investors with substantial net worth and entrepreneurial capacity, so they were perceived as a threat to the financial sectors of developed capitalist nations. Consequently, governments created development banks to take on substantial amounts of high-risk sovereign debt in order to fund the creation of large, government-owned companies and enterprises.

The debt portfolios of these development banks are the most visible measurements of enslavement, as they remain in default under the category of Heavily Indebted Poor Countries (HPIC).

In the 20th century, there were two dominant schools of thought on economic development: capitalism and socialism. Karl Marx's *Das Kapital* laid the groundwork for socialism. Here, the proletariat had ownership and decision-making power over industrial development and managerial activities of newly created companies, with the state assuming the investment risk. The capitalist school was based on Rostow's five steps of economic development, which proposed creation of a class of wealthy entrepreneurs. In the socialist school, market forces are minimized and the means of production are controlled by the government. The consumer has little or no influence on the market or the course of economic development. In contrast, the means of production in capitalist countries are controlled by private enterprises, and the consumer drives the market. However, the market is limited due to limitations in the consumers' knowledge of pricing, quality, and other benefits of a particular purchase decision. This lack of knowledge restricts the consumers' ability to make informed choices and to effectively drive the market. Consumers, therefore, become part of a captured market controlled and manipulated by the producers.

Now, allow me to return to the concept of the LDR. Until recently, economists believed that even technology was subject to diminishing returns. This is true in some productive capacities such as the automobile industry, where the diminishing returns to technology are clearly visible due to the limitations on reducing the marginal cost of production—very similar to the previous agricultural example. However, in other industries such as software, music and movies,

technology has managed to continually reduce the marginal cost of production. This has considerably changed the nature of wealth creation.

## The Modern Decentralization of Wealth

It is amusing to ponder what economists like B. Joseph Pine II and James H. Gilmore call the new economy, "the experience economy," because it is truly an "experience" for all. Pine and Gilmore postulated that businesses need to create experiences for consumers and create events that lead to memories. Those memories then become the product. Hence, businesses charge money for an experience and/or the transformations that occur because of the experience. But the experience can go both ways. The Internet and social media give consumers access to price- and non-price-related benefits, based on the vast amount of online information at their disposal.

For the first time, the formula for wealth is changing again to include the ability of social media to place economic influence in the hands of the household sector. So now, the formula for wealth creation must include Influence as an exponential value:

$$Wealth = Land + Hardware^{(Software\ +\ Influence)} + Labor^{(Education)} + Capital$$

In this expression, "capital" also includes "credit," as in the previous expression, or "credit worthiness," but we chose here to use "capital." This includes the total capital resources available, whether through liquid assets, cash, borrowed funds, or investment funds. Through this, it is clear that the invisible hand is putting the power to choose back into the hands of the true king of the economy: the consumer. This is the basis for an exciting new era of wealth creation.

## Wealth of the Individual

Welcome to the era of consumer influence. These days, e-commerce vendors like Facebook can generate 800 million followers in fewer than five years. Corporate giants like Apple boast more liquid assets than the sovereign nations that house them (in August of 2011, Apple's liquid assets exceeded those of the United States). Technology drives the development of every successful company—both old and new. With its low costs of operation and development, technology has minimized the barriers to entry for many businesses and allowed rapid growth.

The advance of computers, Information Technology, and the Internet have made possible the rise of a substantial number of modern millionaires and billionaires. Coupled with the Internet, IT provides convenient, remote education for individuals, providing the opportunity to increase their earnings by obtaining a degree, and for some, the opportunity to add cash flow streams from many of the online occupations now available to the general public. The evolution of information sharing eliminated the need for in-person document verification, in a world where documents were the primary sources of identification and proof of compliance (i.e., passports, birth certificates, licenses, etc.). Considering the lessons learned during that period, it should come as no surprise that a similar advancement in energy technology will further decentralize the concept of wealth creation. Whereas the IT boom made it possible for a tech genius to generate wealth,

the ET boom has the potential to expand the horizons of wealth creation to every homeowner with the means and access to new technology.

The IT wave required an idea, a computer, and the skills to utilize it. The new ET wave will require only the installation of the technology in an individual's home. Once installed and running, the wealth is generated automatically, and in a number of specific ways that I will discuss shortly in greater detail.

IT was a new frontier. ET, however, introduces an additional economic principle to the discussion, a principle known as the Positive Externality Effect. In short, the Positive Externality Effect states that all parties involved in a transaction benefit advantageously if they are privy to the same information. In economics, an "externality" is a cost or benefit not realized through price. A negative externality occurs when an event increases the cost of a transaction. Conversely, a positive externality occurs when an event increases the benefit realized from a transaction.

The transformative potential of Green X technologies inspired by this book, along with winning Green X Prize innovations, will lead to positive externality on a grand scale. They also have the potential to unleash the promise of wealth creation as originally postulated by Adam Smith, stringing together positive externalities across the full consumer landscape. The potential for value creation and retention will no longer be merely the domain of large corporate firms, but also of homeowners. Anyone with access to the technology will generate and retain more wealth than was possible before. The influence exerted by consumers on a wide variety of companies can be decisive in their ability to compete in the marketplace, especially companies in the service sectors, like restaurants, universities, physicians, etc. They are constantly reviewed by their patrons, influencing others on whether to buy their services or not. This is the new power that consumers hold. The aftermath of the Great Recession of 2008 left no doubt that all nations need a strong gross national product. That means more spenders with increased ability to spend.

The commodities market represents the best example of how a string of positive externalities can provide enormous benefits to world trade. Let us take corn, for example. By standardizing the size of each contract, the type of corn, the delivery date and destination, payment terms, and the corn quality, the only remaining detail left to negotiate is the price. In the event that one of the standardized units of the contract is positively affected, that tends to lead to a positive influence on the price to the consumer.

Let us examine how the Positive Externality Effect applies to this new frontier of individual wealth. The year is 2020. The cost of producing electricity via solar power has become comparable to other traditional methods such as nuclear, coal, and natural gas. The parity is such that solar panels are no longer cost-prohibitive for the average homeowner. With solar panels installed, and other technologies applied, a homeowner who pays $1,800 per month for his mortgage can expect to generate all, or most of that, in savings and income from selling the excess electricity that his system will produce and save.

In this way, the homeowner who has embraced the new ET will not be generating wealth simply by building equity in his home. Rather, his home will represent an effective income stream. Instead of relying only on the home's appreciation to advance its worth, the homeowner can generate additional cash by exploiting the dwelling's wealth creation potential. The cost of utilities will nearly disappear. The gap in the debt-to-income ratio will begin to close, due to the positive cash flow that Green X technologies will generate. The economy will be stimulated in a supply-side fashion. The definition of wealth will change once again. By the time that this new era takes hold, the formula for wealth will look like this:

$$\textit{Wealth} = \textit{Land} + \textit{Hardware}^{(\textit{Software})} + \textit{Social Influence} + \textit{Labor}^{(\textit{Education})} + \textit{Capital}$$

Social Influence has become a new variable. Cultural Influence, however, will become a new and important variable. Education will only be additive, not exponential. And if we let *Hardware* $^{(Software)}$ = Technology, the new formula becomes:

$$\textit{Wealth} = \textit{Land} + \textit{Technology} + \textit{Social Influence} + \textit{Cultural Influence} + \textit{education} + \textit{Capital}$$

With the new formula above, you might notice the "education" variable is presented with a lowercase "e." In the new paradigm, formal education will not be as important for wealth creation. While it will remain true that the average college graduate can expect to earn substantially more over his lifetime than a high school graduate (according to the Census Bureau, a college graduate can expect to earn $1 million more over his lifetime than a non-grad), anyone willing and able to invest in the new ET will be able to generate wealth with or without higher education. For this reason, education remains important, but its influence has been lessened.

Now, let's shift focus to the center of the formula and the variable on Social Influence. The socially disruptive impetus of new technology is especially visible in movements like the Arab Spring and Occupy. Such movements would not have been possible, or at least they would have been less likely and widespread, were it not for advances in social technology (such as Facebook and Twitter). Such technologies took those movements from widespread and random demonstrations and rendered them into cohesive nationwide, even global, strategies.

Economically, the social media influence has quickly begun to strengthen the so-called "Law of One Price." In other words, as suppliers are able to list their prices and features on the Internet, they create a more open marketplace. Competitors use that information to adjust their pricing and compete on non-price-related factors such as free shipping, customer service, 24/7 availability, and customer reviews. This has created an equivalent social network of consumers for virtually every product. As this type of social media becomes more widespread and readily available, the savvy shopper now has the ability to shop for a product at the lowest price and best service and benefits.

Similarly, social media allows the consumer to shop more easily for items of the highest quality. Collectively, social media, especially Facebook, can make or break a given product based on users' reviews. Firms that try to differentiate their product or service based on their claims for quality can find hundreds of customers who document their experience via social media. This has sweeping implications for product viability. The movie *Cowboys and Aliens*, for instance, saw its demise shortly after its debut screening, owing its negative reviews to social media sites and to many social sites that specialize in movie reviews, such as Rotten Tomatoes.

The picture becomes murkier when it comes to cultural influences. Cultural influence on wealth generation stems from three important factors: 1) socioeconomic background, 2) ethics, and 3) race.

Socioeconomic background refers to the resources an individual has at hand from birth throughout their life. People born into wealth are much likelier to generate additional wealth than are people born into poverty or the middle class, perhaps because they possess more capital with which to begin their education and careers. They are better connected to other wealthy people in

positions to help them financially and socially, and they often learn how to gravitate toward the factors that contribute to wealth creation. The wealthy often seem to be "in the know." They are exposed to more specialized information in a timelier manner than those in other economic classes, and they depend on knowledgeable and paid advisors to manage their wealth. They are also in the position of managing wealth rather than managing debt. Banks are paying them; they are not paying banks. The other 99 percent of Americans do not have access to such advantages. They need to look for advantages in other spheres, increasing the probability of making costly mistakes as they try to navigate a much harder path.

Ethics also enters the equation, as the accumulation of wealth becomes easier if one is not constrained by moral or even legal limitations. Businessmen willing to cheat their partners or lie to their investors or customers may lose their partners but may also benefit financially. Bank robbers and drug dealers can accumulate significant wealth if they can avoid the law. In the song "Gimme What You Got," Don Henley sang, "A man with a briefcase can steal more money than any man with a gun." We recently witnessed the transfer of great wealth from the middle class to the wealthy, largely due to the excesses and ethical void on Wall Street.

Unfortunately, racism still exists in the world and it can be a major factor in one's ability to advance in the business world and thus generate wealth. It is also still the case that a large number of minorities are born into a lower socioeconomic situation.

## The Division of Wealth

The idea that Green X technologies can and will advance the formula for wealth in a revolutionary way is certainly a pleasant thought. But ideas are not the only impetus needed to effect economic, political, and social change. Civil unrest and economic imbalance are two additional factors often driving revolution. Considering the Occupy Movement, along with the demonstrated widespread distrust of the government and corporate America, signs of unrest seem to have already begun to emerge (Zeleny et al., 2011). The question then becomes, are we today experiencing a level of economic imbalance similar to the imbalance that led to the collapse of empires? We have the idea, we may have the unrest, and we have the economic imbalances.

Vilfredo Pareto (1848–1923) introduced the famous "80/20 Rule" in his *Manual of Economic Policy* in 1906. Pareto studied income distribution and choices, and also contributed to the development of microeconomics. The 80/20 Rule, or Pareto Principle (or Pareto's Law), was based upon his observation that 80 percent of the land in Italy was owned by 20 percent of the people. Further research showed this to be universally true in virtually all stable and advanced countries of the time. He suggested that economic balance is attained when 20 percent of the people in a society possess 80 percent of the wealth (Pareto, 1971). He argued that in all countries and at all times, the distribution of income and wealth is highly skewed, with a few people holding most of the wealth. Pareto's Law has proven to be remarkably close to the observed data.

This can be explained by observations of human nature. If we evenly distribute all of the wealth in America, or in any society, there will be a minority of the population which works harder, has more ambition and drive, is smarter or more ingenious, or is just plain lucky. Eventually, this minority will gain more of the wealth. Economic stability is only achieved when the 80/20 Rule is satisfied.

Further, the truth of this is independent of the economic system; it holds in a capitalist society, a socialist society, under communism, or under a monarchy. It is, quite simply, a product of the natural order of things. There have been and will always be people who are luckier, smarter, or work harder than others. They will be more successful, regardless of the economic or political system. Partly because of Pareto, the field of modern economics has evolved from a branch of moral philosophy, as practiced by Adam Smith, into a data-intensive field of scientific research and mathematical equations.

A corollary to the 80/20 Rule is the threat of instability when the ratio gets too far out of balance. When 5 percent of the people own 95 percent of the wealth, for instance, a revolution is often at hand. The French and Russian Revolutions are two among many examples. But today, armed with the ability to communicate to the world from our own laptops, modern man's overthrow of an existing system, regime, or paradigm is far less likely to lead to armed conflict. We can wage a mighty battle from the comfort of our own homes. The information highway's social media potential is a not-so-secret, nevertheless ultra-powerful, weapon accessible to nearly everyone.

This idea of revolution is driven from the concept of Pareto Optimality, which states that an economy is stable and the people are satisfied when no one can be made better off without making someone else worse off.

Let us look at the housing market, for example. The optimal market would be one where everyone who wants a house has one, that anyone wanting to buy a house can find one, and that everyone wanting to sell one can find a buyer. Remove houses from that market, and someone is homeless or a potential buyer cannot find an available house. Add houses to that market, and the builders or sellers are harmed because they are losing money on vacant houses where no buyer can be found. As we can observe, the housing market is seldom at equilibrium and there are times of "buyers' markets" and "sellers' markets." While the stable market will run close to the optimum, too much of a shift in either direction will result in market extreme—such as that during the Great Recession. For the economy in general, any deviation from the Pareto Optimality will result in someone being harmed whenever someone becomes better off. In this circumstance, the only way an individual can become better off is to harm someone else or to generate new wealth in a growing economy.

Wealth continues to be created at both the individual and national levels, but the transfer of wealth is at whose expense? The Occupy Movement suggests that 99 percent of Americans have endured the cost of the accumulation of wealth for the other 1 percent of the population. This might seem like a catchy campaign concept but there is ample evidence to support their claim (Pear, 2011). The increasing concentration of wealth in 1 percent of the population first became noticeable in the latter part of the 1970s. Between 1979 and 2007, federal taxation became less progressive. This, along with other policy changes, resulted in the income of the richest 1 percent of Americans growing by an average of 275 percent during that period, according to the Congressional Budget Office (2011). For the 60 percent of Americans residing in the middle of the income scale, income rose by only 40 percent. Meanwhile, the average income *decreased* by $900 for households in the lowest income bracket. All of this has increased tensions among the economic classes—financially, politically, and socially.

From the perspective of federal income tax burden, between the years 1992 and 2007, the average tax rate of the top 400 income earners in the United States decreased by 37 percent, even as their income increased by 392 percent. In matters of wealth ownership, in 2007, the richest 1

percent of Americans held 34.6 percent of the country's total wealth. The next wealthiest 19 percent of Americans owned 50.5 percent of the total wealth. Taken together, the top 20 percent of Americans owned 85 percent of the country's wealth, while the bottom 80 percent held a mere 15 percent. This is not far from Pareto's 80/20, but the imbalance grew in the Great Recession and has worsened in the recovery, since most of the gains in the stock market have been received by the wealthiest among us.

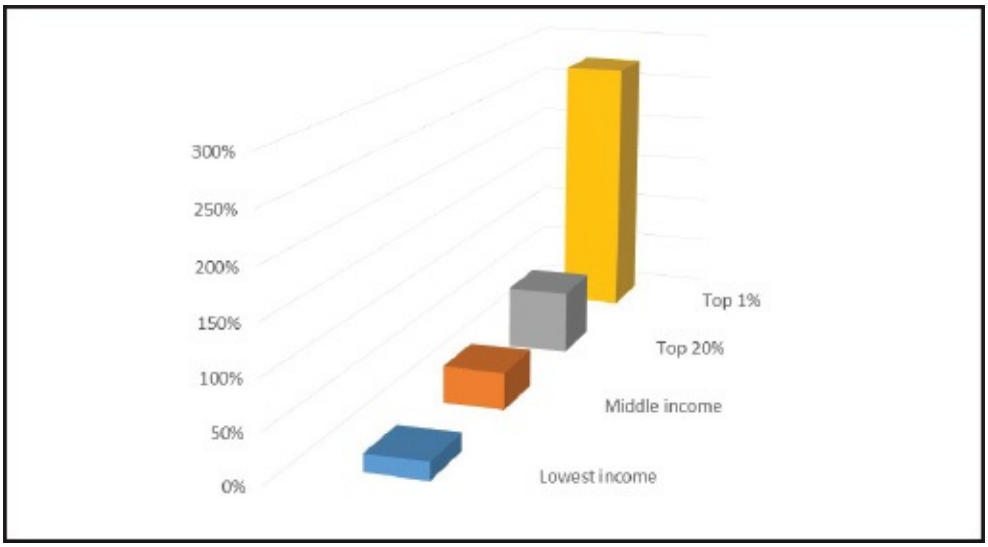


**Figure 2: Growth in real after tax income, 1979 - 2007 *(Congressional Budget Office, 2010).***

It seems appropriate in this space to reflect on points in history when we can observe similar wealth disparity. Like the Occupy Movement, historical social disruptions often seem inconsequential, at first, but when the moment comes that the general population identifies the tyrannical vehicle that made it possible for the very few to dispossess large sectors of the population of their assets, revolutionary acts tend to follow.

When examining the fall of the European monarchies and the Russian Revolution, it is clear that the tyrants were the monarchs. In South American revolutions, the tyrants were typically of a dictatorial political class. Today, as we experience an era wherein Congress has engendered the term "un-governability" and oil companies relentlessly increase the price of gasoline, the 99 percent have chosen financial institutions as the tyrant upon which to unleash their ire.

Almost without exception, historical revolutions began first with social disruptions similar to the Occupy Movement. In every case, the step was taken toward revolution the moment that law enforcement agencies tasked with keeping the peace came to realize that they had more to gain from joining the movement than suppressing it. Workers and students would unite, and governments would fall. An increasing number of legislators are leading the fight against the new tyrants heralding the causes that protect the middle class. Is it possible that our own revolution is not far behind?

## Conclusion

In 1776, the world economy was shifting toward a new world order. Advances in technology and economic thinking paved the way for a new, privatized, model of wealth creation, placing it in the hands of industrial titans. While economic disparity often leads to social, political, and economic change, it also sometimes leads to a gradual and relatively peaceful decline. Consider

what happened to the British Empire following the American and Industrial Revolutions. The Empire declined greatly over the century that followed. Britain's cost of support and control had become too substantial for it to sustain its sprawling territories.

Whenever structural economic change happens, the legislative branch of government loses its prioritizing capabilities. This was evident during England's transition from a nation with military priorities to a country with industrial imperatives. The Great Depression ushered in social changes that made taxes increasingly necessary, due to the increased cost of social programs and the size of the government. Since the Great Recession of 2008, there has been some confusion in the priorities of our legislative branch, to say the least.

Today, the US may succumb to a similar fate. The world's new economic power appears to be China, while the US appears to be fading and becoming dependent on China. Unless this country can come to embrace new economic principles and technologies, it stands to go the way of the British Empire.

Without a new brand of economic, political, and social thinking, the Great Recession may never truly end. This is why a new way of earning wealth is so important.

# Chapter 2:

# BUBBLES AND RATIOS

***You can't be a first-world economy in the 21st century if you're not on the path to a clean energy future.***

***—Wayne Swan***

Economic disparity is a significant catalyst for cultural change, while technological advancement generates exponential growth in a country's economy. This is because new technology multiplies human productivity.

Back when man spent his days tilling fields and hunting boar, there came a time when someone discovered that he could substantially increase his productivity by harnessing the power of animals like horses and oxen. The development of metallurgy for better tools improved agricultural techniques, transportation, and communication, all of which have served to increase the productivity of labor. Various forms of agricultural revolution over the course of centuries have improved productivity and spurred social change.

Centuries later, the Industrial Revolution, skills specialization, the assembly line, and automation have increased the average worker's productive capacity to several thousand units of daily output. The creation of labor-saving appliances and more affordable, as well as convenient, transportation have made it possible for families to expand and thrive at a rate never before seen. This has given rise to urban development across the country.

A similar confluence of technology has occurred more recently with the invention of the Internet, the globalization of cable television services, and the dominance of English as the language for international communication. These advances have made communicating with one another a truly global, instantaneous, on-demand experience. Couple these advancements with the recent and most severe economic recession, and what we have seen is downward pressure on the general level of prices worldwide, bringing about the so-called "Law of One Price" for products, regardless of market. It is a whole new game for supply and demand.

Every coinciding moment of innovation and socioeconomic change in human history can be summed up as *technology answering the needs of the people*. What humanity needs now, in this era of social tension and economic upheaval, are technologies that fundamentally change the game, upending current economic paradigms.

We need a balancing force to stabilize a currently unstable world economy. Furthermore, we need something to enable us to better predict and avoid devastating bubbles, like the one

preceding 2008's real estate collapse and ensuing recession. The Green X Platform *is* that something.

## Bubbles Examined

Despite all our advanced economic measures, bubbles are notoriously difficult to predict. Why? Because they are influenced by two separate, but equally difficult-to-measure, components.

The first component includes numerous intangible factors like market sentiment, political expectations, overvaluation (or what Alan Greenspan famously called "irrational exuberance"), risk perception, and people's general mood. How, for example, do you measure euphoria? You cannot. All these variables are impossible to measure, but their effects cannot be overestimated.

The second component includes fundamental factors like expected cash flow of an asset (dividends, bond yields, etc.): how much might you earn from holding it versus selling it? How much is holding an alternative asset worth? What is the relative risk in holding them? All are difficult to assess. What is the exact value of an orange? A bar of gold? A slab of granite? One cannot observe the fundamental value of a slab of granite. It may be worth $500 to you, but your next door neighbor—who's been searching high and low for such a slab this exact size and color—may be more than eager to pay $1,000 for it! We can at best estimate its market value. Because we're guessing at value, we're guessing at fundamental factors, too; they are far from surefire predictors of future trends.

If spotting bubbles is tough, trying to predict exactly when one will burst is even trickier. Take the student loan bubble coming down the pike. In the United States, we've placed a premium on the life-changing benefits of higher education. Most of us believe that if we go to college, we'll earn a great deal more over the course of our careers than non-graduates. Indeed, the US Census Bureau in September of 2011 concurred, placing that number at over $1.1 million extra in a lifetime (Julian & Kominski, 2011). As average Americans believe that education leads directly to added wealth, they are willing to go far deeper into debt to get one. That willingness, coupled with skyrocketing tuition, steady or declining salaries, rising interest rates on student loans, and massive unemployment or underemployment, now threatens the happy outcome of what has been heretofore true. What we're seeing is a real and identifiable student loan bubble.

No one can say if or when it will burst. This particular bubble is fueled mostly by non-fundamental factors. It is really a matter of how much longer we are willing to take on tremendous debt pursuing a career path that pays only moderately more than it did twenty years ago. It could happen tomorrow. It could happen ten years from now. It might never happen. There is just no way to know.

To predict what is relatively unpredictable, economists use economic ratios. These are decent indicators of the presence and magnitude of bubbles in any asset market. But they fail to provide a specific measure of asset overvaluation. They also cannot identify exactly when a given bubble began, nor can they forecast when it will end (unless you're evaluating in hindsight). Ratios merely provide a point of reference about the market for a given asset. One way to forecast a time at which a bubble starts is to assign a value at which a bubble *could* start. Over a period of time, this value can be adjusted to reflect experience with the measurement. But again, this is at best a hypothesis.

As we're dealing with a recent economic slowdown preceded by the bursting of a real estate bubble, we believe that many elements of the Green X Platform will have a big impact on the economics of the real estate sector. Let us examine the ratios most commonly applied to the real estate market and see if we cannot establish the impact of the Green X Platform on the market and the potential market bubble.

## Obsolete Ratios

We begin with the two main ratios economists use to assess homes. These are the most oft-used criteria to estimate a home's value, as well as potential real estate bubbles like that of the early 2000s. The first criterion is called the price-to-income (PI) ratio, the proportion between the median house price in a given locale, and the median family's level of disposable income. In other words, how much money does the average family have available compared to the average price of a home? The PI ratio is the primary yardstick banks use to decide whether to grant mortgages to borrowers. If you do not make enough money to meet the ratio's criteria for affording a $400,000 house, you are not going to secure the loan for it. It is also one of the two primary determinants of whether a country's overall real estate market is overvalued or undervalued. Put simply, if people with tons of disposable income are living in very modest homes, the market is undervalued. This tends to create a real estate bubble. Conversely, when there are comparatively poorer people living in relatively expensive homes, the market is overvalued. This leads to bubbles bursting.

The second criterion is the price-to-rent (PR) ratio. This is the average cost of owning a home compared to the projected income one might receive by renting it out, or the estimated rent one would pay renting that home. Because rent is like an income or expense in itself, if you are receiving rent monthly (an income) or if you are paying it monthly (an expense), the PR ratio tends to follow pretty closely with the fundamentals of supply and demand. If there is a great need for rental properties, the amount of rent one might expect to bring in naturally rises. If everyone is flocking to buy their own homes, landlords might want to start lowering their rent. As is the case with any pure supply-and-demand principle, unsustainable rent bubbles are rare. It is for this reason that economists like it so much as a predictor of real estate bubbles. It shows simultaneously when home prices are skyrocketing and the rental market is flat-lining. In theory, that should warn economists that a bubble is nigh.

But that is just theory. In fact, not only do the PI and PR ratios serve as rather lousy indicators of when a bubble will burst, they also have a tendency to make it more difficult to climb out of economic slumps. When a bubble bursts, we see a dramatic decrease in the value of property, but as many people have experienced over the past few years, the corresponding debt remains unchanged. Your home's value may plummet, but your mortgage payment sure doesn't! When that happens, your burden for repaying the mortgage becomes a greater financial drain, which of course leads to you spend less on other things, further deepening the economic slowdown.

With their often inaccurate assessments of the true state of the real estate market, these two ratios tend to exacerbate the problem. They ensure that real estate bubbles take their time in deflating. If the bubble takes more time to inflate, the recession takes longer to recover. When it takes longer to recover from a recession, we all suffer. What is needed is a more dynamic ratio that will allow the real estate market to be as liquid as it needs to be, by providing economists

with a truer and more accurate measure of a home's value compared to an individual's ability to generate income.

## Price-to-Energy Ratio

Enter the Green X Platform. Green X innovations introduce an additional element to an individual's income capacity: the ability to save on utility and tax expenses, and even generate income by selling excess energy to the utility grid. This added element makes the PI and PR ratios more dynamic. Where PI is designed to "prove" a home's affordability, the price-to-energy (PE) ratio made possible by Green X products could lead to a more accurate measure of the home's intrinsic value, and also accurately measure the *home's* ability to generate income. This improves the prospects for both lender and borrower alike. The lender can feel more confident in not only the value, but also the payback of a given home, and the buyer can enjoy the boost in earning power, resulting in a higher return on investment for existing homeowners and more homes for new homeowners.

Let's look at an example. If you earn $80,000 per year, there is only so much house cost you can afford. But if that house allows you to produce energy—yielding both savings and earned income—suddenly you can afford more house. The stability and predictability of such income is excellent, giving lenders greater reason to take a chance on you with a loan. That the house is operating efficiently, with minimal expense, gives them even more incentive to say yes. You bridge the gap between the house you want and the house you can afford, and the real estate market stabilizes.

The PE ratio is an interesting concept that could be interpreted in the following ways:

Price of a Green X Home = $350,000.

Total annual energy-generating capacity of the Green X Home, assuming monthly energy savings and energy sales of $300, would mean $300 x 12 = $3,600.

The PE ratio = $350,000/$3,600 = $97. This would mean that the homeowner has an investment of $97 in the value of his/her home for every dollar that the home generates in energy.

The price of the Green X Home technologies-to-energy ratio would be calculated and interpreted as follows:

Price of Green X Technologies = $30,300/$3,600 = $8.42. This means that for every dollar that Green X generates in energy, the homeowner has $8.42 in the value of his or her equipment. This value is a constant throughout the life of the equipment, as long as the cost of energy remains the same.

It is important to remember that Green X Platform innovations will likely attain a relatively constant energy-producing capacity, while the value of the home can increase or decrease. For purposes of illustration and future calculation, let us assume that the energy-generating capacity of a Green X Home reaches its peak at $3,600 a year and that it produces for five years, while the value of the home increases by 5 percent per year during the same period. The value of a $300,000 home, equipped with a full Green X system, would need to appreciate at a steady 1 percent per year to match the value added merely by the saving created.

*Money Pit No More*

The economy of innovation means more than just hardware and software development. It means changes in consumer and homeowner behavior. Our culture advocates homeownership, but the luster of that goal has been diminished. Homeownership is increasingly perceived as a ball and chain preventing economic enrichment. It is a cash drain in terms of taxes and unpredictable maintenance expenses, an asset with far less certain equity-building capacity.

The energy-generating capacity of Green X innovations can add an unprecedented cash-flow-generating capacity. This revolutionary advantage translates into monthly income and savings. Green X will provide value to people at every income level. Seniors can especially benefit because anchoring their future to their home is part of their lifestyle, and the additional source of income with few requirements and easy maintenance is a great benefit during the retirement years.

**Figure 3: Money Pit No More**

## Improving the Ratios

The PI and the PR ratios will become dynamic as the energy-generating equipment is amortized. The PI and the PR ratios will change because the income number will add the value of the home's energy generation to the homeowner's estimated income. Data on the home's structure and history, collected with the use of sensors, will mitigate the risks associated with the home as collateral for insurance and other actuarial considerations. This should improve the valuation of the house, reduce the risk and, therefore, the cost of insurance.

The house valuation method would have to include the value of the energy-saving and -generating equipment as well as the cash flow produced by that equipment. The present value of the stream of energy sales plus the value of the equipment at the time the house is purchased would add to the net present value of the home, similar to the valuation methods of commercial property.

The Green X Platform has the potential to put homeownership on the rise again. Homeowners will realize a significant reduction in the cost of ownership, increased stability in value, and a home that becomes a potential source of revenue—instead of a financial burden.

# Chapter 3:

# WATER: THE NEW UNALIENABLE RIGHT

***We forget that the water cycle and the life cycle are one.***

***—Jacques Cousteau***

What comes to mind when you think of the Declaration of Independence? If you are an American, the concept of freedom likely stands out. You may call to mind the forefathers of the United States or the American Revolution. You might think about the Fourth of July or summertime. When I ponder the Declaration of Independence, I am struck by its remarkable phrase "unalienable Rights." Many tend to dwell on the brilliance of the word "unalienable," but I would point out how interesting it is that the authors of the Declaration chose to capitalize the word "Rights."

I am not entirely sure why the many writers of the Declaration agreed on the point of capitalization, but I do believe it shows their overwhelming reverence for the concept of human rights.

It seems beyond debate that, since the signing of that document, these rights have been considered the cornerstones of America's legal, social, and economic systems (whether they have been applied appropriately is a conversation for another time). The legal and social rights are well known, but consider the idea that the right to the pursuit of happiness serves as the basis for many of our economic principles—principles such as the right to bequeath personal assets, the right to transfer property, and the right to free and clear ownership, which are guaranteed by the right to the pursuit of happiness.

With advances in technology, these rights must be reconsidered and reapplied. For example, whether you agree with the right to bear arms or not, what is not a matter for dispute is the fact that guns today are not the same as they were nearly 250 years ago. If the forefathers had considered the possibility of rocket-propelled grenades and fully automatic weapons, might they have crafted their wording differently? That is difficult to say. What can be said, however, is that advances in gun technology make for a fascinating debate surrounding Second Amendment rights.

There are certainly other examples. The more the Internet and social media encroach on our everyday lives, the more we all struggle with a natural right to privacy. The more global the economy becomes, the more difficult it is to maintain and enforce intellectual property rights. As

new sources of fuel are discovered below the ground, the question turns to land-use rights and the threats to water supplies.

In this rapidly advancing world of green technology, one of the next great questions will be the weight we must place on one's right to generate one's own energy. Can it be considered an unalienable Right?

How deeply do basic rights extend into the basic necessities of life? Do you, for example, have a right to food, energy, clean air, workplace safety, etc.? Few would dispute the idea that you do. Do you have a right to water? Again, that seems without question. But then there is this point: does *everyone* have a right to water? Is the right to drink and bathe unalienable?

In my mind, it should be. But whether you believe in the green initiative or not, climate change has made water increasingly scarce for a larger proportion of the world's population. In 2013, the United Nations estimated that 783 million people worldwide lack access to clean water. This is not just a problem for "third-world" countries. Right here in the United States, states like California face life-altering water shortages.

Several years ago, while visiting a foreign country where water is very scarce, I encountered a tag of graffiti that read, "Blessed are those that bathe because there is no water in heaven." These words illustrate the dire situation that so many nations currently suffer. There have been many conflicts over water rights in American history, particularly in the southwest, however it is difficult for most Americans today, living in a land of plentiful water resources, to imagine a scenario in which countries go to war over the world's most basic necessity. But make no mistake, if trends continue, this could become all too common. Unlike wars for oil or political ideas, a war for water would represent a war over matters of human survival.

The potential for this national security threat is already very real. In the South American Andes, for example, we have seen strife between two countries that, if left unresolved, could evolve into conflict. Much of the region comprising Chile and Bolivia gets its drinking water from snowmelt drifting down from the Andes. The terrain between the two countries forces the bulk of this runoff toward Bolivia. Bolivian leaders have operated under the assumption that because it ends up inside their sovereign borders, this runoff belongs to them. But Chile is home to the driest place on Earth, the Atacama Desert

(Johnson, 2013). The country often suffers water shortfalls and has chosen to divert the runoff into its own territory. To date, the Bolivian government has been unsuccessful in their attempts to appeal to international courts for their right to the water. Chile's successful counterargument has been that access to water is an unalienable right, one that no border or international tribunal can strip.

If there is not enough water to go around, the question becomes: what happens between these two nations if this cannot be peacefully resolved? Could war ensue? And if so, what would that war look like? Who would get involved? What might be its global consequences? They are troubling questions.

You might say that, given the scarcity of usable water in some countries, trade might be established. This would be true in a perfect world of free trade, but all data suggests that global trade in drinking water tends to happen between industrialized nations only. Less-developed and developing nations are often left to fend for themselves.

We then consider immigration. If you were a poor and thirsty citizen of a less-developed nation, would you not be compelled to immigrate to a country with plentiful water? And, if you

didn't know from day to day whether you would be able to wash your food or your body, let alone satisfy your thirst, would the legality of your immigration matter to you?

Faced with the rule of international law versus the compelling need for drinking water—obey immigration laws or die a slow, painful death—few among us would choose to adhere to the law. As of June 2013, over half a million Somali refugees are encamped in Kenya, a result of decades-long drought and a political vacuum (US Department of State, 2013). Many more have turned to piracy to escape the crushing poverty that is largely driven by a lack of water.

The shortages of potable water in developing nations could add further stress to the immigration problems facing industrialized nations. Illegal immigration, in turn, affects unemployment, law enforcement, and even elections. If we residents of industrialized nations think that economic conditions have led to mass immigration, just imagine what might transpire if water was not available in two thirds of the world.

If two thirds of the world is thirsty and the other third possesses an abundance of water, it is not difficult to visualize massive emigration. We're already seeing such mass movement in Somalia and the rest of Africa. All across the continent, people are displaced by the hundreds of thousands in their attempt to seek the unalienable right to water. Water, then, not only becomes a human rights issue, but also a politicized immigration issue, not to mention an economic one.

The Declaration of Independence was written at a time and place when water was plentiful, but as this resource becomes increasingly scarce, it demonstrates its undeniable nature as an unalienable right.

## Water and the New Civilization

My goal over the next three chapters is to demonstrate a New Civilization promised by technologies like the Green X Home. In the case of water conservation and redistribution, the successful Green X Home could provide advances comparable to the discovery of fire. A bold statement, to be sure, but hear me out.

Many anthropologists credit fire as one of the driving forces for assembling communities. Where there was fire, people would gather. That gathering eventually evolved into civilization, in part by taming the fire and utilizing its properties of heat and light to live better lives. With technologies we foresee from the Green X Platform, I believe mankind will take another step of historic proportions. We are seeing a new epoch in civilization, *one in which the individual is becoming energy independent*. Where fire offered refuge from an unforgiving wilderness, leading to the birth of civilization, the Green X Home offers refuge from an unforgiving energy grid, leading to economic independence and even profit potential.

Maintaining a sustainable path toward water and energy independence could usher in the New Civilization, effectively ending many of the social, economic, geopolitical, and climatological stressors we witness today. The outdated technology we use to distribute electrical energy is evident whenever a major storm blows through town. It can take days, weeks, sometimes even months, to fully restore the power. Dependence on the grid exposes our vulnerability.

Furthermore, the lack of water and electricity has blighted the chances for a decent lifestyle for billions of people around the world.

Let's begin with water. According to UN Water, 70 percent of all global water consumption can be attributed to agriculture, 20 percent to industry, and 10 percent to domestic use—drinking,

washing, and bathing (US Department of State, 2012). Industries within developed nations currently consume more than half of all the water available for human use. This demonstrates the inequities of consumption across the global stage, with industrialized nations consuming more than their share of water and, at the same time, garnering greater access to this precious and limited natural resource.

This inequity can be factored in with the staggering increase in demand over the past 50 years. With population growth comes ever more stress on water supply. The world's population is growing by about 80 million people a year, suggesting an increased freshwater demand of about 64 billion cubic meters a year (US Department of State, 2012). With a finite amount of potable water on Earth, one should consider how long we can meet such a rapidly growing demand.

Threats to the national security of water-rich countries increase as other nations realize growing water shortages. Secretary of State Hillary Clinton's commissioned classified study, the *National Intelligence Estimate on Global Water Security*, yielded findings that she called "sobering." According to the US Department of State's media release,

> **"While wars over water are unlikely within the next ten years, water challenges—shortages, poor water quality, floods—will likely increase the risk of instability and state failure, exacerbate regional tensions, and distract countries from working with the United States on important policy objectives" (Office of Press Relations, 2012).**

The overarching trend demonstrated by the study was that in the next ten years, water shortages are certain to become more acute. As this occurs, it is projected that water will become a powerful leveraging tool. Some have said that this leverage is akin to a weapon of attrition, allowing upstream nations to wield the upper hand over downstream nations. Chile first annoys Bolivia; one day Chile may rule Bolivia. Based on this study, Clinton launched the US Water Partnership in an effort to share American water management skills with the rest of the world (Office of Press Relations, 2012).

According to Ania Grobicki, Executive Secretary of the Global Water Partnership, a coalition that includes government, private sector, academic, and non-governmental groups (NGOs):

> **"Water is a global issue and is increasingly seen as a global risk" (Lee, 2012).**

Furthermore, the World Economic Forum's 2011 Global Risk Report states that factors like the rapidly rising global population and growing prosperity place "unsustainable pressure" on resources (World Economic Forum, 2011). Demand for water, food, and energy is expected to rise by 30 to 50 percent worldwide in the next two decades.

A report issued by the U.N. Children's Agency and the World Health Organization states that between 1990 and 2010, over two billion people gained access to safe drinking water. This means that 89 percent of the world's population, or 6.1 billion people, enjoyed access to safe water sources at the end of 2010, but 11 percent, or 783 million people, still do not have access to safe water sources—including about 70 percent of Somalia's citizens (World Health Organization, 2012).

Fortunately, there are answers—answers we can derive from existing technologies that are worth exploring. Even if matters of conservation leave you unmoved, consider the fact that these technologies stand to save the US and other countries billions of dollars per year. According to the American Water Works Association, in 1998 alone, water-conserving fixtures installed in US households decreased consumption by 44 million gallons per day, resulting in a total saving of more than $33.6 million per year. In Figure 4 below, it is interesting to note that almost 14 percent of daily water consumption can be attributed not to matters of overconsumption, but to simple leaks (Mayer et al., 1999).

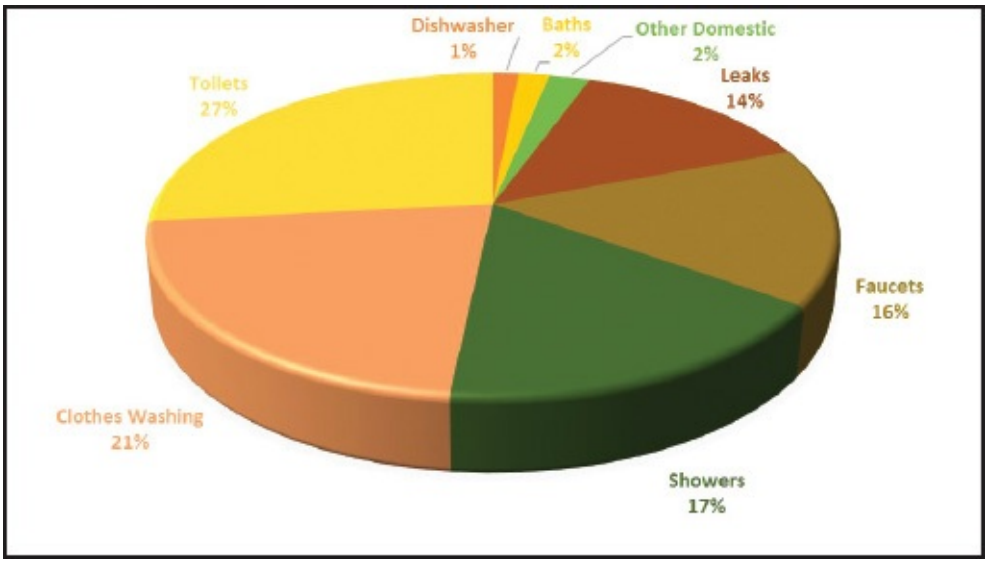


**Figure 4: US Daily Water Use *(American Water Works Association, 2009).***

If all US households installed water-saving devices, some estimates say water consumption would decrease by 30 percent. The estimated savings would amount to 5.4 billion gallons per day valued at $11.3 million (or in excess of $4 billion per year).

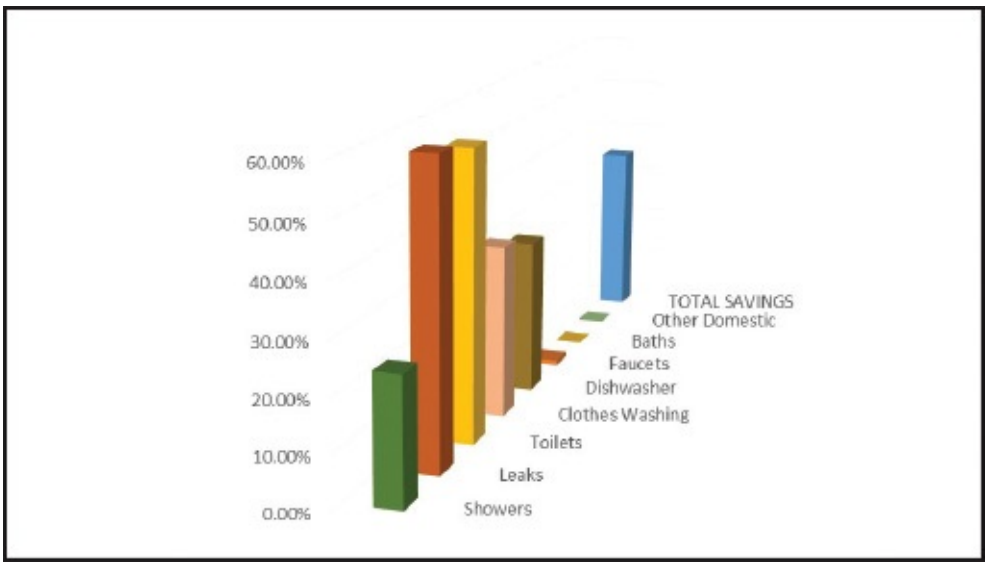


**Figure 5: Water Savings Using Efficient Fixtures *(American Water Works Association, 2009).***

Now let's turn to energy. If we can suggest that the right to water is unalienable and that this right is something we should work to extend to every person on the planet, then it seems reasonable to hold the same premise about the sun. Every living being has a right to sunlight. Why, then, should they not have a right to use that sunlight to generate electricity? And should they not have a right to sell the energy they generate?

In the New Civilization, there will come a need to protect this right with legal measures that will safeguard energy production in the same way as the right of ownership. These arguments should unleash massive proliferation of renewable sources of energy, instead of the guarded attempts made by most nations so far. Individuals also need to be educated about their unalienable right to sunshine as a productive asset and the need to assert that right. Developed nations need to focus their attention on recycling and protecting and cleaning their water sources. These activities require massive resources of energy that can be diverted from the energy that is currently used to provide electricity to homes.

In the Green X Home, everyone wins. The homeowner can save and actually make money by generating his or her own energy, and governments do not need to embark on the lengthy and capital-intensive construction of electric utilities and grids that have detrimental effects on our environment and also demonstrate an uncertain return on investment.

## Conclusion

We can safely conclude that water will, one day, become a right that every living being can access. To justify such a bold claim, in the coming chapters I intend to examine the various facets of the green movement and its impact on societal values, health, poverty, personal finances, and, of course, the environment. It is my staunch belief that when a country reduces its carbon footprint, it simultaneously strengthens its democracy and its position on the world stage. The green movement is not just about battling global warming; it is about spreading freedoms and unalienable rights to billions of people around the world. In the chapters to come, I will explain why, and show you exactly how, this reality is possible.

Not that we don't have plenty of work ahead of us. Studies show that the most industrialized of the developing nations, China and India, emit the most $CO_2$; poorer countries bear the brunt of the negative effects. While Brazil, Russia, India, China (the BRIC) and many other countries grow stronger, richer, and more developed, poorer countries suffer from rising sea levels, irregular and disruptive rainfall patterns, and famine ensuing from a lack of water and mechanized agriculture, as well as political instability.

In many instances, these disruptions to the natural flow of water can lead, and have led, to aggression on the part of the water-poor nations. National aggression is a natural outcome of a country lacking a basic resource, and such a country becomes a national security concern to its neighbors.

Some nations are calling for the establishment of a global green fund to help poorer countries alleviate some of these problems. The target for that fund is $100 billion. But as I will explain in the coming pages, even a straightforward idea such as this faces substantial hurdles before it can ever hope to come to fruition. Greening can and should be a right for all mankind, but we will never make it there without the right alliances, the right resources, the right philosophies, and, most importantly, a healthy dose of true and effective political will. I believe I have identified just such a formula to realize these broad and ambitious changes. Read on to discover how I believe we can make the green movement possible.

# Chapter 4:

# THE GREEN CONUNDRUM

***Everyone wants to go to heaven, but no one wants to die.***

***—Peter Tosh***

Public sentiment changes pretty quickly. Sensationalized stories that make national news can rapidly sway how people think about a given issue. But whenever we talk about real and significant change from a government body, we have to recognize that the gears usually turn painfully slowly. Do you realize that while the first official efforts to enact women's right to vote came as early as 1848, it was not until 1920 that the US finally ratified that right nationally?

It is crazy to think that something so obvious and so rational took our nation so many years to figure out. The good news is that when it comes to developed nations, what is *right* eventually wins out. The public outrage that surrounded Michael Vick's dog-fighting scandal stemmed from general moral objection to the inhumane treatment of those poor dogs, however until relatively recent times, fighting dogs or roosters was not only commonplace, it was a social event.

One hundred fifty years ago, the United States accepted the practice of owning another person and treating him or her as property. Only 60 years ago, retailers constructed separate rest-rooms and water fountains for use by people of different races. Smoking used to be normal in the workplace—everyone from the President to peons would light up wherever they happened to be. It was even common for newscasters to wave their cigarette around during live TV broadcasts. Today, we have laws banning smoking in nearly all places with four walls and a roof. Across North America, if you want to have a cigarette in January, you have to brave the cold.

America has undergone any number of grand, sweeping changes to social norms that now seem completely unbelievable. Imagine your community today where women cannot cast a ballot, people buy and sell other people, or where smoke hangs thick in the air at the office. All of these thoughts might seem absurd. Similarly, many of my esteemed colleagues believe that shifting to a green society is an outlandish (pun intended) notion. I disagree.

We abolished slavery. We championed equal rights. We eliminated unwanted second-hand smoke. Why should it be impossible to go green?

In part, it is challenging because making the change will be admittedly complex. In much the same way that the above-listed advancements in American history required hard work and sacrifice, the road to a green society will be rocky. Nevertheless, most people (despite their

position on the reality of global warming) agree that adopting a green energy policy would in fact yield economic, health, social, aesthetic, financial, national security, and, of course, environmental benefits.

Of course these advances will only come at a price. Therein lies the conundrum: we know we can improve our society with green growth, but we also know the task will take lots of money, discipline, study, ingenuity, and cooperation. Benefits will come only after our collective nod YES and do what's needed.

Years later, generations to come will marvel at our unimaginable life *before* the green revolution.

## The Economic Conundrum

The story begins with the inherent problems of a broad-based green growth initiative. For countries like the US, any initiative implementing long-term change requires grand-scale processes that are usually beyond the means and motivation of most politicians or corporations. Most green efforts work primarily at the local level. Even then, what helps one community sometimes damages another. Implementing green initiatives in developed countries is costlier than in developing countries because it takes a great deal more time, effort, and money to "clean up" something that has already been built than to build up something new with green principles in mind. It's the night-and-day difference between landscaping a brand new yard or re-landscaping one that is overgrown with neglected bushes and trees and plenty of weeds!

Many developing nations, particularly China and Brazil, currently struggle with the relationship between the *seemingly* contrasting disciplines of economic development and environmental consciousness. Their approach to industrialization seems to mirror that employed by the United States and Europe 100 years ago: to meet the growing demand for electricity and transportation by way of coal plants, gasoline engines, and myriad other solutions that depend on fossil fuels.

Competition for limited and unreliable material supplies, unstable and unpredictable fossil fuel costs, and market disruptions and unpredictability have made that method of industrialization no longer sustainable. And I am not just talking about the environment here. Greater consumption of fossil fuels equals a greater drain on available resources. The more developed countries battle over these resources, the more unaffordable and unreliable they become, especially for poor and developing nations. The more unaffordable they become, the more difficult true progress becomes, and the more we disrupt the delicate balance of the global economy and political stability.

If we are to both thrive economically and survive environmentally, countries like the BRIC must strive for industrial development via technologies that bypass dependency upon fossil fuels. They must go green *first,* in contrast to nations such as America and Europe who are looking to green after decades of polluting the air and depleting fossil fuel reserves. Without such green initiatives, the damage they could cause to the environment (and, in turn, the global economy) might well become catastrophic.

But does green growth work? Not if global politics reign supreme. If China can be exempted from the Kyoto Protocol's GHG emissions standards, if politicians win office based on the promise

of new jobs in so-called "clean coal," then the initiative is ineffective. Unfortunately, the world's economy and environment can no longer wait for the political will to change.

Bad environmental policy affects the economy, often deeply. Consider China, where government-subsidized programs resulted in unbridled economic growth—often at the expense of the environment. The net result? Even as China works to undo the damage of the past 25 years, the Chinese Academy of Sciences reports that 43 percent of surface water is too polluted to use (Mayer et al., 1999). The air quality in cities like Beijing and Harbin can reduce visibility to ten meters, forcing the shutdown of factories, public transportation, schools, and airports (The Economist, 2012). In addition, scientists are beginning to see the impact on the health of the population.

Consider also the rate of population growth worldwide. The United States, with all its luxuries, still consumes the most energy and creates the most pollution. Moreover, many countries are in the process of Americanizing, developing a bigger and more demanding middle class. With every new middle-class citizen, there will be more demand for cars that pollute the air and large homes that require substantial power to light, heat, and cool. Citizens' highly diversified diet consumes more water and land. The more the air is polluted, the more taxed the energy grid. The more water that is dedicated to animal and grain growth, the less viable and available the remaining resources.

Cleanup is costly. Scarce water is more expensive than plentiful water, and land comes at a premium when massive farms occupy so much of it. For many developing countries, the day has come to plan green growth at the outset, rather than as a bandage to apply to the wound after bad development has already taken hold.

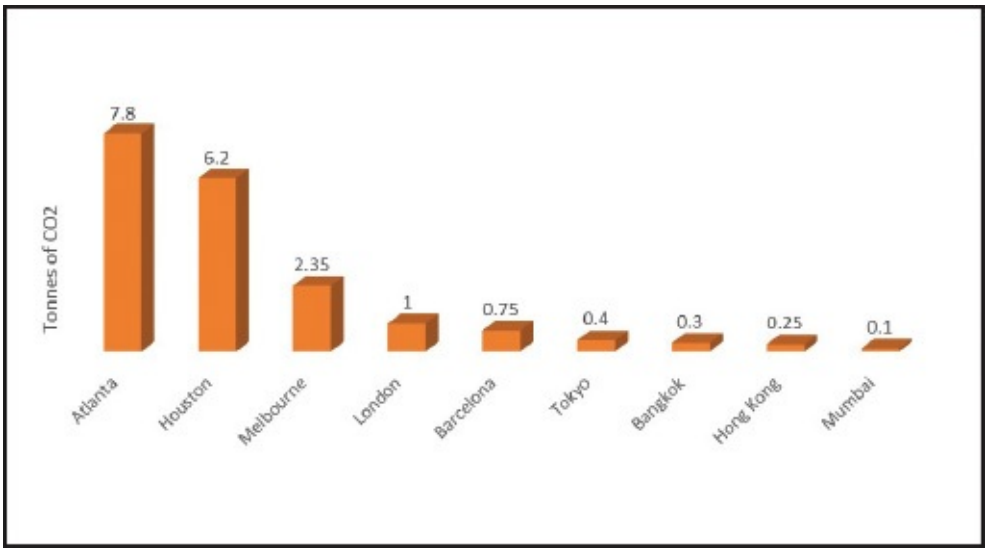


**Figure 6: Urban Transport Emissions (World Bank, 2013).**

Compare Barcelona with Atlanta. Despite similar populations, Barcelona has much greater density and a modern and functional mass transit system. Both Atlanta and Houston, meanwhile, suffer from massive urban sprawl along with legendary traffic problems.

Unfortunately, the necessary changes are not without difficulties. Gaining ground in one area (say, air pollution) can cause problems in another (say, soil contamination). Consider the nuclear power conundrum. Yes, it is an incredibly efficient, relatively cheap source of electricity for millions of people, but its byproduct is toxic. If we support nuclear power, we must also decide how to support solutions for the waste that quickly becomes an issue of Not in My Back Yard (also known as NIMBY).

For developing countries, the problem is more complex. While solar power might make sense for countries near the equator, it is less feasible when most people cannot afford solar panels to install in their homes and must rely on the government or utility companies for electric power. But without power lines, there is no way to deliver that power to their homes.

Then there is the complex issue of subsidies. With each change of guard in administration, opinions change on how to deal with the most important aspects of conservation. Consequently, subsidies doled out during each term have a tendency to linger long after they are useful. Consider appropriations for corn-based ethanol production in the United States. Whether and when corn ethanol becomes a viable replacement to gasoline is not relevant. How those subsidies impact patterns of growth and demand for corn *does* matter. Not only does corn require a tremendous amount of water, it is also key to determining food prices. In 2012, we saw the dual effect that subsidies and a warm climate can have on a crop. Farmers resolved to grow more corn than ever before. The drought devastated the crop. Prices shot up, and we experienced a shortage of many processed foods that rely on other grains and soybeans that farmers might have grown in larger supply if not for the subsidy.

Further economic problems remain. Without globally adopted prices for carbon, water and land, any sweeping change, whether at the local, national, or international level, can lead to economic shock. Without globally adopted policies for GHG reductions, one country might manage to reduce its carbon output, while another country might wipe out the gain with non-green growth. Without better auditing of environmental costs, it will remain difficult for companies, both large and small, to take stock of exactly how much damage their processes are doing to the environment.

## The Political Conundrum

In the previous section, I outlined a number of economic hurdles that we will have to overcome if we ever hope to shift toward a green economy. Many, if not most, of those hurdles are politically driven. Obviously, this is because politics drives everything on this planet, however it is also because politicians in developed countries find themselves in a difficult position when it comes to the promise of green initiatives. On one hand, it is pretty clear that "going green" would benefit any number of political hot-button issues. It would create jobs, improve the environment, and ease tensions with many opposing countries (more on that in the next section). On the other hand, there is still so much money and so many jobs in fossil fuels, and sticking to the status quo maintains those jobs and gets the politician re-elected. So how can we get politicians thinking about the future?

It begins with an examination of the individual. Politicians, like everyone else, are born and raised with certain values, the evolution of which tend to become entrenched based on the fraternity, political affiliations, and social alliances of the politician.

Take, for instance, 2012 GOP nominee Mitt Romney. Following the killings in a movie theater in Aurora, Colorado, Romney offered a tepid response to the question of whether the country should enact new gun laws. Whether Romney himself believes that US citizens should be allowed to own arsenals of semi-automatic weapons does not matter. Modern politics dictated the thing that mattered in that moment: Romney did not want to upset or alienate the National Rifle Association. And he certainly didn't want to lose their financial support.

My intention is not to pick on Romney or even the conservative right. What I am demonstrating is that even in the case of a politician who believes that green initiatives are important for a healthier economy and environment, change might not occur because of political influence. Instead, many politicians have been indoctrinated to rally behind big oil and eschew everything that even suggests the introduction of greening. Politicians will always abhor polices that are good for the planet or otherwise, if they do not fit into the core principles of their political party or the sources of their financial backing.

The problem here is that politicians, like everyone else, are driven by self-interest and allegiances, by money and power. This is because money and power ensure comfort, safety, and purpose for oneself and one's family. Humans consider it a matter of survival.

It is not just politicians who suffer from self-centeredness. Take anyone you like from any background and you will find that their chief priority is looking out for themselves. There is not anything inherently wrong in this; self-preservation is important. But, it is also important to consider the larger world.

Imagine a bartender in a big city. Suppose his family has worked in the retail distribution of liquor for at least a generation. Having grown up in and around a bar, we can guess a few things about his background and perspectives. If it is a seedy bar, he might hold a worldview steeped heavily in the realities of the underground. He has seen his fair share of addicts and drug dealers, prostitutes and pimps, perhaps bookies and hit men and all other sorts of the criminal element. We surmise that he has likely seen and served many alcoholics, and even though he knows drinking is harmful to them, he will continue to serve them liquor because he is more interested in the welfare of his family's business than his patrons' health.

Similarly, when a person is elected to office, he does not change his stripes. He continues to compromise the welfare of his constituents in the same way that the bartender compromises the welfare of the alcoholics in the bar. His voice will sound human and caring, but his actions will be fruitless and unproductive. His drive will be to speak as powerfully or as meekly as the circumstances require, to safeguard the interest of the party and to get paid generously by special interest groups, while ignoring the needs of his constituents.

So here we have the primary problem, the ultimate political conundrum: how to make hundreds of self-serving politicians look beyond their immediate personal interests and start doing things that benefit the world at large? With so few substantial green technology patrons available and able to buy the loyalty of the people in power, it is likely to be an uphill battle. Until then, politicians will likely maintain their course, upholding unsustainable, environmentally damaging, economically draining, and national security-threatening energy policies.

## The Diplomatic Conundrum

When we think about the political spectrum on a global level, the picture gets even more complicated. Politicians do not have to worry about only what's happening here at home, they also have to jockey for prominence on the world stage. The US finds itself in a particularly precarious situation, given that its continued addiction to oil and other fossil fuels requires it to toe the line of shaky alliances with countries that do not seem to share its political interests. So how does this affect green policy?

To find the answer, consider the friends the US has made in order to ensure its access to oil: Pakistan and Saudi Arabia, for starters. The United States considers Pakistan an ally, even though they harbored and still do harbor terrorists—including recently deceased Public Enemy Number One, Osama Bin Laden. Indeed, they even punished those who helped us find him. Just like ransom money from Somalian pirates, Pakistan receives billions of dollars in aid from the US government, due primarily to its supposed cooperation in the war on terrorism. They claim to share information on terrorists with the United States—and maybe they do—however, it seems they forgot to share the whereabouts of Bin Laden. The United States has funded Pakistan handsomely to aid in the war on terror, but Pakistan refused to divulge where the US could find the man who orchestrated the single largest terrorist attack on American soil. And they are considered a US ally in the war on terror?

You have to wonder about the real reason the United States sucks up to Pakistan. It is simple: nuclear weapons. Some suggest that, to create a peaceful zone between Pakistan and India, the United States must keep Pakistan in check. One way to do that is to send them money and weapons.

Enough about the country in which Bin Laden died. Let us talk about the one in which he was born: Saudi Arabia. Despite being one of our strongest allies in the Middle East, Saudi Arabia has excelled in breeding international terrorists. Fifteen of the terrorists responsible for the attacks on September 11, 2001 were from Saudi Arabia. We attacked Afghanistan for harboring terrorists. We attacked Iraq under the pretense that they harbored terrorists. Yet, we still buddy up to Saudi Arabia, one of the truest and richest safe havens for Islamic terrorists in the world. Why? Oil is the simple answer. Saudi Arabia has a stable government that holds a tremendous share of the world's oil, and the United States consumes a tremendous share of the world's oil. It is as simple as that.

So with these two countries holding so much sway over the United States, it seems logical to deduce that any shift toward greater reliance on green technology and lesser reliance on foreign oil will require quite a bit of political maneuvering on the world stage. The US simply cannot change its policies overnight without angering several key countries it has come to rely on. And the United States is merely one player in this game. Every developed nation in the world maintains alliances with countries with which they agree and with which they disagree on key political issues. Upsetting the balance of commodities exchange could result in a tremendous upset to the balance of power. To "go green" will require more than just political will and foresight. It will require careful planning to make sure critical international alliances do not disintegrate into conflict.

Yes, the shift toward a green economy in the United States and elsewhere will have more than its fair share of complications. Yes, the outlook is bleak. But you could say pretty much the same of every major political, social, and economic change the United States has ever undergone. Recall this chapter's opening thoughts. Women's suffrage, the abolition of slavery, even something as seemingly simple as banning smoking indoors, all of these things eventually came to fruition because they were *right*. They were *just*. They *needed to happen*. It is my firm belief that the same is true of the green movement. Without that political, social, and economic shift toward greening, the environment, the global economy, and the political arena will all be thrust into chaos. As in other epochs, despite all the chaos, individual self-interest will build the path into the green economy.

Our nation has done great things in the face of immense need. We need to rise to the challenge again. With the environment deteriorating and the economy flagging, we must look for ways to overcome our common problems and forge significant change.

Arguably, the common thread between our past, impending environmental catastrophes and our repeating economic downturns is our dependence on fossil fuels and on those who have them. The need to expand the opportunities to increase personal cash flow income will have clear repercussions in the green economy, because the green economy is an individual as well as a communal need.

## The Green Economy

When we inevitably reach that great day when all these conundrums are resolved and the world moves toward what is right and what is needed, what will a "green economy" actually look like? It is tough to define. A green economy comes with vast socioeconomic and political implications; it means different things to different people. According to the United Nations Conference on Sustainable Development (2012), the green economy offers the clearest promise of economic growth, alleviation of poverty, and protection of the Earth's ecosystems. To achieve economic growth, it is necessary to increase aggregate demand, meaning an expansion of spenders with enough cash flow to satisfy the pent-up demand that poverty warehouses.

I would add to this that a green economy requires a new brand of thinking about what "growth" means and what it will require. The industrialized nations of our planet need to understand that the old way of industrializing is no longer the only way.

Modern industry requires more than vast factories and huge smokestacks. We have entered a techno-industrial age with radically different economic development paradigms. Gone are the years when economic development was fueled exclusively by major infrastructure projects. The rebirth of cottage industry, organic and sustainable agriculture, microbreweries and distilleries, telecommuting, buy-local programs, and small-shop technology development are all signs of this shift. The availability of massive computing power in a small box, instant communications, and access to knowledge, markets, and financing make this possible. The ever-rising cost of transportation of goods and people, the inefficiencies of massive corporations, liberalization of regulations and laws, and a growing distrust of large politically active companies make the cottage industry desirable. We have now entered an era when liberalizing the barriers to technology transfer and development, changing patterns of production and consumption—including trade in agricultural products—and capital flows makes more sense than ever before.

From a macroeconomic standpoint, industrialized and developing nations must take into account the welfare of future generations. They must proactively reduce damages caused by environmental degradation, climate change, loss of biodiversity, and especially damage to wetlands and water systems. It is no longer acceptable to destroy the land or pollute the air and water to support throwaway consumption and fuel-burning energy production. The global marketplace must consider the longterm ramifications of unfettered capitalism. It will be up to the governments of the world to protect the planet and to provide a working economy based on renewable resources—not a declining economy based on extraction, depletion, and pollution.

I have chosen to call this chapter "The Green Conundrum" because we can define economic development as the capacity of a country to constantly generate new activities that create wealth,

but the picture becomes a riddle because a green economy requires a multifaceted approach to growth that transcends geographic, cultural, and political borders. In a green economy, sunlight is a valuable resource in pecuniary terms, a house is a productive asset, water is an unalienable human right, global connectivity is an economic imperative, and human productivity has a global virtual market.

To make these ideals a reality, developing and developed nations must make investments in infrastructure and industry, but they must also make investments in local energy production and in furthering global connectivity by way of ensuring access to computers and the Internet by their citizens. In the green economy, we cannot reserve communications exclusively for the wealthy and we cannot have a handful of mega-corporations controlling energy. In a green economy, the personal, quite literally, is political.

Let us answer the question of how this initiative would benefit global society and global economics. The new green economic reality challenges even our most basic measurements of economic activity. Many economists agree that the Gross Domestic Product (GDP) should include measurements of natural resource depletion and pollution, something that would change the traditional GDP formula to:

***GDP = Consumer Spending + Government Spending + Business Investment + (Exports - Imports) - Natural Resource Depletion - Pollution***

This formula is arguably more accurate because it accounts for the net effect of the productivity and depletion of the country's available resources.

Take the contribution of a gold mine to the GDP. The mine increases the GDP as its operators invest hundreds of millions of dollars in the purchase of the land, capital equipment, transportation, etc. It creates hundreds of jobs and those employees contribute to consumer spending, as do the mine's operations and consumption of goods. Various government entities will also spend on supporting infrastructure, regulatory inspections, licensing, etc., also adding to the GDP. That is where the current definitions of GDP leave off, neglecting the effect of the removal of gold and depletion of a finite resource. Traditional conceptions of GDP also ignore the effect of scarring the land, destroying a native habitat, polluting the water supply and impeding recreational and natural assets.

GDP is widely used as a lagging indicator of economic well-being, but after the inclusion of natural resource depletion and pollution, nations with large mineral exports would find their GDP substantially diminished. GDP can be increased through serious investments and policy changes to introduce the green economy to these countries, thereby increasing production without decreasing resources.

According to The McKinsey Global Institute, migration to urban centers will increase the population of consumers in new market-cities by one billion by 2025, amounting to 65 percent of global growth and contributing $30 trillion dollars to the economies of those 600 cities (Dodds et al., 2012). That is a very plausible scenario because agriculture is an economic activity where economies of scale are imperative, hence the takeover of much of the productive land by large farming enterprises and the movement of those farm workers into urban environments.

As these changes occur, the natural resource depletion and pollution elements of the new GDP equation become more prominent. Population growth leads to more consumption, particularly

when a higher and higher percentage of the new urban population climbs into the middle class. More consumption leads to more resource depletion and pollution.

Consider the natural resource depletion and pollution cost of beef production, for example. Raising cattle as livestock to produce the beef needed to feed a growing middle class taxes the environment and the economy. Producing cattle for beef requires a great deal of feed and water, draining the resources of many communities trying to lift themselves out of poverty. Beef can be grain-fed or pasture-raised. The former creates a competing market for grains, raising the cost of corn and other grain stocks. Pasture feeding consumes land, water, fertilizer, and fuels that could otherwise be used for food production. As the middle class satisfies its taste for beef, the poor struggle to find water and affordable grains. It is a never-ending cycle, with no one getting ahead.

Global population trends suggest that this problem is only going to intensify. From 1970 to 1995, consumption of meat in emerging nations increased by 70 million metric tons—almost triple the increase in industrialized nations (Delgado, 2003). Likewise, milk consumption has increased at more than twice the rate seen in developed countries. Similar trends are seen for other meats and agricultural products.

Interestingly, emerging nations now appear to be consuming even more meat than industrialized nations. For more than a decade, the strongest increases in meat production have been in the developing world. Finally, in 1995, we reached a milestone where, for the first time, more meat and dairy products were produced in developing nations than in industrial countries, and this trend has continued. In 2007, at least 60 percent of meat was produced in developing nations. It is as if these once-poor populations cannot get enough of what was considered to be a luxury. Still, they account for 85 percent of the world population, but only 63 percent of world meat consumption and 60 percent of milk consumption. On a per-capita basis, industrialized nations consume 88 kilograms of beef per year, while emerging nations consume 25 kilograms (Ashton, 2011). China recently passed the United States in beef consumption, a major barometer of economic success. Clearly, there is still much room for the developing nations to demand more production of high-cost commodities.

Why does this matter? Because it comes at great cost to the environment as well as the economy. Many countries are lifting a large percentage of its people out of poverty, at great cost to the environment, and to the poor. None of this is sustainable long term.

Livestock production uses 30 percent of the world's entire land surface and consumes 23 percent of all water resources designated for agriculture (Matthews, 2006). According to the UN's Food and Agriculture Organization, which neither states nor implies in any way an endorsement of this author's views:

> **"When emissions from land use and land use change are included, the livestock sector accounts for 9 percent of $CO_2$ deriving from human-related activities, but produces a much larger share of even more harmful greenhouse gases. It generates 65 percent of human-related nitrous oxide, which has 296 times the Global Warming Potential (GWP) of $CO_2$. Most of this comes from manure. And it accounts for respectively 37 percent of all human-induced methane (23 times as warming as $CO_2$), which is largely produced by the digestive system**

**of ruminants, and 64 percent of ammonia, which contributes significantly to acid rain" (Matthews, 2006).**

Surely, these economic and environmental trends cannot continue. Something must be done before we reach a global disaster. We must shift toward a greener, more sustainable, and more united growth effort.

## The Education Conundrum

It all begins with education. Even despite all the recent shifts in educational capabilities (the mobile revolution has, and will continue to, change the world), the green revolution remains weighed down by the preponderance of old-world educational mind-sets. Many simply do not believe a green revolution needs to happen. They hold that global warming and other environmental changes are simply fiction—despite overwhelming evidence to the contrary.

In the United States, even the education system is oil dependent, a fact that teaches most educated US citizens to think about foreign policy through oil-dependent glasses. As the US falls victim to this tendency to focus on the past, the rest of the world seems to be passing it by. The BRIC countries, with their greater concentration on shaping a future independent of foreign sources of energy, have lately been producing far better students and far more doctoral candidates than the United States. China produced more PhDs than the USA for the first time in 2008 (Maslen, 2013). The rest of the developing world appears to be concentrating more and more on sustainable ways to solve problems, while the US continues to focus on maintaining the status quo.

When we talk about the green economy, we are talking about an entirely different standard of living. The good news is that new technology makes it far easier for the US to bridge the gap between where it currently stands, where it would like to stand, and where it *could* stand as a world leader in education and development. Thanks to mobile devices, the now-ubiquitous PC, and the Internet, nearly all of the accumulated knowledge of mankind is available at our fingertips. Where there was a time when we needed to memorize knowledge provided by textbooks and encyclopedias, now we all carry it in our pockets. With easy online access to even the most advanced educational courses, a person doesn't even need to attend a university anymore. With that in mind, as we move forward toward the green revolution, we need to redefine what we mean by "education". Employers need more graduates with critical-thinking and problem-solving skills, there's less dependence on rote learning and memory skills. The "book knowledge" that has been so prized is giving way to new kinds of intelligence.

The need to define energy independence has become a priority. The discovery of fire, one form of energy independence, promoted communal living as well as the development of agriculture, tools, and weapons. Similarly, energy independence based on renewable sources will increase the radius of individual interaction to include the whole world. It will be a revolution similar to what we saw in the way that social media networks affected the Arab Spring. Likewise, websites that provide products and service reviews are helping create uniform quality, while the Law of One Price promotes the commoditization of virtually all products and services.

## Entrepreneurial Plod

Irrespective of the conundrums, the entrepreneurial spirit responsible for almost all inventions has already started to become evident in the green economy. The thousands of homes with photovoltaic panels on their rooftops all over America demonstrate that homeowners see potential cash flow from their home. Another example is Uber, the online chauffeur brokerage. Since the first oil crisis in the Carter administration during the 1970s, state and federal governments spent billions building lanes for high occupancy vehicles without much success. However, when the entrepreneurial spirit got hold of the idea that drivers could make money by using the seats in their cars, the idea to share a ride became popular. In the case of Uber, the political will preceded entrepreneurial motivation.

Here's an important example of the fact that the entrepreneurial spirit can be guided. It has its own time frame, and it can create power. Look at the medical and recreational use of marijuana. Once the entrepreneurial spirit got hold of this matter, the political, social, educational, and economic will created enough momentum to legalize it. The same is happening with the green economy, and this is what will drive it to effect larger social change.

## Conclusion

In recent years, it has become abundantly clear that the environment, the global economy, and global security would all benefit from an energy-independent America. Yet, many obstacles stand in the way. But, as we have seen time and again throughout history, what is needed, what is right, and what is just eventually wins out over what "has always been." With the right opportunities, the right philosophies, and the right political will, the green initiative will become an imperative. On that day, we will see a great landmark in American history. On that day, the US will free itself from its dependence on the resources of other countries to sustain its economy and its well-being.

It is not hyperbole to say that it can be considered key to saving the global climate, promoting universal prosperity, and even achieving that apparent utopia of peace on Earth.

# Chapter 5:

# FERTILE GROUNDS

***In the long term, economic sustainability depends on ecological sustainability.***

***—America's Living Oceans, Pew Oceans Report, 2003***

We know that the green movement is trending dramatically on the world stage. With resources dwindling in many countries, and technologies advancing at an unprecedented pace, it seems like only a matter of time before more countries join the "Green Club." If we can assume that such a Green Club exists and that its membership will only expand, my goal is to identify some prerequisites nations must satisfy in order to join it. No matter what you might believe about my arguments up to this point, we can all agree on one thing: water is an essential component of life. Both from a scientific perspective as well as the practical perspective, a person's well-being first begins with access to water.

In Chapter 3, I made the case that water will soon become the new "unalienable Right," following or leading to potentially explosive geopolitical tensions regarding the availability and sustainability of many developed and developing countries' water supplies. The concept of water as a basic human right raises many ownership questions, with answers that vary greatly, depending on which side of the pond (or river, or lake, or stream) you find yourself residing. Who can claim the rights to a flowing river upon whose stream several nations may rely for their survival? In other words, no country can become a member of the Green Club until it determines reasonable, sustainable, and most importantly, *equitable* means of water distribution to its population and its neighbors.

Another prerequisite is that a country must have sufficient technology to effectively accomplish energy independence. Explosive technological advancement has led to steady growth for many sectors in the world's economies over the past three decades. It has also established a trend for improving standards of living and providing better and more capable products at lower prices with each passing year.

The more technology proliferates, the more globalized the world becomes and the closer we get to the Law of One Price dominating all aspects of the world economy. Essentially, the Law of One Price states that once exchange rates are accounted for, arbitrage will eliminate any price differences across markets. Many new developments, including the introduction of microprocessors and the increasing popularity and accessibility of social media, promise to

accelerate this process. Green Club members must be able to present and deploy solid, sustainable, and again, *equitable* plans for the use and development of green technologies.

Beyond the institutional, social, and economic infrastructure prerequisites, there are a few other precursors for aspiring Green Club nations. At first glance, it may look as though these institutional prerequisites are just the natural purview of most industrialized or industrializing nations, but most developing nations have, in their own small measure, adopted policies and practices that can qualify as green. Later in the chapter, I will present a series of examples regarding poorer or developing countries championing green efforts. For now, let us consider the following prerequisites often displayed by the wealthier and developed nations currently going green. They tend to expend a larger percentage of their GDP on research and development, win a disproportionate number of Nobel Prizes, put forward a large number of gold medal winners in the Olympics, serve as friendly environments to some of the world's largest and most popular retail chains, and enact the most favorable laws when it comes to human rights and equality. On that last point, the correlation between the greenest countries and the countries with the most favorable laws for disabled people is particularly intriguing. This will be discussed later. Let us now examine the most fertile grounds for further green development.

## The Grounds of R&D

Given that green technologies represent the cutting edge of global energy concerns, it makes sense to begin our search for the fertile grounds of green by examining countries directing the highest percentage of their GDP to research and development. Those near the top of the R&D matrix in fact lead the world in green energy expansion; they are closest to joining the Green Club. This is a direct function of cause and effect. Those countries with more advanced technology in general also have the best green technology and the capability to deploy and utilize that technology.

As reported by the World Bank, among all countries surveyed from 2005 to 2010, the percentage of GDP dedicated to R&D varies from 0.02 percent to 4.4 percent and has averaged 0.93 percent (World Bank, 2013). Not surprisingly, the United States resides near the top of the list, dedicating 2.9 percent of its GDP to research and development. The BRIC countries of Brazil (1.16 percent), Russia (1.16 percent), India (0.76 percent), and China (0.79 percent) have historically dedicated around 1 percent of their GDP to the cause, but all four countries have seen surges in those numbers of late. Denmark, Finland, Germany, Sweden, Japan, and Israel lead the pack at, near, and oftentimes over 4 percent. It is no coincidence that these countries win a remarkable number of Nobel Prizes. Note that there is a direct correlation between the countries listed above and the leaderboard for green technologies. It seems reasonable to suggest, therefore, that any country hoping to join the Green Club must first begin to invest heavily in research and development.

## The Grounds of Nobel Prizes

The more a country dedicates to research and development, the more likely it is to be represented in the annual list of Nobel Prizes, and the more likely it is to be a leader in green technologies.

Need proof? Consider that the list of Nobel Laureates for the past ten years by country of residence is dominated by the United States (54 laureates), United Kingdom (11), Japan (11), Israel (6), Russia (5), France (5), Canada (5), Germany (4), and China (3). These countries account for nearly all of the Nobel Prizes won during that period. The Eurozone combined won 34 prizes in that same term.

It is no coincidence that many of these countries are also leading the charge toward greener energy production. They should consider themselves full members of the Green Club, and many continue to solidify that membership with each passing year.

## The Grounds of the Olympics

We also find fertile grounds for the green movement in countries that have excelled in the Olympics, as defined by the cumulative number of gold medals won. Consider the list below:

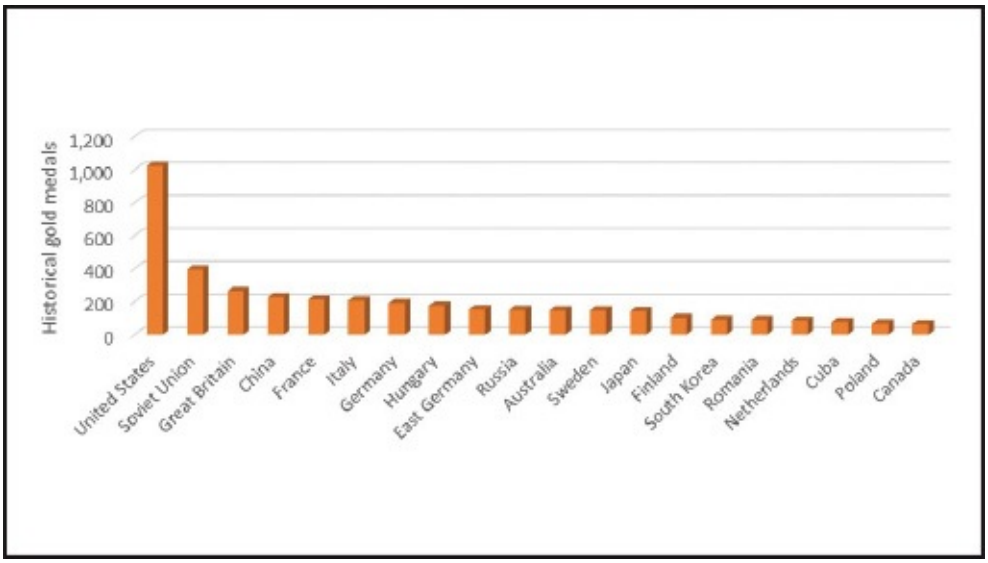


**Figure 7: Olympic Gold Medal Count (*Topend Sports, 2016*).**

With a few exceptions, this list closely follows the leaderboard for green technologies.

## The Grounds of Retail

When we examine the world's most recognizable brands (Walmart, McDonald's and Coca-Cola), we find that the most fertile grounds for green initiatives reside in countries that harbor the largest numbers of these three companies. Interestingly, these retail giants are trending toward greening up their own business practices. All three are world leaders in the sustainability movement.

In the case of Walmart, we see a company that has undergone nothing short of a green renaissance in recent years. It does not seem a stretch to suggest that by its mere omnipresence across the US, Walmart's focus on sustainability will become contagious, so to speak, with a symbiotic relationship extending to other retailers, consumers, and even political systems—with a net effect of "the whole country" becoming greener.

What began as an attempt for Walmart merely to create a buffer between itself and environmental criticism became a massive re-envisioning of corporate sustainability principles.

Their foray into the initiative has revealed that going green is not only socially responsible, it can actually be profitable. The success with which they have implemented various initiatives, and their remarkable effect on the company's bottom line, has influenced other retailers, even full industries, to begin thinking in more environmentally sustainable terms.

The potential impact on the world is staggering. Walmart currently has a presence (defined as either a Walmart or Sam's Club store set up in a given country, as listed on Walmart's website) in 27 countries (as of July 31, 2012). Nations from Argentina to Malawi to Zambia, and many developing and developed nations in between, now host the chain. With so many countries seeing the environmental and pecuniary benefits of Walmart's new green strategy, it seems to have become one of the primary indicators of a country's ability to join the Green Club.

Two other major players in this new wave of green include McDonald's and Coca-Cola. Consider the following list of countries in which McDonald's operates (including the number of restaurants in each given country):

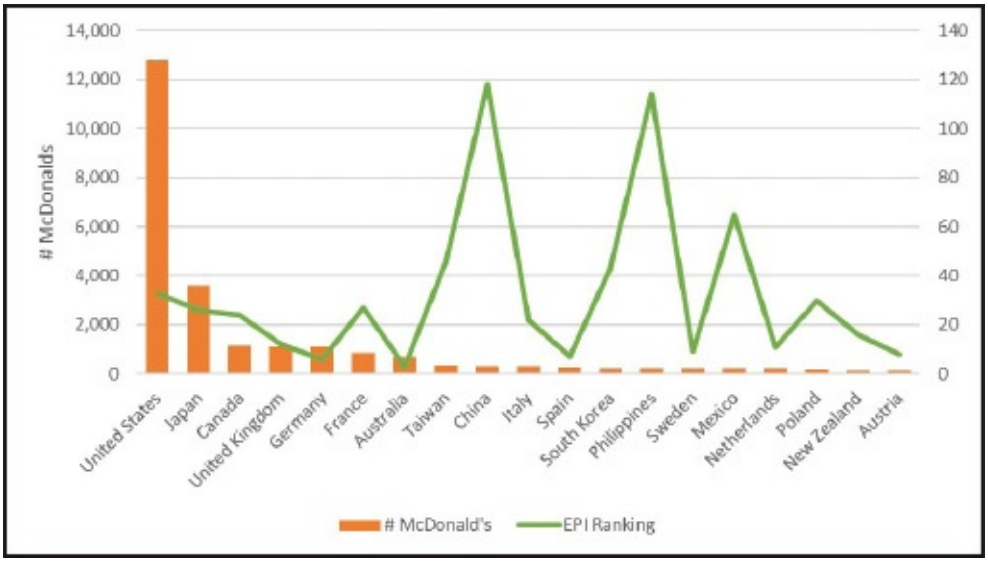


**Figure 8: McDonald's Operations vs. EPI *(Environmental Performance Index, 2012).***

McDonald's has well over 20,000 restaurants worldwide, giving the chain a considerable footprint in all four hemispheres. The third column in this table is the Environmental Performance Index, for each country, compiled by Yale University's Center for Environmental Law and Policy together with Columbia University's Center for International Earth Science Information Network (Emerson et al., 2012). With the notable exceptions of China and Mexico, which have many McDonald's but not much concern for the environment, it is clear that this list happens to reflect the list of the world's greenest countries.

More to the point is imagining the green impact that 20,000+ McDonald's could make on a country if they sparked a revolution among other businesses. Coca-Cola could deliver that same revolutionary impact as they operate in literally every country in the world—except for North Korea and Myanmar. The influence and empowering technology of such enterprises could create a promising synergy to move each country in which they operate further and faster on the path to Green.

*Walmart and Real Estate*

Walmart's global expansion could yield more positive economic benefits related to home values. According to economists Devin Pope (University of Chicago) and Jaren Pope (Brigham Young University), when a Walmart store opens, surrounding home prices tend to surge. Between 2001 and 2006, they analyzed more than one million real estate transactions near 159 newly opened Walmart stores. Prices of homes located within a half-mile of a new Walmart rose 2 to 3 percent, an average gain of $7,000. Even as the Walmarts age, homeowners see continued increases in their home values between 1 and 2 percent during that period, or approximately $4,000.

So what does all of this mean? It means that the more a country accepts Walmart, the more its median home prices rise. The more its median home prices rise, the wealthier its citizens become. This leads to a probable rise in GDP, which leads to a probable rise in R&D, which leads in turn to a probable rise in green technologies in the countries in question (Pope and Pope, 2015).

**Figure 9: Walmart's Effect on Real Estate**

## The Grounds of Human Rights

Finally, if we take a look at the countries that lead in various trends related to diversification of economic systems and highly specialized skills, we begin to see a clearer picture of which countries might hope to lead the Green Club in the future. When examining specialized skills and what they mean to a diversifying economy, an intriguing market segment emerges. According to a September 2012 article in The Economist entitled, "Disability and Business: The New Green: Business May Find Disability as Important as Environmentalism," one of the most substantial emerging markets—in terms of employment, consumption, and productivity—is the labor market for disabled people (The Economist, 2012).

Jorge Perez of Manpower, an employment-services firm, says disabled people frequently have unusually high productivity. Thorkil Sonne, the founder of Specialisterne, a Danish firm that finds high-tech jobs for autistic people, says that they can focus on repetitive tasks that might be boring to other workers. Britain's electronic-espionage center, GCHQ, eagerly recruits people with autism and Asperger's syndrome. Their ability to spot patterns can make them ace code-crackers (The Economist, 2012). In many cases, we are seeing recruiting agencies actively harnessing and marketing the skills of people who until recently were considered disabled, or even unemployable.

Despite all this potential and demand it seems that, of the companies in the S&P 500 Index, only 25 percent boasted strategies aimed at the disabled market, and a mere 6 percent concentrated a great deal of their business on that same market segment. Furthermore, Rich Donovan discovered an amazing correlation by way of his Return on Disability Index (an index he developed to track the shares of the top 100 most disability-friendly firms): firms best known for employing the disabled outperformed the stock market for five years running (The Economist, 2012). What might this imply? That more progressive and open-minded companies succeed better in the marketplace. Correlation does not imply causation, but it is certainly a noteworthy relationship.

That data might seem surprising, but it should not. Industrialized nations have always required highly specialized skills that can only be found in people with specific capabilities that, due to the strength of these qualities, may be considered as outliers of normal behavior. Those outliers, otherwise known as specialties, almost always drive corporate growth. Until recently, Western society's treatment of people with highly developed, specialized, and unique skills was only a measure of social sensitivity. But with all the social, cultural, technological, and political developments we have seen over the past 20 years, it has also become a measure of economic and political diversification.

Recruiters of disabled workers can explore endless new markets for highly specialized workers with a unique work ethic and a diverse set of untapped capabilities. Just as the strongest Fortune 500 companies maintain the most "disabled friendly" policies, the same is true of countries at large.

According to the Secretary for the *Convention on the Rights of Persons with Disabilities* at the United Nations Department of Economic and Social Affairs, as of December 2010, 147 nations have signed a treaty that,

> **"Further promotes mainstreaming disability, encourages greater disability-inclusive international cooperation and enables further participation of persons with disabilities in the development processes."**

The countries with the best disability laws also happen to be the leaders in green policy and technology. Nations that aspire to attain green credentials and join the Green Club ought to pay attention to protecting the rights of the disabled, recognizing their various specialties, abilities, and ways of being. A willingness to enact such laws seems to suggest a mind-set that is particularly receptive to this new model of individual wealth creation. It also indicates that these countries are making a concerted effort to utilize all of their resources to maximum effect, which is consistent with a green outlook. This requires a new way of thinking and an openness to change–consistent themes throughout this book.

Nothing great has ever come from remaining stagnant. The countries who lead the world in green policy and technology know this idea well. They live it.

## World Leaders in the Green Club

While we have seen a remarkable and generally favorable push toward green technologies worldwide, the planet's rapid industrialization poses a real threat to the green initiative. The real wave of change cannot occur until a significant number of developing and developed countries embrace the notion that improving their sustainability will also improve their bottom line.

**Figure 10: The Lights of the World *(Geoscience News and Information, 2011).***

Figure 10 provides a nighttime satellite view of the world. One immediately notices that the United States, Europe, and

Japan stand out as Earth's brightest nations. In other words, the most industrialized cultures consume the most energy. But, the irony of that picture is that the more luminescent cities and countries are the very same ones leading the charge on green science and technology. There are exceptions, of course. Australia and New Zealand, for instance, rank quite high on the list of greenest countries, and yet they appear among the darkest countries at night.

Why is this? Why is neither Venezuela nor Malawi leading the charge on green technology? In short, the answer is money. Too many green technologies are not yet affordable—or profitable enough compared to conventional energy sources. However, that does not mean that green is only available in wealthy nations. There are green agendas to be found even in the darkest and poorest corners of the globe.

Many citizens in the impoverished nation of Mozambique, for instance, are turning from traditional charcoal fuel toward cheaper, far cleaner biofuels. This trend owes to both economics and health. As the nation's forests recede and charcoal prices rise, citizens struggle to afford using it to heat their stoves. A group of foreign investors, including George Soros, Bank of America, Merrill Lynch, ICM, and Novozyme, have implemented a strategy to get the citizens of Mozambique to shift toward cooking stoves that run on clean-burning biofuels. Not only does this make cooking more affordable for the average citizen, it dramatically cuts down on the occurrence of asthma and other pulmonary diseases among the population, and helps stave off further deforestation and the resulting damage to the environment and climate.

In South America we find a series of ingenious and low-cost green initiatives to add to the mix. The Evangelical University of Bolivia implemented a pork, duck, and fish farm, achieving the highest levels of economic efficiency in agriculture. The project is a model to create jobs and wealth for the small villages in the Amazon basin. The multipurpose farm is built on the premise that pigs and ducks have inefficient digestive systems.

Here is how it works: the pigsty is built slightly higher than the duck farm, which is, in turn, built higher than the fish pond. Gravity carries the pig waste through an open canal that runs through the duck farm and into the fish pond. This careful arrangement maximizes the use of the corn in the balanced meal fed to the pigs. As their highly corn-concentrated waste is pushed by water and gravity through the center of the duck farm, the ducks feed on corn remnants. The ducks swimming in the pond feed their own high-corn-content waste to the fish in the pond.

Under this model, a community could farm more than one source of protein by feeding a plentiful agricultural commodity to one species. This sustainable agricultural project has generated sources of employment and wealth for communities in Brazil, Peru, Colombia, Venezuela, and the French, Dutch, and British Guianas.

Employing many of the same principles, the Evangelical University of Bolivia, in conjunction with the German International Technical Cooperation Agency, developed something called a "bio-digester," designed to feed cattle-dependent communities. The bio-digester is essentially a spherical concrete structure that collects cattle waste guided by gravity, along with water that contains live yeast. As it is heated, the yeast activates on the feces, producing methane gas that is, in turn, used to heat the water needed to process beef. The methane also fuels the motors that drive the hoists in the slaughterhouse.

These same Amazon communities use a primitive, horse-powered water pump to remove processed organic matter in the bio-digester. This material is dried by the sun's energy in shallow, open pools and later packaged for sale as low-grade fertilizer. The system turns cow dung into free energy and commodity fertilizer. Nothing is wasted.

Thailand, Bangladesh, Botswana, Kenya, and many other countries suffer from potable water shortages due to drought, disruption of water sources, or pollution of ground water or water tables. Storing rainwater from rooftop run-off in water butts is a cheap, effective way to obtain high-quality drinking water in many places. The water butts come in many sizes, from 100 to over 3,000 liters. They can be made or bought. A 2,000-liter water butt in Thailand sells for about $25 USD and can supply a typical household for about six months. Most importantly, the water butts protect the family's drinking water from waste, spoilage and mosquito infestation.

Many villages employ clever methods for building such water butts using readily available materials. These pioneers are creating secondary markets for the sale of water butts to other villages that lack the materials, expertise, or manpower. The water butts improve the overall health of the villagers, making them more productive. The water can also be used for livestock production, irrigation, or sanitation. This is an example of people taking the initiative to secure their right to clean water by utilizing available resources and their own ingenuity, and it is happening all over the world.

## Conclusion

The major prerequisites for a country's admission into the Green Club are that it invests in research and development, has an interest in green technology, and possesses advanced technology and the ability to implement it. The proliferation of green enterprises within a country provides positive examples of profitability while supporting green infrastructure. The progressive natures of Green Club countries are reflected in their attitudes toward human rights, intertwined with their progression toward a Green economy.

Even in the most primitive and economically deprived parts of the world, the ingenuity and drive of the people can provide green solutions. If even impoverished communities can move toward a greener life, why can't we?

# Chapter 6:

## TAPPED OUT

***When you've exhausted all possibilities, remember this —you haven't.***

***—Robert H. Schuller***

Think back to the near-death of the American auto industry. It was not that long ago, but it is amazing how quickly people forget just how close we came to losing one of the world's largest and most influential companies. General Motors nearly folded for myriad reasons, but all stemmed from the same lack of foresight, and a general inability to adapt to a rapidly changing world. Some economists suggest that GM broached the brink of bankruptcy because they had too many entitlement programs, coupled with declining profits owing to the recession. While these circumstances certainly were factors, I see a different culprit. I believe GM failed to embrace sustainable technologies soon enough to save itself. Other car companies invested in hybrids and fuel-efficient methods to keep pace; GM continued to rely heavily on its fleet of gas-guzzling cars, trucks, and SUVs.

This is not to say that GM can be blamed entirely. Trucks and SUVs are a large part of what made it a towering giant in the industry. As one of America's oldest corporations, GM has endured many recessions. The difference with previous downturns was that its executives could always count on the price of gas to come back down. This time around, it just was not happening. Couple that with an increasingly green public sentiment, and people wound up voting GM out with their wallets. Sure, GM had many entitlement programs that hindered a healthy bottom line, but the fact that their vehicles had become too costly to maintain made a bad situation worse, as did the market movement toward vehicles that simply were not in GM's repertoire. The economic downturn dampened car sales and clobbered the SUV/truck markets, leading GM into bankruptcy.

Contrast that with Ford. They faced no such fate. In fact, one could argue that the recession actually rendered them stronger. Sure, Ford was flagging for a time. But the slowdown spurred self-reflection, and a significant rebranding was set in motion. With that effort came an unprecedented push toward sustainability. Every car in Ford's line is more fuel-efficient than it was five years ago, and most are more efficient than their competitors. Ford has regained its foothold as one of the world's strongest automakers.

So why did Ford thrive while GM faltered? I believe this owes, in large part, to Ford's global presence, coupled with a close relationship with China, which nurtured in Ford a greater

understanding of the need for sustainability—one their Detroit-based competitor lacked. Embracing green technology, Ford entertained the hybrid equation long before GM, giving them a competitive edge and propelling them back into the black.

GM is just one example of how many of the old philosophies that helped build this country are just not relevant anymore. No matter what you believe about global warming and the economy, it seems obvious that the planet stands on the cusp of an entirely new era in which the prevailing wisdom of Western civilization will no longer reign supreme. Its value and resources are tapped out.

What do I mean by "tapped out"? That previously effective protocols and processes are today underperforming. For example, the US economy, stretched so thin by overleveraging and underproduction, has for many years demonstrated signs that it cannot sustain itself without major change. Many cultural values have been tested in recent years and proven less than viable in this new age. The US education system, once the envy of the planet, is churning out fewer globally competitive students. The US government shows time and again that party infighting is crippling its ability to lead and make change. Modern US energy policy, with its reliance on nonrenewable resources and dependence on foreign oil, is not sustainable, particularly in this volatile global political climate.

On the international stage, that age-old adage of "might makes right" just does not hold any longer. The middle class is dwindling so rapidly that it is beginning to look like a failed experiment. Perhaps most shocking of all, the sum of these factors has led to a stark reality: in the world's richest, most powerful nation, people are not nearly as happy as they used to be.

In fact, we are not even as happy as most people living on $2 per day in developing countries, where people work hard on jobs that fulfill them, then come home to modest but comfortable and steadily improving lifestyles. Here at home, kids kill kids with TEC-9s. A generation of college graduates face mountains of debt, with no end in sight. Lifestyles appear to be constricted here in this "land of opportunity." Our children are not as well off as we were. Something has to change.

Nearly every major contributor to the historical power of the United States appears to be on the brink of collapse or irrelevance. If we do not take a hard look at these various aspects of society and go back to the drawing board with sustainability and independence in mind, the future will be very dark indeed.

I spent much of Chapter 1 illustrating what I believe to be the coming evolution of wealth generation. I believe the Green X Platform holds the key to a new epoch of wealth and prosperity. With this chapter, I intend to show that the economy is not the only thing in danger of collapse without innovative solutions like Green X. Considering the many global philosophical, political, and economic shifts emerging, the coming years promise to be the proverbial game-changer for developing countries, along with any developed nation that chooses to follow the push toward more sustainable thinking. But don't take my word for it. Let us examine the evidence that following the old American recipe for success is not going to cut it anymore.

## Foreign Relations

"Might makes right." In one interpretation, the phrase means that the folks in power at any given moment decide what is wrong or right. You find this in dramatic extremes: what Hitler's Germany believed to be right differed greatly from what Churchill's United Kingdom adhered to.

In relatively minor dichotomies, what was "right" during the Reagan administration differed from what was "right" in the Clinton administration. This interpretation is essentially the same as the old wisdom that "history is written by the victors." If you lose a war, it is hard to ensure that your agenda becomes a part of the historical notion of what is "right."

For centuries now, "might makes right" has been a bit of a rallying cry for the Western world. Long before the founding of the United States, the people, groups, or nations that have been strongest have tended to rule their weaker counterparts, often through military dominance. These powers-that-be set philosophical standards and dictate the moral code for anyone lacking the strength or will to fight back. For centuries, the West has attempted to propose the moral code for our entire planet. Today, the vast majority of weapons are in the hands of the US and the UK. These two superpowers attempt to command the rest of the globe as to what each nation can and cannot do, as well as what each *should* and *should not* do. Just ask Adin Ballou, American pacifist, abolitionist, and the man to whom the English version of the phrase "might makes right" is first attributed:

> **"But now, instead of discussion and argument, brute force rises up to the rescue of discomfited error, and crushes truth and right into the dust. Might makes right and hoary folly totters on in her mad career escorted by armies and navies" (Ballou, 1846).**

In the 19th century, Ballou, certainly no fan of war, asked whether the West's attempt to gain the ideological upper hand by way of force was morally acceptable. From his quote, we can ascertain that he certainly did not believe the concept to be sustainable. Today, with tensions rising, we have to ask ourselves what "hoary folly" awaits us if we do not embrace new principles soon.

The concept is, of course, nothing new, and the US and UK are obviously not the only nations in history to adhere to the principle. Greek historian Thucydides outlined the notion behind the words in his *History of the Peloponnesian War* (431 BCE).

> **"Since you know as well as we do that right, as the world goes, is only in question between equals in power, while the strong do what they can and the weak suffer what they must."**

Plato's *The Republic* (380 BCE) makes the proclamation that:

> **"Justice is nothing else than the interest of the stronger."**

Over the past two centuries, the US has become the mightiest power (and police officer) in the history of the world. Lately, it finds itself joined by other powers like Russia, India, Brazil, and especially China.

A recent example of the old "might makes right" being tapped out is Vladimir Putin's counter of Obama's war overtures in response to Syria's use of chemical weapons. Putin went so far as to challenge the American philosophical doctrine of exceptionalism—on the pages of the Wall Street Journal, no less. He followed up his commentary by brokering the elimination of Assad's chemical

weapons, thus averting a military confrontation between the US and Syria, one the US could ill afford to engage in, anyway. Weeks later, while the UN chemical weapons experts were busily dismantling Assad's weapons cache, the US government shut down and couldn't pay federal workers. Imagine the US government shutting down in the midst of a developing war. Even if Congress appropriated special funding for the war, it would have been met with the American people protesting in the streets. There is little doubt that Obama was quietly thanking Putin for his intervention and even for that oped piece.

What is "right" has become rather muddy. What is clear, however, is that industrialized nations, with their adherence to tapped-out, unsustainable philosophies, have begun to adversely affect poorer countries. Might has given these nations the ideological upper hand, but in terms of the environment and even the geopolitical landscape, this might actually may be more *wrong* than it is worth.

Would it surprise you to learn that most of the fallout of the polluting practices of industrialized nations land outside their own borders? The wasteful practices of the US burden countries like Mali with environmental, political, and economic side effects. Carbon released by industrial nations has caused sea levels to rise in Mali, hampering the fishing trade. The Maldives are rapidly disappearing and are now very vulnerable to storm surges. Those same carbon emissions cause farmland in Somalia and Ethiopia to suffer from drought and their citizens to starve, while enough food to feed them all is thrown into US garbage dumps. Because it does not affect us here in the US, it is easy to ignore the problem, to keep practicing wasteful habits and pretend that everything is okay.

According to Thara Srinivasan, a former researcher at the University of California, Berkeley, if we look at the period between 1961 and 2000, the environmental damage that wealthy nations have inflicted on poorer countries amounts to a staggering 1.8 trillion International Dollars—US dollars adjusted to account for the purchasing power of other currencies (Srinivasan, 2008). If we turn to the United Nations *Millennium Ecosystem Assessment* and World Bank reports, we see that these estimates are actually quite conservative. But we are talking about a world in which might makes right, so what choice do these poorer countries have in the matter?

In a word: none. A survey of the legal conflicts regarding environmental issues between global corporations, nations, and nonprofits reveals that the World Trade Organization and the international courts tend to favor those parties with the financial capacity to confront the expenses required to seek justice and reparation of damages.

Even in cases of genocide, international courts have sided with the people in power. Take the residents of Achacachi, Bolivia, for example. They accused former President Gonzalo Sanchez de Lozada of ordering his troops to fire on a large number of unarmed indigenous, anti-government demonstrators in 2003. The deaths of many demonstrators and some passers-by were typified as genocide and crimes against humanity by Bolivian law and by the US District Court in Florida. However, the Court of Appeals leaned on the US State Department's recommendation to provide immunity from all civil and criminal cases brought against former heads of state of foreign nations (*Mamani v. Berzain*, 2011). This is just one case that clearly demonstrates that the protection of the mighty is a tradition of wealthy nations.

As early as 1987, the United Nations *Report of the World Commission on Environment and Development* identified two conditions for mutually beneficial international economic exchanges (Brundtland, 1987):

1) The sustainability of ecosystems on which the global economy depends must be guaranteed.

2) All economic partners must be satisfied that the exchange is equitable.

Unfortunately, the environmental relationships between wealthy and developing countries continue to fall short of these conditions.

In a world increasingly globalized, the old strategy that "might makes right" marginalizes poorer nations, who do not have a voice at the table of progress. Those countries will continue to bear the brunt of environmental fallout and the ire of influential, self-righteous nations. We will continue to see powers like China ignore economic trading blocs like the Association of Southeast Asian Nations (ASEAN), simply because that would require too much change on their part. However, the dawn of the social media age means every actor, large or small, can now have a voice on the world stage. The question is, will enough of us recognize that the international relations philosophy of "might makes right" is tapped out?

## Education Systems

I have mentioned that GM suffered a massive hit to its stability and reputation because it failed to see the growing trend toward greener cars and more sustainable corporate practices. What I did not mention is *why*. Whenever a powerful company fails so spectacularly, one must pin the blame on its leadership. It is strange to think that, in a country once revered for its education system, quality leaders for a company like GM would be in such short supply. For decades, GM lived on the cutting edge of technology. Some of the most famous business leaders in US history once piloted, or otherwise worked for, General Motors. So where have all the good leaders gone?

With all the party infighting going on in Washington these days, as concerned citizens we must look through the malaise and see the bigger picture about which no one is talking. The philosophies that used to influence Western curricula have all but been forgotten. Global studies on education confirm that the United States is not competitive, in any subject, across the full spectrum, from grades K-12. Given that not so long ago, the US was the envy of the world with respect to education, this boggles the mind.

Among the many reasons for this steep and tragic decline, we can attribute much of the downfall to our education system's underlying philosophies, its capitalist ideas. Students are rarely taught to be stewards of the Earth, or that problem solving drives the economy. No, regardless of the subject in the US, the bent is toward the take-take-take American way. This includes the replacement of academic rigor for bureaucratic compliance, where the number of assignments, the student's conformance to a writing standard, and compliance with deadlines are more valuable than substance and content.

Contrast that with children in Asia, who are taught from an early age that life is not just about the taking, and that everything in this world is interrelated. What you do as an individual has an impact on other individuals, as well as society and the environment at large. In the US, the concentration is on shareholder value. In Asia, it is about caring for the people who work for you. Every concept favors sustainable values. As a result, Asian students gain an education much more relevant on the world stage.

Capitalist societies define success in terms of return on investment–even for those activities that should not be measured in financial terms, like education. In the past 30 years, the financial

success of online higher education as a product of the digital age has created corporate behemoths such as the University of Phoenix, Kaplan, Walden University, Career Education Corporation, and many others.

It should come as no shock that these are the new standards of a society where children get trophies for simply attending rather than achieving. These days, nearly everyone is assured a high school diploma, just so long as they bother to show up for class. A college degree can be obtained online as long as you are willing to pay. Students with 3.0 GPAs qualify for financial aid to attend a university, driving a lowering of standards.

Meanwhile, many educational institutions teeter on the brink of bankruptcy and many so-called public universities now receive 10 percent or less of their funding from the state. Many primary schools have changed their grading scales to exclude Cs, Ds, and Fs. Pre-K to 12$^{th}$ grade schools, rather than encouraging discovery and innovation and fostering critical-thinking skills, teach in a way designed only to meet state or federal standards. The new definition of success is not a demonstration of knowledge retention, but rather, a low attrition (dropout) rate.

According to Sharratt and Harild's 2015 study, the key ingredient in moving schools "from good to great to innovate" is alignment between state and school educational goals, and an open flow of information measuring schools' progress. Further, focused leadership at government, school district and principal levels is crucial in translating leadership skills to students.

Currently, there is a trend in America that champions the idea of choice in education whereby parents receive a voucher to send their children to whatever school they choose. The alternative trend is to increase the education budget to improve the use of technology and to develop the knowledge transfer skills of our teachers. If the decline in performance and rating among American schools–both primary and secondary–is not proof enough that the modern American educational system is lacking, then surely we can find our proof in the notion that the two "best" ideas to reshape that same educational system are so distinctly opposed and no solution appears to be at hand.

## Energy Policy

If we examine US energy policy in detail from the 1970s to date, we find two schools of thought that prevail in the argument toward an energy-independent United States. To the right of the political spectrum we witness the argument that we should open up pristine land in Alaska and the National Parks to drilling. This notion is much to the chagrin of liberals and the green movement, who want to preserve wildlife and protect the environment through the development of green technology.

Sarah Palin had a good time with "Drill, baby, drill" during the 2008 presidential campaign, but that's the funny thing about oil wells: eventually they are emptied out. No, the answer does not appear to be to increase drilling on American soil, or even offshore. Neither does it appear to be to rely solely on green technologies, many of which are too ineffective or expensive to warrant much of an investment in the short term. The solution for the next 20 to 30 years appears to lie somewhere in between.

At present, we have political electioneering interfering with any real chance for progress. According to Amory Lovins, author of *Reinventing Fire: Bold Business Solutions for the New Energy Era*, American energy policy is lacking because it fails to provide sufficient types of incentives for

the private sector to run with alternative sources of energy and many other environmental products and services (Lovins, 2013). The problem with the engagement of the private sector in the environmental revolution lies with educating the consumer. It is hard to understand why American consumers willfully choose to remain uneducated about the advantages that alternative sources of energy could have on their lifestyle and income.

Despite GM's late arrival to the game, there is no doubt that the automobile industry is at the forefront of this change. But the cost of retooling the manufacturing capacity of an industry sector that is already undergoing a major correction in financial efficiency is a risky proposition. The main reason for the perception of this risk is that the effectiveness of green technologies such as electric and hybrid cars, carbon fiber components, and advanced batteries and fuel cells is still in question. There are no reliable estimates of return on investment—or risk. At the rate the world is increasing its consumption of fossil fuels, "Drill, baby, drill" is an initiative that could last only a few years, while providing no long-term answer.

The uncertainty surrounding the long-term effects of radical resource depletion projects and the absolute certainty of becoming "tapped out" eventually are factors driving political opposition to projects like the Keystone Pipeline, offshore drilling on the East Coast, and exploration on public lands and parks. Given the finite nature of the results and the potential ecological damage, the exploitation of fossil fuels seems to be a tapped-out strategy.

There is no question that America's energy policy and Homeland Security are tied together as long as the exploitation of fossil fuels continues to be a priority for our economic sustainability. Forget the issue that the Organization of the Petroleum Exporting Countries (OPEC) countries are unfriendly toward America. Their need for hard currency will drive them to sell oil to whoever is willing to pay. The most important point is that the new technologies to extract fossil fuels from American soil are a desperate last attempt of a society that has refused to face reality.

The sooner we come to grips with the fact that America does not have enough fossil fuel to sustain itself for long, and the sooner we realize that the energy sector as we know it is unsustainable, then, and only then, will we get to work on alternative sources.

The more you delve into the subject of the resources, laws, uncertainty, and need to change, the more upsetting it is to realize that we as a society have decided to ignore our most immediate need, which is to change our sources of energy. The United States is in desperate need of a new perspective on energy consumption.

## The Middle Class

We learned many things about the state of the American economy during the recent recession. One of the most troubling is that the middle class is shrinking rapidly. The class that built America into the largest economy in the world is running out of resources. There was a time not long ago when being a member of the middle class meant living comfortably. These days with overleveraged credit, huge student loans and lower wages, most members of the middle class basically live paycheck to paycheck. The more we learn about the causes of this economic downturn, the more it looks like the financial system has been doling out credit for the express purpose of keeping the poor and middle class grounded in perpetual economic gridlock.

The definition of "middle class" (and "poor," for that matter) needs to be reassessed. We need fresh understanding of what it means to be wealthy, and what goes into sustaining wealth.

Perhaps it is time for the workers who keep the corporations running to have a stake in their success. I do not mean to suggest that we should just start handing people money or stock, merely that the financial gains achieved by success should, once again, be shared by everyone who worked for that success.

Henry Ford is credited with the invention of the assembly line and, therefore, making the automobile affordable. But his real achievement was in compensating his workers in such a way as to enable them to afford the machines they were building. He, and others like him, created the American middle class. Although the middle class suffered greatly during the Great Depression, the post-WWII years saw an economic boom largely fueled by the rise of the middle class. That trend has reversed itself, however, and the middle class has seen its prosperity and prospects dim markedly since the 1980s.

The very notion of wealth creation needs to be reexamined. The modern concept of wealth-building has adversely affected the middle class, pushing it toward the lower demographic. These days, corporate giants pretend to render a good service with one hand, while collecting all of the benefits from that service with the other. High interest rate loans and fees create much wealth for the lenders and keep the borrowers in perpetual debt, often near poverty. Most of the middle class divvy up their paychecks among the banks and utility companies, making no economic progress.

There is another way. If a house can generate wealth beyond its debt burden, then the buyer as well as the builder and the lender will generate wealth. The meaning of wealth creation has changed forever and we will begin to see another resurgence of the middle class.

## The New World Leader

If we accept the idea that many of the values that made America strong are weakening the question becomes, who is emerging to lead the next era of progress? By most signs, it appears to be China. No matter what you read about the global economy, one overwhelming realization seems to be taking shape: where the United Kingdom reigned supreme in the 19th century and the United States dominated the 20th, China has most assuredly begun to muscle its way into control of 21st century.

If the United States hopes to become a partner–and not simply an afterthought–in this new century, it must deepen its understanding of the philosophies that have shaped, and continue to shape, the form of political dispensation happening in the Eastern Bloc—particularly in China.

To find the spirit of the change that Chinese society is currently undergoing, we need look no further than our own history.

Any discussion about Chinese economic history begins with feudalism, an economic system where the powers-that-be exchanged land holdings for labor, tribute, and military support. In a feudalistic society, barter trade is the norm. There is no money exchanged for goods and services —rather, goods of comparable value and services are used as currency. Interestingly, this barter system was also the norm in Western civilization from the 9th to the 15th century.

When the Western world first transitioned from feudal societies, it did so with the generalized use of paper money as a medium of exchange along with increased economic diversification. These trends gradually ushered in capitalism, where systems of production are privately owned for the creation of for-profit goods and services. This transition happened much earlier for the United States than it did for China, but the Chinese economy has taken to capitalism quite well.

Capitalism as we know it has undergone many transitions over the centuries, the most important being the Industrial Revolution, characterized by mass production, low-cost labor, and the creation of investment markets. Following the Great Depression, United States capitalism abided the integration of social safety nets such as unemployment compensation, welfare assistance programs, and health care for the disabled and the elderly, in contrast to a purely capitalist society which values economic growth over social good.

Change is coming for both the United States and China, not to mention the world at large. As early as 1952, Galbraith identified the need for a "countervailing power" to decrease the power of corporate "technostructure," which seeks to control consumer demand and market growth. This countervailing power, accelerated by social media, broadcasts reviews of products and services that drive competitors to one price. With its proliferation will come the dawn of a truly new era wherein the people's economic, political, and environmental will is transmitted through social networks. Thus will societies effectively transcend sovereign, cultural, and religious boundaries hindering their self-determination.

Developing nations will bring with them millions of people joining the capitalist system, as higher standards of living and higher levels of consumerism lure them. As more nations develop, we will find ourselves facing unprecedented urbanization of the planet. If most of these nations trend toward the United States' philosophy, where consumption is the name of the game, the whole ball of wax might melt.

The Global Footprint Network, a nonprofit organization dedicated to promoting sustainability, states that if everyone emulated the American consumer, we would need approximately five times the surface of our planet to sustain such consumption levels (Matoon, 2008). Clearly, it is preferable that emerging nations follow the Chinese philosophy of sustainable consumption.

To predict the sustainable behavior of Chinese consumers, the International Food Management Association, an international educational nonprofit institution, examined the biospheric, egotistic, and altruistic values of the Chinese. Their findings reveal that the Chinese consumer highly associates his or her biospheric and egoistic dimensions with sustainable food consumption behavior. These value orientation dimensions are consistent with traditional Chinese culture and Taoist philosophy advocating the unity of man and nature. Compare this to the biospheric and egotistic dimensions of Western culture, which advocate admiration of authority, social power, and influence (Sowards, 2011).

Interestingly, the altruistic values demonstrated by the Chinese are no different to those of consumers in Western civilization. The Chinese associate none of their environmental belief dimensions with sustainable food consumption behavior. However, young and high-income households in China specifically endorse sustainable food consumption. Unlike the United States, which was founded on principles of freedom and discovery, fed on a steady diet of insatiable consumption and then brought to the top of the economic picture on the back of the unrelenting philosophy of "bigger and better," China finds its roots in the concept of sustainability. Many of the values responsible for the current sustainable environmental development in China are the same values typically demonstrated by an agricultural society that champions hard work and increasing production by simple mechanization and the use of fertilizers, pesticides, and herbicides. Much of this philosophy can be attributed to China's relatively impoverished history however, even at the current pace of wealth and affluence, much of the country has not departed from its sustainable way of life. One finds the evidence of this claim in the average Chinese

citizen's comparatively higher savings rate, a rate so high that some pundits have suggested it has helped to deepen the economic woes of the free-spending Western world.

With these philosophies underscoring so much of what they do, it is no wonder that China is overtly trying to lead the world in sustainable development. Many centuries of Chinese philosophy are finally paying off in economic results. If history is any indication, the economic leader in this century will export its core economic principles to the rest of the world, along with many of its most successful companies. The leaders, after all, lead, and the rest of the world–wanting desperately to align with the wealthiest nation–will do its best to follow. If current trends hold, where the US once exported the Rule of Law, democracy, McDonald's, Walmart, and Coca-Cola, the Chinese may wind up exporting their sustainability belief systems.

## The New World Order

Let us return to our GM example for a moment. Recall that GM became a hot button issue in the run-up to the 2012 presidential election because President Obama and his challenger Mitt Romney held such opposing views on the subject of what had been done about GM's bankruptcy filing. Romney ran on a platform of economic Darwinism, claiming he would not have bailed out GM and would have forced the company to secure private funding to work its way out of bankruptcy. That old American way that holds that corporations large and small have to fend for themselves would have held.

I am not necessarily a strong proponent of bailouts, but the contrasting view seems vindicated at this point. With Obama's decision to bail out GM, he effectively abated the economic, criminal, and infrastructure fallout that would have further crippled Detroit and the country at large. It is of interest to note here that private funding for a GM restructuring was not available, and it is probable that GM would have gone out of business and taken most of its suppliers and vendors with it. Meanwhile, GM has made a quick turnaround to become a profitable company and many millions of job losses were averted.

Here we find at least one political method that we can define as sustainable. The President used tax funds in a transparent way, and to the true and lasting benefit of the people. Obama presents a new breed of thinkers, the kind of people necessary if we hope to prevent America from falling further behind the BRIC nations in terms of math, science, sports, education, environmental sustainability, quality of life, quality of health care, and on and on. With more thinkers like Obama, thinkers who look to sustainability first, we might usher in a new brand of political and philosophical thinking that just might gird the next century to include sustainability.

These ideals have already delivered the United States from the brink of economic decline and near collapse. For instance, the US Interstate Highway System, while in the nation's best interest, would not have been feasible if left to the free market, as it is an inherently unprofitable venture. When I mention these ideals I'm not talking about socialism, as some pundits might have you believe. I'm talking about an emerging force that's greater than capitalism or socialism and all the other "-isms" combined. That force is called sustainability. The sustainability of a socialist system requires the tax revenues that the capitalist private sector produces to maintain the social safety nets. Likewise, the sustainability of a capitalist system requires the social safety nets to fuel aggregate demand and productivity.

## Conclusion

The world is changing. Many people in poor countries are living happier lives than people in wealthier nations. China has lifted over 300 million people out of poverty over the course of the past forty years. Africa, despite the diversity of its 53 (give or take) countries, is doing much the same. The ideas and ideals these countries have used to alleviate poverty are gradually permeating through the corridors of power in the industrialized world. Meanwhile, millionaires started shopping at Walmart during the recession, a group of citizens mobilized via social media to have a warmonger in Uganda brought to justice, and we have the Arab Spring netizens, the Occupiers, the Green Tea movement, crowd-sourcers and Facebook enthusiasts at large heading up a host of more sustainable entities as they permeate every fiber of society.

While these are all exciting movements, if you are a fan of the modern US way of life, they might be a little frightening as well. If we look back through history, it becomes clear that the collapse of every major society usually followed an economic meltdown that subsequently led to social upheavals. Typically, these social upheavals were sparked by the emergence of new technologies that allowed the masses to communicate with one another. The printing press, the telephone, television, fax machines, the Internet, cell phones, and now smartphones and tablets—each of these technologies delivered the masses from a government and a way of life that had become tapped out. Could social media be the next technology to usher in the new era?

# Chapter 7:

# TAWDRY LACE

***Come, you promised me a tawdry-lace and a pair of sweet gloves.***

***—Mopsa in* The Winter's Tale *by William Shakespeare***

Ah, *tawdry lace*. I love this term, particularly how it applies to the rather ridiculous manner in which the United States and the world at large have constructed their current array of environmental protection and energy production laws. Why "tawdry lace"? Good question. Consider the etymology of the term. We can trace "tawdry lace" back to A.D. 679 and the death of the Queen of Northumbria (near the border that now lies between modern-day England and Scotland), a woman who bore the name so unfortunate, Ethelreda, that she was assigned a much easier-to-digest alias, Audrey, or Awdrey.

Like many Catholic saints, Audrey's story was quite entertaining. It began in 640, when the then-princess married a man but refused to ever consummate the marriage. When this first husband died three years into the arrangement, she was left to play the field once more. The only problem was that Audrey had taken a perpetual vow of chastity. That did not stop her from marrying again, this time for stately reasons.

Now, to meet one man in your life who is willing to uphold your vow of chastity is one thing, and the task is made far easier if he dies young, but to meet in one lifetime *two men* willing to live more like your brother than your lover? The odds, even in the seventh century, were astronomical. It was not long before Audrey's young second husband started making plays for his husbandly rights, but Audrey held strong to her vows and even became a nun. The new beau went so far as to bribe the local bishop, himself a saint named Wilfrid, to release his wife to a life of carnal pleasure. Wilfrid was having none of that, however. Instead of granting Audrey's release, he helped steal her away to the countryside, far away from her lustful husband.

While holed up in a promontory called Colbert's Head, the queen and the bishop waited for a sign from God that they were doing the right thing. God sent them a high tide that lasted for seven days, effectively barring Audrey's pursuing husband from reaching the hill on which she had cloistered herself. It turned out that a week was too long for Audrey's husband to wait. He quickly went off and married someone a little more appreciative of life's pleasures. Meanwhile, Audrey went about the rest of her saintly life. She founded the great abbey of Ely and became the abbess.

More to our purpose is the fact that Audrey was quite fond of necklaces of all types and styles. She was so fond of them, in fact, that when she developed an enormous tumor on her neck, she believed it was divine payback for her years of necklace avarice. Apparently, erudite doctors of the time agreed, and she took to wearing necklaces made from fine lace to hide her tumor, which ultimately proved fatal.

This story gripped the English and Scottish populace so much so that the village of Ely would hold "Saint Audrey's Fair" every year on her feast day. This fair became known for its remarkably gaudy and shoddy wares. Artisans sought to outdo each other with the garishness of the lace neckerchiefs up for sale. So outlandish were the accessories that they spawned a new word: "tawdry," an English corruption of the words "Saint" and "Audrey."

Since the Middle Ages, the term has been used as a euphemism for any kind of cheap, gaudy, and showy merchandise. I apply it here for this chapter, however, because in the context of the lofty but ultimately empty promises of environmental legislation, we are looking at an array of laws, accords, and treaties that are essentially all flash and no meaning. We are tying plenty of fancy necklaces around the problem but are still suffering from the cancer that is global warming.

## Tawdry Policy

There is another interesting parallel to the Saint Audrey story here as well. Although Audrey was married twice, she remained a virgin by persuading both of her husbands to let her remain untouched in the service of a higher and godlier cause. This reminds me of some of the environmental policies that many developed countries have adopted in recent years. These countries seem willing to go through with a wedding—codifying would-be effective policies—but they then forsake the marriage with a refusal to actually enforce meaningful action or consummate the contract.

According to the European Network of Agricultural and Rural Policy Research Institutes, the Czech Republic has a bit of a problem on their hands regarding land consolidation and re-parceling. The goal on its surface was simple: the Czech Republic used to have a serious issue with the management of their agricultural operations. A small handful of farmers dominated the land use and agricultural production in the country. This made these super-farmers, in effect, above the law in terms of how much land they could control. In an effort to weed out any new competition, they would buy up large tracts of land and simply leave them untended. This meant that the Czech Republic was not growing nearly as much as its tillable land could produce. To combat this problem, the Czech Republic's leaders adopted reforms and committed financial resources toward consolidating and re-parceling the unused land in smaller "cadasters" (the elementary official territorial unit) to be bought up by smaller aspiring farmers.

As is the case with most laws of this scope in these modern times, the attempt has failed miserably. The law was noble in nature but tawdry in execution. Despite these legal reforms, 5 percent of the Republic's largest farms occupy almost 75 percent of the unused agricultural space in the country. These large farms occupy 3.6 million hectares of the total 4.3 million hectares of agricultural land in the country, leaving 300,000 hectares abandoned and untilled.

Since the late 1990s, even with all the money that the Czech leadership has thrown at the problem, the country's agriculture and its relationship to the environment and landscape remain largely unchanged. At the same time, the resultantly poor economic conditions affecting the other

95 percent of farming operations has led to an increase in the use of fertilizers and pesticides. With a greater need to create a good crop, many farmers have resorted to environmentally damaging products to ensure better yields.

This law, designed to prevent the further industrialization of the Czech Republic's agricultural resources, wound up making it easier for the industrialized farms to corner the market. What we have here is ineffective environmental legislation accompanied by weak enforcement of the laws: tawdry policy, tawdry lace.

Similar antics occur at even broader levels, including the United Nations Environment Programme Finance Initiative. Here we have a powerful partnership between the UN and the global financial sector, one that continues to champion the notion that short-term costs to investors for enforcing higher environmental standards in the industrial sector could lead to industrialized countries losing their competitive edge. For instance, the higher standards of the United States would drive polluting industries south of the border. On the other hand, developing countries contend that the cost of cleaner technologies could make their industries less competitive.

The unfortunate side of both of these arguments is that the World Research Institute suggests there is growing evidence that neither of them has any basis. More stringent environmental standards are in fact linked to stronger, not weaker, economic performance. Japan and Germany, with their strict environmental policies, are highly competitive on the global stage, especially when compared to countries with ineffective environmental legislation.

So here you have the global financial sector, in concert with the UN, seeking out countries with weak legislative frameworks in order to impose their will on the landscape of global industrialization in an effort to save a few bucks. But there is overwhelming evidence that countries with exacting environmental standards actually attract the greatest amount of direct foreign investment. The notion that global corporations would welcome increased regulation is completely divorced from their profit-maximizing principles. In addition, the concept that the financial sector would favor investment in countries with weak or unstable government is at odds with their asset-security principles. Arguments like these are contrary to reason and are prime examples of the way so much ineffective legislation is based on fallacies.

You cannot give what you do not possess. Many examples can be given of our legislators' lack of foresight and intelligence, but an even bigger problem is their indebtedness to special interest groups and campaign contributors. How many lawmakers over the years have enacted laws that are essentially useless? You cannot craft good legislation without intelligence and understanding. You cannot build an ethical society within a system that abandons ethical principles.

In the United States, we have a system where lawmakers are strong-armed into decisions that make little sense for the country or the world. Even those who have the intelligence and foresight to create meaningful and lasting environmental laws are faced with the prospect of having to run with and against scores of politicians wary of stepping on big business's toes. Now more than ever, Washington has sacrificed morality for dollars and progress for the status quo. As a result, what few laws they do enact might look good on paper but just do not produce the change they promise.

## Tawdry Politics

Environmentalists sometimes celebrate the mere passage of a law because of its purported purpose, or even its title. Problem is, some laws simply do not work. Others work for a while before being subverted and rendered ineffective. The same is true for alliances. Even the most evidently beneficial relationships can unravel.

I do not mean to pick on crude oil and fossil fuel production, but this is the first example that comes to mind: Aramco. The story is short and sweet. When Saudi Arabia first began tapping into its vast oil fields in the 1930s, it did so through a partnership with an American company called Standard Oil of California (SOCal). The company spent the next three years searching for oil to no avail, so they sold 50 percent of their stake in Saudi oil to the Texas Oil Company (Texaco). Another four years and several drillings passed before the American oil companies finally struck oil just north of Dhahran. The resultant well produced a great amount of oil each day—just enough to get the American companies interested in expanding their operations in the Middle Eastern country. In 1944, the conglomerate changed its name to the Arabian American Oil Company (Aramco). The ensuing years saw a number of other American oil companies buy stakes in the claim, whittling down SOCal and Texaco's control to 30 percent each.

But, as is often the case in these operations where so much money is being made, politics driven by greed began to intervene. In 1950, Saudi King Abdulaziz threatened to nationalize the country's oil production, ultimately forcing Aramco to agree to a 50/50 split, rather than being booted out of the country entirely. After all, 50 percent beats 0 percent. The US was no stranger to this tactic; Venezuela had already embarked upon a similar strategy a few years earlier. So its lawmakers granted Aramco a massive tax break, often called "the Golden Gimmick," designed to match the profits King Abdulaziz had effectively snatched away. This deal, of course, angered our Israeli allies, so President Truman worked them into the deal. They received the same amount that the Saudis received. The net effect was that the Aramco consortium would maintain their full profits, and for every dollar of profit, Saudi Arabia would get 50 cents and Israel would get 50 cents. Those matching funds would, of course, be paid by the US taxpayers. In effect, Aramco kept its bottom line intact and the taxpayers made both the Saudis and the Israelis very wealthy. Aramco then moved its headquarters from New York to Dhahran.

You have an American company funding the exploration for oil, finding oil, and establishing Saudi oil production, half of which was ultimately seized by a Saudi king. Those losses were subsidized by the US Treasury, which doubled down for Israel. Then that company moved its business entirely into Saudi Arabia. You can guess what happened next.

The moment the US started doing things that Saudi Arabia did not exactly agree with, the country began forcibly buying stakes in Aramco. By 1980, through political and financial pressure, Saudi Arabia owned 100 percent of the formerly all-American company. Funny thing was that the American partners in the operation continued to manage the Saudi oil fields, even as a royal decree changed the company's name to drop "American" from the title. Now known as the Saudi Arabian Oil Company, this oil giant was now free to seize the final piece of control from American interests. They stopped shipping oil to Israel in the same year Americans finally left the operation.

Standard Oil of California (now Chevron) struck that pact with Saudi Arabia for what seemed like a beneficial purpose at the time. In their view, they could imagine such a wealth of oil flowing from Saudi Arabia that American gas and energy costs would plummet. It would be the solution to current and future fuel and energy demands for decades and even centuries to come. But through a series of mishaps and royal intervention, this American operation would ultimately become solely Saudi Arabian. Saudi Aramco is now the world's largest company, with profits checking in

just short of $1 trillion per year. In many ways, they hold the power to control the world's economy.

If you consider what a massive diplomatic slap in the face this series of events was, it seems rather shocking that the US still publicly claims an alliance and indeed a kind of odd friendship with Saudi Arabia. It is especially perplexing when you think about how, even after September 11 2001, when the largest terrorist attack on American soil was perpetrated by a largely Saudi contingent of Islamic extremists, the US still keeps dumping so much cash into the coffers of Saudi Aramco. The US could have gone another route. Indeed, it is capable of going another route even now.

What is that route? It is what Brazil did following the 1974 embargo. They began meeting all of their fuel needs by way of locally produced ethanol. They do this with a fraction of the land available for corn and sugarcane in the United States. Such a policy switch would make sense. Instead, we continue with the tawdry practice of politically posturing with Saudi Arabia. Our relationship with Saudi Arabia still tenuously exists, as it has for years, and our energy policy remains remarkably unchanged. Once again, this is tawdry politics leading to policies that undermine the national interests of the United States.

## Tawdry Laws

Much like the lace sold at Saint Audrey's festival, the fabric of our law is often tattered or poorly constructed. It can sometimes be a fun exercise to examine some of the construct of this fabric. Much of it does not serve any meaningful purpose. Many of our laws are relics of times gone by, and some are just downright humorous. Some address major issues like the environment or the economy, and others address things so trivial it's a wonder that they ever became law in the first place. Other laws appear to be well intended, but demonstrate a shocking array of unintended consequences. Some result in the exact consequences that were intended but are good for few and bad for many. Lawmakers do not always have the people's best interest at heart. Sometimes our legislators seem to have lost touch with reality and enact laws that make no sense whatsoever. Many laws should be eliminated and many more should never have made their way into the legal code.

There are so very many examples, but let us start with Dekalb County, Georgia, which has a law limiting how many vegetables a person can grow on his own property. One resident faced a $5,000 fine for exceeding the maximum number of plants. Even though our criminal ended his reign of tomato terror, the county is still suing him. Even as the urban farming movement is taking root all across the country, saving homeowners money and reducing the need for industrialized farms with their massive carbon footprints, we have a county government trying to inhibit the productive urban gardener. It makes sense, perhaps, to impose restrictions on things like pig farms, chicken farms, or feed lots; operations that assault the senses and strain resources. But what harm could a vegetable garden possibly do to a community? Are people really going to be upset about the tomato crop in their neighbor's backyard? Are they jealous, perhaps? Does he just not share, or is his produce a danger to the peace?

Just in case you were thinking that governments are all anti-vegetation, consider the Arizona law that sets a penalty of 25 years in prison for cutting down a cactus. Apparently there was once a craze there for shooting or otherwise chopping down cacti, which led to the endangerment of

several particularly valued plants in the region. The preservation of cacti is a worthwhile pursuit but a quarter century in prison for cutting a cactus?

Or, how about Cerritos, California, where there is a restriction on the number of days that animal manure, including dog poop, can remain in someone's yard? The answer, in case you live in Cerritos and have not picked up poop lately, is seven days. The odd thing about this law is that it limits itself to one-third of the year: from January 15 to May 15. Beyond that, aging poop seems to be all right. Plus, everyone owning a pet or farm must register with their local code enforcement officer and be assigned a day of the week on which they will remove all manure. Perhaps there is no real crime in Cerritos to concern law enforcement.

These statutes seem to be intended to address actual problems, but also seem to be written by people who are unfamiliar with the real world. At least in Colorado, all they ask is that you do not deface rocks in their state parks. You are also not allowed to graze your cow, goat, burro, horse, pig, sheep, mule, or llama (yes, llama) on city property.

Meanwhile, across the country, there are laws that perhaps had their time and place, but that place is gone or that time is long past. Turning to Louisiana again, a woman's husband has to wave a flag in front of her car before she can drive it anywhere. The actual enforcement of this seems doubtful, but one must wonder why it is still on the books—indeed why it ever was. The same holds true in Rhode Island, where it is still illegal to sell a toothbrush and toothpaste to the same person on a Sunday. Also, ladies, you are forbidden to wear pants in Tucson.

Many archaic laws are holdovers from the horse-and-buggy era. In San Francisco, it is still illegal to have a pile of horse manure more than six feet high. In Tennessee it is illegal to drive while sleeping (this was a bad idea for the buggy driver holding the reins of the horse who knew his way home, but on a highway behind 200 horses it is a very, very bad idea indeed.) In Indiana it is illegal to pass a horse on the street. Cars in Ohio are still not allowed to scare horses, and horns are expressly forbidden, statewide. If you have driven in Ohio, then you can probably attest to the fact that this statute is universally ignored.

Many bad laws have good intentions, but that does not make them good laws. In many states, you cannot carry a concealed weapon without a permit. In Alabama, slingshots are considered weapons; a Kimber 1911 or a slingshot, it is all the same. The state also saw fit to add a law that made it clear you are not allowed to drive a vehicle full of so many people that the driver's vision is obstructed. I cringe to think about how many clowns you would have to pack into a car before you can no longer see through the windshield. This is, no doubt, something to be avoided, but did it really need to be part of the legal code?

Speaking of the legal code, the Texas Criminal Code is over 600 small-font pages' worth. How would any person walking the street know whether or not he is breaking the law at any given moment? I have had multiple Texas lawyers admit that they do not know what is in that book. How is a layman, or a policeman, supposed to know? Do the legislators know? I doubt it.

Laws with good intentions and bad consequences—or laws that never should have been laws—create clutter, confusion, and occasional humor. But bad laws of another kind are more insidious, sometimes purposefully so. Many oppress minorities, such as the Jim Crow laws of times past and present, laws protecting special interests at the expense of the general public, zoning restrictions or exemptions designed to protect the interests of connected supporters, special tax breaks and subsidies, and the list goes on and on.

Texas would be likely named the grand champion of tawdry law. They officially deny man-made climate change but have a program to control the weather. At least in Texas, they promote

the use of renewable energy sources. They have developed huge wind farms within sight of the oil fields, and have programs to develop and encourage solar, biomass, and other energy sources.

Meanwhile, in South Carolina, a bill was passed out of a Senate Committee in April of 2014 whose stated purpose was to "promote the establishment of a reliable, efficient, and diversified portfolio of distributed energy resources" for the state. Touted as promoting the use of renewable energy in a state with an ample supply of such resources, the reality was that the bill was written by and for big utility companies seeking to maintain their monopolies. The measure prevented individuals or competing companies from using solar energy shining down on their own property to generate electricity—heaven forbid that they should be allowed to sell that energy, or even share it. Even more reprehensible? That the utilities managed to slip in a provision expressly allowing them to use dirty fuels in their own power plants and to pass along all of the costs of cleanup or remediation to their customers, who had no say in the matter.

Similar legislation is being considered, or even passed into law, all across the country. Even more insidious is that these kinds of frameworks are predominantly being implemented in the Sun Belt, in states like Alabama, Arizona, Florida, Nevada, the Carolinas, New Mexico, and Texas, where solar and wind energy are so abundant.

Getting a little hot under the collar? Me too. Even as the Earth warms—as droughts become a greater threat worldwide, as weather becomes more bizarre, damaging, and even deadly, as water resources dry up, crops die, and wildfires rage, as energy production becomes more costly and environmentally damaging, as nations struggle to solve how to industrialize more safely and cost-effectively, as economies reshape around new technologies and realities, as political power struggles rage in a void of international law, as people from countries both rich and poor literally starve in the streets and as the future of this planet looks bleaker all the time—lawmakers are concentrating on things like stealing crawfish and shoveling poop.

Even worse, when we should be working toward change and solutions, many of our elected representatives are working hard against the needs of citizens and, for that matter, society and the world at large. They are busily securing the demands of their special interest contributors (their "real" bosses?), the moneyed powers that pull their strings. Where is the concentration on real, measurable solutions? Where is the dedication to creating real change? Where is the will to make a difference in this changing and sometimes frightening new world? In the end, it is all tied up in tawdry lace.

## Conclusion

The only solution to this kind of legal and political absurdity is for legislators, corporations, and people to go beyond the call of duty to generate real change. Without that kind of broad, sweeping charge to do what is right, the moral decay of politics will continue to serve as a major roadblock to new technologies developed through Green X and other environmental initiatives. Perhaps with the built-in wealth-generating capability of modern technology, we might overcome our broken politics, our bottom-line, our short-term corporate posturing and many of the other stagnating problems with society, politics, and modern economics.

Perhaps Green X will usher in a new age of change wherein politicians, corporations, and even sovereign nations can all begin to see the benefits of systems that represent a win for the environment, a win for the energy grid, and a win for profits across the board. I believe that this

reality is possible. Unfortunately, before we get there, we must first figure out how to overcome the blame game and the greed that plagues Washington and the world.

# Chapter 8:

# THE BLAME GAME

***When you cease to exist, then who will you blame?***

***—Bob Dylan***

Opponents of climate science like to muddy the waters of the debate by stating the fact that for about two and a half million years, the Earth's climate has been anything but stable. We know for certain that our planet has spent the past several million years fluctuating between very warm and very cold periods, so our opponents' storyline is that you cannot actually pin climate change on the contributions of man.

The problem with this argument is that it ignores the fact that this latest spike in average temperatures has come at an unprecedentedly dramatic rate. Never in 2.5 million years have we seen such a sharp increase in temperature in such a short period. Mankind has only been around for 200,000 years or so and industry for only a couple hundred years, and we have experienced no comet hits or super-volcanoes. The primary culprit of late is the dramatic increase of carbon and carbon compounds emitted into the air.

For millions of years, the Earth warmed and cooled by natural phenomena, the occasional stray comet from beyond or an explosion from within. We are now seeing a sharp increase in average temperature in a remarkably short time. Should it seem a coincidence that this spike began right around the time that industry started booming and cars started rolling off the factory lines by the millions? Cars and factories release the exhaust from fossil fuel combustion into the air. These exhaust gases and particulates collect in the atmosphere, ultimately contributing to what we call the Greenhouse Effect.

The way the atmosphere is supposed to work—how it has worked for thousands of millennia, and why life on Earth is possible—is that it accepts the sun's energy before allowing most of it to radiate back into space. However, with heavier GHGs in the air, less of that energy is allowed to escape. It becomes trapped on the planet, as if the atmosphere is wrapped in a giant blanket. This leads to an alarmingly rapid increase in average global temperatures, which could, in turn, negatively impact thousands of the planet's ecosystems. Venus is uninhabitable because of the extreme of this effect. Mars is unlivable because of the lack of this effect.

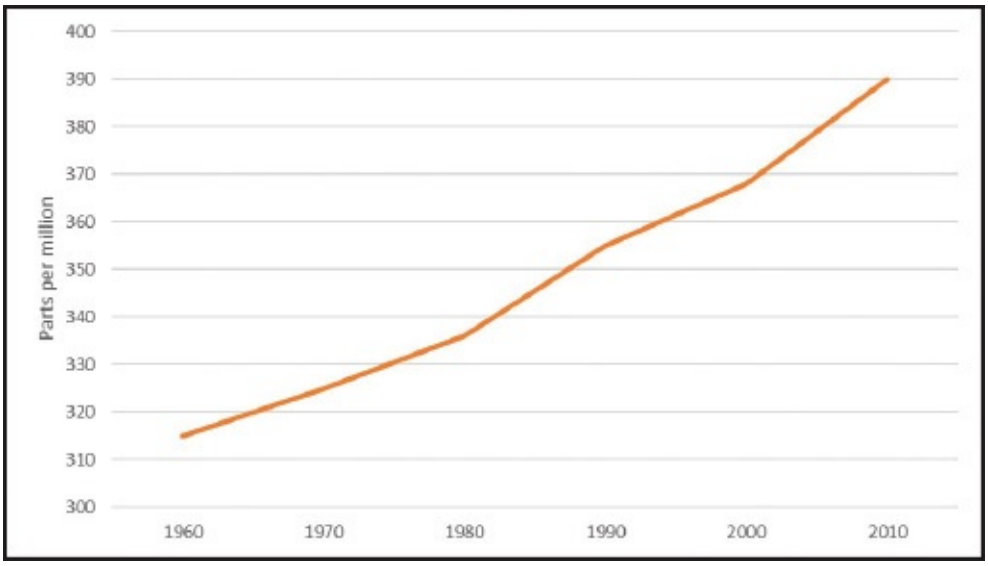


**Figure 11: Atmospheric $CO_2$ Data *(Tans, 2014)*.**

Whatever you believe, we know these things to be true: scientists taking samples from polar ice have found that carbon and methane levels in the air are rapidly increasing (Tans, 2014) and are higher than they have been in at least 800,000 years (Petit et al., 1999; Lüthi, 2008). Arctic sea ice has declined by 10 percent in just 30 years, shipping lanes through the Arctic Ocean are beginning to open, the world's glaciers are rapidly shrinking and, as long as industrialization and car ownership keep growing worldwide, the amount of GHGs in the atmosphere will continue to rise. At the current rate of increase, we can expect average annual temperatures to rise by 2 °F to 11.5 °F by 2100 (Environmental Protection Agency, 2014).

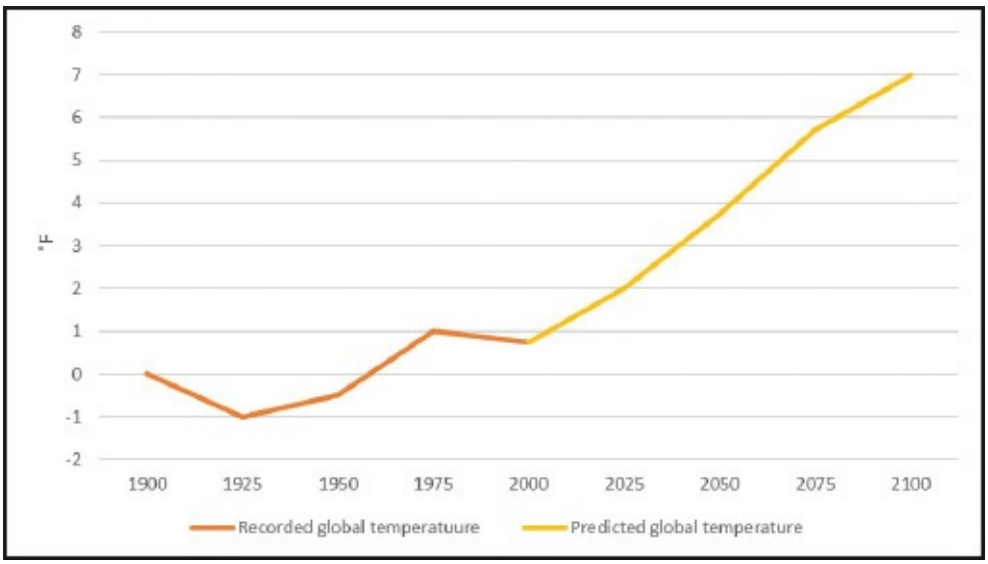


**Figure 12: Global Temperature Data and Models *(US Global Change Research Program, 2009)*.**

We continue to observe the terrible effects of this increase in temperature. Warming leads to a greater loss of polar ice, rising sea levels, and the devastation of coastal areas and island nations. Weather patterns can and will change dramatically, scattering rainfall heavily in certain areas, while leaving others virtually arid. This combination of floods and drought will ravage economies and food supplies. Storms are intensifying in both summer and winter. Species unable to adapt to these wildly varying conditions will struggle and ultimately die out. The great tropical reefs are already in danger. Even worse, the melting sea ice and glaciers mean more absorption of the sun's energy accelerating the process.

It really does not matter what you believe about the causes of climate change, because this much is true: if these trends continue, the world will soon be a much less hospitable place. A 10 °F increase would be catastrophic.

Nobody seems to want to take responsibility for climate change itself. Continuing the previous chapter's discussion of hollow laws, let us explore how and why we have little more than "the blame game" and empty laws addressing these changes in global climate.

"My hands are tied" is the battle cry from world governments whenever the subject of climate change enters the international conversation. Blaming someone else often follows that cry.

Lately, the economy has served as the most convenient excuse for politicians trying to avoid enforce healthier emission standards. How, after all, can a lawmaker be expected to concentrate on broad, sweeping changes to the corporate status quo when he is still just trying to save the economy from utter collapse? It is funny how politicians can use the "hands are tied" argument in favor of economic bailouts, while simultaneously using it to avoid responsibility on climate change measures. Even as the world's developed countries frantically work together to rescue the economy, those same developed countries do little more than point fingers at one another when it comes to rescuing the environment. Yes, the number of domestic environmental laws passed annually is higher today than it was back in 2000, but as we discussed in the previous chapter, too few of them render much effect. It is also true that they are more common in developing countries than in developed countries (The Economist, 2013). As you have seen, efforts at international treaties on the subject have been, at best, a trying situation, at worst, a disgrace.

In an attempt to get to the bottom of this blame game, we will examine the various international confabs organized in an attempt to reach a global treaty on GHG reduction. With this study, we will unravel two very important points: the lack of political consensus has prevented every international conference on record from yielding the desired outcome, and the private reasons that these outcomes have not been achieved is that the powers-that-be are almost always more content to play the blame game than they are to exact real change. What I intend to expose is a persistent lack of the kind of political will needed to reach a desirable outcome. Since the inception of these international confabs, they have looked less like symposiums on change and more like stages for political theater.

There have been dozens of international conferences on the subject of climate change. Let us briefly examine those of highest profile and see why each conference essentially fell apart, failing to produce the change it sought. Let us also address the question of why the sites for each of these conferences are chosen over sites that might shine a greater light on the problem at hand. Why, for instance, are we holding these things in tourist locations like Cancun, instead of industrial areas like Houston? Let us examine the source of discontent between major nations, and finally, let us question why these conferences are concentrating on clumsy and unenforceable "cap and trade" solutions, instead of innovative new technologies and strategies.

## The Kyoto Protocol

We begin our examination of the blame game with the highest profile of all the international symposiums on climate change, the Kyoto Protocol. The initiative was the first international effort to establish a treaty regarding the reduction of global greenhouse gas emissions (United Nations, 1998). Created in 1997, the treaty was heralded as a landmark in global politics. In

creating the now famous "cap and trade" system for GHG reduction, the Kyoto Protocol first placed a cap on global GHG production, while also creating a value for the gases themselves. This allowed GHGs to be commoditized and rendered into products that countries can trade. Countries producing large amounts of GHGs can exchange emission allowances with countries producing smaller amounts for cash. The cap and trade system has slowly evolved into one of the world's largest commodity markets, with annual trading levels exceeding $140 billion.

The concept was nothing short of ingenious. It provided the answer to a question that had been plaguing nations for many years: how can we effectively reduce GHGs when corporations are producing them? Governments supposedly had the will to make change, they just could not do it without corporate help—the old "my hands are tied" argument reared its head once more. With its cap and trade solution, the Kyoto Protocol gave companies the incentive they needed to finally start considering better management practices for their GHG emissions.

In many ways, the Kyoto Protocol established a trend toward a low-carbon economy. Unfortunately, it has done little to compel corporations and nations to invest in new green technologies. The Kyoto Protocol is further hampered by the fact that it was not ratified prior to its first expiration date of 1/1/2013. The agreement was amended in 2012 but still has not been fully ratified and has yet to take any legal effect. Further, several major countries like Russia, Japan, and Canada have already pulled out of the agreement in favor of their own national policies. Essentially, it is a lame duck protocol.

Whatever happens with the cap and trade system Kyoto introduced, it seems clear that the global market for GHGs will follow the same path as any other financial security of global interest. A GHG is a financial instrument that can be traded on spot, forward, or future contracts. The true political and economic impact of the Kyoto protocol is visible in the fact that it did not motivate any substantial investment in research and development in technologies to minimize carbon emissions. Rather, it created a global market for one financial instrument that is $140 billion strong—a boon to the financial markets and a bust for the environment.

The reason I do not see the cap and trade system working in any measurable way is that whenever a public good has a value, then enterprises will engage to increase the revenues and reduce the cost involved in achieving that public good's value. Given a conflict between the public good and a profit, profit always wins.

As far back as 1648, the Peace of Westphalia stated that obligations forthcoming from environmental pollution may be imposed on a state. Such an event never happened because then, as now, the political will to safeguard our environment always fell prey to international relations, internal politics, the profit motive, and greed.

As early as 2001, nations started abandoning the Kyoto Protocol because they saw no further benefit to remaining in it. The position of the US became very clear after the financial instruments were created and traded in the American securities markets: once the trades occurred, there was no further reason to subscribe to the Protocol.

## The Copenhagen Summit

The Copenhagen Summit, officially referred to as "the 2009 United Nations Climate Change Conference," attempted to apply a more political approach to the subject of reshaping the way nations think about carbon and react to climate change (United Nations, 2009). During the

summit, presenters addressed the science of long-term climate strategy, social disruption from climate change, the equity issue, meeting the challenge, and the costs of inaction.

As often happens when you get so many UN delegates together, little progress is made. There is plenty of talk to go around, but far too few actionable decisions or measurable results. In fact, at Copenhagen the disagreements were so prevalent that the only thing they managed to approve was a motion to take note of the Copenhagen Accord itself. In other words, rather than passing an accord for $100 billion in increased aid to the developing world, they only accomplished acknowledging that the accord had been presented and that everyone was aware it exists!

Think about that for a minute. The UN gathered to explore one of the most critical predicaments of our time. Everyone sat through hours and hours of compelling scientific data and explanations and listened to the dire consequences of doing nothing—and then they did nothing.

Many developing nations—those that would have benefitted directly from the accord in terms of funding for greener technologies, carbon reduction, and famine relief—pointed the finger at the industrial nations that had sidled up to the table. There just was not enough political will on the part of the developed world to make a change. What was the result? The world currently has a wildly lucrative carbon emissions market, but no commitment backed by monetary aid to clean up industrial wastes in developing nations or to reduce the emissions that affect those nations so dramatically.

Just to demonstrate how completely useless summits like Copenhagen have been, let's take a quick look at the justification by each side of the spectrum of developed versus developing nations that they managed to cobble together in this perpetual blame game. Developing nations blamed the United States Senate and Barack Obama for the failure of the conference to achieve an actual deal. The justification goes that because the Copenhagen Accord was negotiated with only a handful of nations participating, excluding the majority of UN member states from the discussion, developing nations had no say in how the accord was assembled. There was no motivation to sign it because they had no say in its construction—even if it happened to be full of great ideas. While developed countries like the US pointed fingers at governments like China for allowing the talks to fall apart, developing countries pointed back, claiming that President Obama had essentially backed China into a corner by demanding concessions from them without offering them much in return.

Other finger-pointers blamed the host country itself for not issuing enough invitations to the final two days of negotiations, leading to inequities in the expectations of carbon reduction from country to country. By way of example, China would have had to reduce their emissions per capita to somewhere around a fifth of the per capita expectations leveled on the United States.

Obviously these kinds of inequities cannot stand in a global initiative of this scale, but the finger-pointing did not come from just one side. Australia seemed to believe that India, China, and several other emerging nations formed a pact to undermine attempts to create legally binding carbon emissions targets in some seedy effort to ensure their continued and unmitigated economic and industrial growth. The United Kingdom, meanwhile, set the blame solely on China's shoulders, accusing them of sabotaging the conference by placing the onus on Obama to make massive concessions. The divide from the China/India perspective, at least according to the UK, was that these emerging countries did not believe it was fair to hold them to stricter standards than those expected of the US. They argued that they should be allowed to pollute at least as much as the United States pollutes—never mind what having three or more US-level polluters would do to the global environment. What is fair is fair, the developing countries argued. Their concept of

fair is that if the US was able to develop on the back of coal power 50 to 100 years ago, then China and India should be allowed to do the same now.

From China's perspective, their representatives played a key and constructive role in the talks, ultimately leading to the "success" of the summit. A curious claim, considering the idea that China played no part in the closed-door discussions that encompassed the last two days of the conference. Yet responsibility does not all fall into China and the US's backyard. Some blamed African countries for trying to shift the focus of the conference away from climate change and toward an effort to improve the entire continent's standard of living. To some, the conference seemed more about anti-Americanism than protecting the environment. Others placed the blame on India, saying that power brokers present at the summit wanted nothing more than to ensure that the elites of that nation could continue to enjoy their lavish lifestyles at the expense of India's millions of poor.

No matter whom you believe, without real change administered at the Copenhagen Summit, and with the expiration of Kyoto fast approaching, the European Union found itself forced to implement legislation to revise its carbon allowances system by way of a nefarious-sounding program called the Emissions Trading Scheme (ETS). The ETS is based on a "cap and trade" principle. The "cap" refers to a limit placed on the amount of GHGs a company can emit in its factories and production plants. The cap is continually reduced, therefore reducing the total amount of emissions over time. While the intentions may have been good, nothing much came of it. Basically all this scheme does is further strengthen the carbon emissions market by granting free allocations of $CO_2$ emissions to global sectors exposed to international competition. In other words, they took measures to drive down the price of $CO_2$ emissions commodities by flooding the market with paper that no one has to bid on.

The entire summit achieved nothing and, as a result, one of the most powerful political unions in the world took unilateral action to effectively weaken the one and only thing the Kyoto Summit actually achieved. Clearly, the blame game does not just impede progress, it can also be a remarkably destructive factor in its own right.

## Cancun and Copenhagen and Canada, Oh My!

What comes to mind when you think about Cancun? I picture sunny beaches and crystal waters. I see a sublime tropical vacation in a tourist hotspot. Quintana Roo is like another world; there, they harbor no concerns about the United States producing the majority of the world's $CO_2$ pollution. Nor do they share the worry arising from the rest of industrial Mexico, whose capital suffers some of the worst air pollution in the world. It seems strange, then, that an area with relatively little industry and almost no pollution would serve as the host site for the next major, and ineffective, climate change summit. Why would delegates from all over the world gather at the tourist locale of Cancun to discuss a problem that does not seem to exist there? Why not Mexico City instead?

Now, what comes to mind when you think of Canada? I think about a giant and pristine country full of clear water and vast natural spaces, with sustainable business and industrial practices. I think of a place that should be on the cutting edge of climate change discussions, a place that should serve as both champion and model for all future climate change deals. Strange, then, that Canada is no longer a part of the Kyoto Protocol. Why would a country that is so much

in favor of climate change reform refuse to remain part of the world's highest-profile international climate change accord ever struck?

Why is a place like Cancun hosting a major symposium on climate change, and why is the country arguably most in favor of controlling climate change not interested in sticking to the Kyoto Protocol?

Many cities have the capacity to host these summits, but a long-view study suggests that the ones that win out have a high degree of flexibility and capability when it comes to climate change. In other words, the host countries are already in far better positions than a country like the US to make a real and measurable change to their energy infrastructures. The decision-makers behind these conferences are inclined to choose host countries most equipped to put the agenda's best foot forward. The problem with that theory is that many of those are third-world countries, so it's not just a matter of political will, but also a matter of infrastructure.

Cancun is just one of a series of rather odd-seeming choices for the climate summit host. We have also seen cities like Bonn, Copenhagen, Rio de Janeiro, and Accra, the capital of Ghana. Ghana is a third-world country situated on Africa's Gold Coast. Accra seems to have been chosen not because it is an environmental landmark or a tourist destination, but because it is one of the few democratic societies on a chaotic continent. It does seem that there is a political need to hold a climate summit in Africa, and non-democratic nations need not apply.

So we can see that prerequisites to becoming a host country are to demonstrate an infrastructure and a political ability to exact real change. We can also see that it is important to be a democratic nation, which, perhaps, is implied by "political will." It also seems to help to have an endangered natural resource that the world values and which might be adversely affected by climate change. Cancun is a clear example, but take Rio as another. Way back in 1992, when the world hosted its first purposeful discussion about climate change, an affair histrionically named "The Earth Summit," leaders at the UN chose Rio because of the tremendous threats to the Amazon rainforest. Notice that Brazil also happened to meet the first two criteria: it was very much a third-world country and very much ready and able to shift its infrastructure toward less polluting energy resources. It also enjoyed the benefit of being democratic.

There, in part, as a response to the threat against the Amazon, the UN put together a non-binding accord to reduce GHG emissions by the year 2000 (United Nations, 1992). Unfortunately, the accord was not effective—most notably as it was non-binding, but its clunky acronym, UNFCCC (the *United Nations Framework Convention on Climate Change*), did not help.

Kyoto came next, and, in addition to meeting those important criteria established by Cancun and Accra, it also happened to be one of Japan's most historic cities. When the world suddenly realized that the heritage and history of Kyoto were underappreciated, Kyoto landed the next big summit, and the one that led to the catchiest name.

Copenhagen was next, landing the gig mostly because it was set up to immediately follow the scientific conference called "Climate Change: Global Risks, Challenges and Decisions." Copenhagen got itself a conference because it was the most cost-effective and time-efficient locale. The attendees only had to buy one plane ticket, and since both events were held at the Bella Center, they did not even have to change hotel rooms. The frustrating part is that even though the US, China, India, Brazil, and South Africa all managed to draft the "Copenhagen Accord" at this event, it was not actually adopted by anyone of significance, just "taken note of" as a great challenge facing the world. Sadly, much of the world anticipated this result before going to Copenhagen!

So why is all of this important? In short, if we think about where these conferences are held, in conjunction with their general lack of measurable results, a clear picture starts to emerge: they are little more than a farce, dramatic political theater in pretty places. In many ways, they serve only as an opportunity to boost the host city's economy, while giving international politicians a chance to be on TV as they sidle up to their allies or bicker against their enemies and enjoy a few margaritas on the beach. As such, the venues have been little more than a grand stage upon which overwrought politicians can clatter their wind-bagging in a global forum for the ever-present and always unproductive blame game.

## Conclusion

None of these conferences is even coming close to discussing solutions that could lead to actual change. Kyoto established a global market for emissions trading. Copenhagen generated a bunch of countries officially on record as saying that the stuff outlined in Kyoto was important, all without legally binding any of the countries to follow anything outlined in it. The initiatives that Kyoto raised are basically on life support, with countries like Russia and Belarus refusing to adopt such stringent standards.

The fact remains that it still wouldn't matter one iota if we could get everyone to commit in actuality, instead of just in spirit, to accords like Kyoto.

Yes, here I am playing the blame game, but hear me out. What sounds like it would make a bigger difference: a bunch of major players trying to leverage against one another for the most cost-effective climate change Band-Aid that no one will ever adopt anyway, or actual infrastructure measures that could fix every climate change problem by way of advanced technologies? I am going to go with the latter.

If the politicians cannot save us, then perhaps the engineers can. There is a host of technologies that could lead the charge, and more are coming every day. Of course, we have the sweeping and cost-effective changes we can expect from technologies from the Green X Platform, but we also have stories like German Mennonites migrating to northeastern Paraguay and developing environmental solutions such as air-conditioning their homes by way of carefully dug tunnels and powering their communications with solar panels. Here, we have a generally technology-averse people understanding the need to live a sustainable lifestyle and then making that sustainable lifestyle a reality with just a few gadgets and thoughtful solutions. The Mennonites are not alone, either. Other small religious and political sects have established sustainable communities in otherwise undeveloped places like southeastern Bolivia and eastern New Mexico.

Despite what many might believe, the technologies exist and most are not even that difficult to implement. The thing standing in the way is the constant grandstanding and finger-pointing of the world's most powerful leaders, and the greed of the moneyed interests behind them.

Perhaps it is time for all of us who actually care about the concept of slowing, reversing, or even making one shred of difference on the issue of climate change, to take a step back and do it ourselves. We have waited long enough for the leaders to lead. In the absence of actual results—or even the wholehearted acknowledgment from all countries that there is, in fact, a problem called anthropogenic global warming—the responsibility falls to each of us as citizens and consumers who care.

# Chapter 9:

# CLOSE CALL

***Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has.***

***—Margaret Mead***

In this chapter, I intend to discuss the opposite side of the political coin that I so vehemently railed against in Chapter 8. We have had our fill of political ineffectiveness. Let us turn, then, to an examination of what happens when political figures actually do something to create real change.

Money talks, right? It should come as no surprise that one of the most significant (successful) political agendas in our lifetimes had to do with money. In this chapter, I intend to dissect the causes of the financial meltdown that occurred in 2008 and discuss in detail how life as we know it in the United States could have changed forever, had it not been for certain interventions put in place by the President and a reluctant legislative body.

In late 2008, there were those media and political pundits who believed we were headed for the single greatest financial disaster in world history. Some of the more doom- and gloom-ridden among them suggested that the average American would soon face shortages at the grocery store, long queues at the gas pump, a run on banks, and staggering shortfalls of natural resources. Here we are in 2017 already, so let me ask you, how did that prediction turn out?

The point of this chapter is to demonstrate that, even in these troubled times riddled by seemingly ineffective governments and an apparently gridlocked political world, simple legislation can still make a difference. It would appear that, through keen political insight and action, we successfully averted an unprecedented catastrophic global economic meltdown. It was a close call. So, if it is possible to save the world's economy from imminent doom, why should it not be similarly possible to fix a similarly ailing environment?

## The Great Freak-Out, 2008

As we look back at widespread fearmongering in late 2008 and early 2009, we perceive a tendency to hide the shame (and the bloody economic aftermath) of America's self-inflicted wound. What politicians once called "the Great Recession" looks now as if it was little more than

smoke and mirrors designed to distract from the potential disaster our own greed, financial irresponsibility, and political posturing were leading to.

I am not pointing fingers here. This was not a Republican recession, nor was it a Democratic recession. We cannot strap the blame to President George W. Bush's shoulders, and we cannot pin it on President Barack Obama, either. This was a recession in the making from both parties and both presidents. Besides, regardless of who got us in or out of the mess, we do not seem to have the fortitude as a society to admit that our national economic behavior of late has been fueled by remarkably un-American values.

Many of the same values that made this country great (those same values that we teach to others throughout the world) were consciously numbed by greed, carelessness, cynicism, and convenience. Homeowners discovered that cashing the equity in their homes would make them more money than they could earn in their lifetimes. Business provided the "sign and run" convenience of subprime mortgages. We all understood that the higher the value of our homes, the more we could make. Greed and cynicism guided our appraisers, underwriters, bankers, and everyone else, including the homeowner, to increase the value of homes without any forethought. Bankers and regulators favored frequent securitization and homeowners loved the effects of the "irrational exuberance."

These realities were completely foreign to America's founding values of hard work, self-control, and integrity. The rugged individualism Americans used to love so much went by the wayside. The idea that an abandonment of those values could be so heavily responsible for global financial welfare is a frightening thought.

Let us delve a little deeper. The act of shifting consumer short-term debt (credit cards) into long-term obligations (mortgages) motivated consumers to spend irrationally and live beyond their means. It also, however, increased the moneymaking opportunities for lenders. The speed with which lenders securitized mortgages created a fever for signed documents. The magic of capitalism took over the cookie cutters, and the "I have got to have it" attitude found fulfillment in perishable money backed by plastic.

Given the result, it would appear that bankers are not the most properly equipped members of our society to manage the full faith and credit of the people of any nation. Their priority appears to be to maximize the net value of their financial institutions. The only members of society who can manage the full faith and credit of the people are their elected officials, but these officials are also clearly in disarray. The worst part? The stimulus these elected officials voted for allowed the banks to avoid bankruptcy without actually solving the problem created by the aforementioned trends.

## Gold-less Standards

Reality shows us that nearly all of us were (and are) guilty of violating those principles that made industrialized nations so progressive. Everyone who bought a home or refinanced their credit card debt over the past 30 years in the industrialized world effectively abandoned any memory of the principles that gave them the highest standard of living. Anyone could tell that the hourly increases in the prices of homes would have frightening consequences, however every single person and institution on Earth benefited from the financial management capabilities of

the industrialized nations. Collectively we seemed unwilling to acknowledge, much less act upon, the judicious warnings.

The currencies of the world's industrialized democracies are limited only by the full faith and credit of their people. However, when the Gold Standard was laid to rest, democracies had little idea how to manage the new currency system. Most nations imposed limits on financial institutions, though it seems clear today that those regulations remain inadequate.

Every economic recession in history started when a group of people touched off an event that caused widespread distrust of the financial system. The first documented recession was in 1789, when America's currency consisted of copper coins. When a small group of people counterfeited those coins, distrust, even panic, ensued. In the case of the most recent recession of 2008, there was no physical representation like copper, but, rather, the actions of a group of bankers jeopardized the public trust.

A system that protects its people's assets is one that exists by popular mandate. The many institutions that comprise our economic sectors attempt to achieve this goal effectively and efficiently. The financial interaction between the household sector and the financial sector is corrupted and is in critical need of regulation. The economic consequences of that behavior have short-term implications like periods of severe lack of liquidity, however long-term consequences are clearly visible in diminished individual net worth. The difference between a recession and a depression is that the former is measured in terms of time and liquidity, but an economic depression should be measured by the losses of the average person's asset values. Regardless of what we can deduce from the lack of negative GDP for more than two consecutive quarters (the definition of a recession), the economic collapse of 2008 depressed retirement accounts, home equity, and the value of résumés. In fact, all the economic values of individual wealth were negatively affected.

We're all tempted by greed at one time or another. Easy lending can easily stimulate our unhealthy appetites for profit, fueling Alan Greenspan's "irrational exuberance." To minimize damage and avert future disasters, industrialized nations would do well to exert increased control over all their financial regulatory institutions.

## The New Economic Reality

This depression has taught us that equity values are perishable, uncertain, and in many cases, constraining. As the labor force of industrialized nations seeks to adapt to the new economic reality, homeownership might limit any homeowner's ability to improve their economic conditions by moving. In this new economic reality, the wealth of individuals becomes increasingly based on cash holdings, liquid investments, and multiple sources of income.

Think about it this way: for many decades, businesses have viewed their competition as rivalry and declared price wars on each other. Given that real wars are destructive, it makes sense that price wars may be rather destructive processes, as well. Put plainly, they do not build up businesses in the way that their intrepid owners might desire. What they do build up are erroneous consumer expectations. This is exactly how an industry reduces its way down to things like "the dollar menu" or "value combos" at our favorite fast-food restaurants.

This is only one small example. Over the past 30 years, all sorts of companies have engaged in destructive competitive practices. By standardizing most characteristics of products and

services, the act of leaving a product's pricing as the only variable with which to compete will undoubtedly drive it down. In response to this alarming trend, companies have recently worked to differentiate their products or services and develop new constituencies to increase their market share. In other words, they have continued with the old adage that the consumer is king. Ironically, to support that belief, businesses need the cash their customers hold, even as they seek to differentiate their product or service offer. How do they get that cash? Low, low prices.

Another troubling development centers on the credit crunch, which in some respects forces consumers to diversify their sources of income to gain discretionary wealth. What most workers earn these days is just not enough to make ends meet. With few options for broadening their income sources, there emerges the new king: the employer.

Wage earners understand that they need the benefits of a full-time job and one or more additional sources of income. Likewise, homeowners also need to look for opportunities to generate cash savings from activities such as gardening. Even so, money remains tight for the vast majority of Americans.

Fortunately, some solutions appear to be emerging from the problems themselves. Consider obesity. The most widely recommended cure for obesity is exercise. If you grow vegetables in your garden as a more affordable food source, well, that is an easy, efficient way to both save money and increase exercise. "Old" technologies like composting, plowing, and raising a limited number of small animals such as chickens can help solve the new problem of obesity. Pair that effort with new technologies, such as installing solar panels, and the savings and benefits you realize will only grow. This is the new economy in a nutshell: it will require that people focus on attaining the most benefit by developing cash-generating activities as part of their overall lifestyle.

The consumer will always be king of a market economy, but ours isn't a market economy anymore. It is something entirely different, and its king is the employer. Employers hold all the power because millions of people depend on them so desperately to provide their income.

## Why this Recession Isn't Over

As I mentioned, the first documented recession started in 1789 and lasted four years. It began when a small group of businesspeople linked to the financial services industry decided to counterfeit copper coins on such a scale that people lost all trust in the financial system. Sound familiar? Both then and now, we see greedy financiers threatening the integrity of our financial system. Greed created that first documented recession and it has created every recession since.

The solution lies not in figuring out how to curtail the unbridled appetites of Wall Street, but rather, in how to properly regulate the financial sector to prevent bankers from harming borrowers yet again. In hindsight, it is clear that the financial meltdown of 2008 led to government intervention forcing American taxpayers to "buy out" defaulting homeowners who had obtained loans despite their lack of ability to repay them. This benefited the banks, many of which were close to bankruptcy, but hurt the masses. Home prices plummeted, causing a vast number of homeowners to lose equity.

It has been said that recessions are actually a necessary evil. If you buy into this cutthroat capitalism mentality, then a recession's purpose is to weed out weak companies so that the strong will prevail—and get stronger. Trouble is, during the 2008 recession, only one weak

financial institution, Lehman Brothers, was forced into bankruptcy. All the others were strengthened not by market corrections, but, rather, through taxpayer sacrifice and the enormous losses of homeowners.

This set a discouraging precedent, suggesting that our government will bail out (in effect, finance) unbridled greed. Get yourself underwater financially? Well, if you are big and important enough, the government will protect you by requiring the taxpayer to wait on all those critically important investments in infrastructure so we can fund the excesses of financial institutions just like yours. Even nine years later, the Great Recession is far from over because large financial institutions still have no reason to fear the law. In essence, the financial sector has become the only sector that exists beyond the framework of the law.

We now know that this travesty forced taxpayers to forgo many infrastructure projects, decreased the value of the wealth of individuals, and diminished many people's ability to earn a living wage. Returning to our previous war analogy, these are similar devaluations seen in times of armed conflicts on our own soil. Consider the following parallels: the effect of the Great Recession devastated many families as they lost their dwellings. It compromised their health as they switched to cheaper foods. It placed great emotional strain on children who watched their parents' anguish at losing everything they owned—including their ability to secure credit. Like the fallout of a real "war," these things affect lives in irrevocable ways, with ripple effects for years to come.

## Whatever Happened to Ethics?

America is home to some of the world's best research universities, all of them adhering to the mission to discover, teach, and educate effective leaders. In the realm of business and finance, the objectives remain to guide our nation through the peaks and troughs of economic phenomena. Over the past couple of decades, however, there appears to have been a clear departure from the knowledge of ethics and the civility upon which many of these institutions were founded. This departure has become evident in the exercise of values inherent in the American entrepreneurial class. If we consider the QS TopMBA.com Applicant Survey, 2011—the largest survey of MBA applicants ever conducted, involving 4,527 applicants and comprising a demographic spanning everyone from young professionals to experienced executives—a number of key points emerge. First, the reasons for seeking an MBA have not substantially changed in recent years:

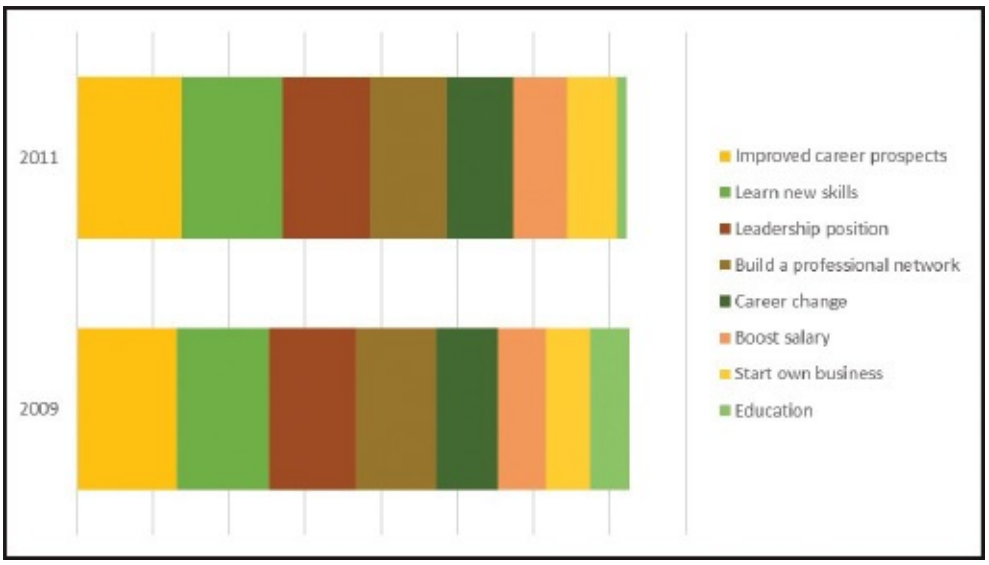

**Figure 13: Motivations for Pursuing an MBA *(QS TopMBA, 2011)*.**

Secondly, the survey lists the sectors of our economy that boast the most MBAs:

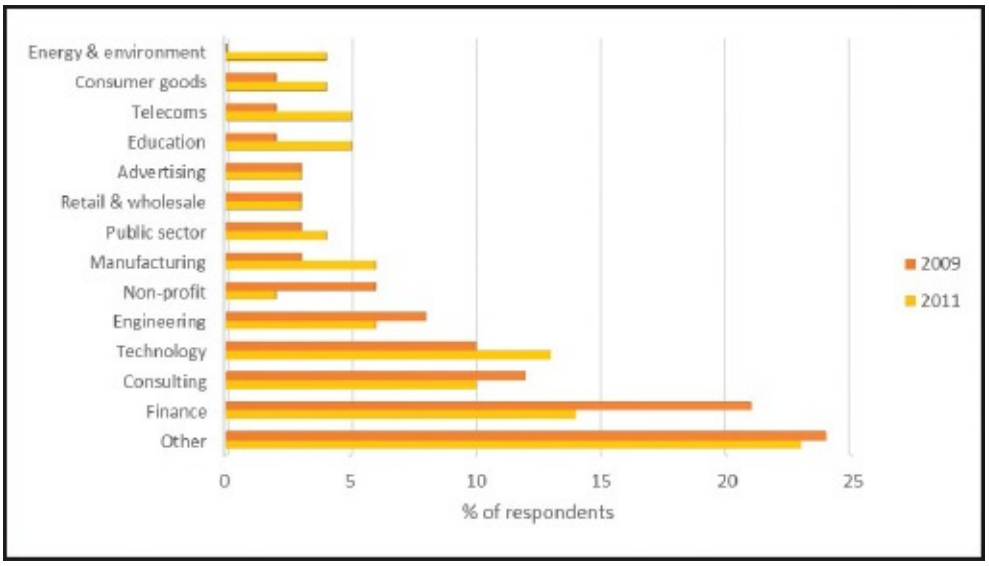


**Figure 14: MBA Pursuers' Employment by Sector *(QS TopMBA, 2011)*.**

And the economic sectors toward which MBAs tend to gravitate:

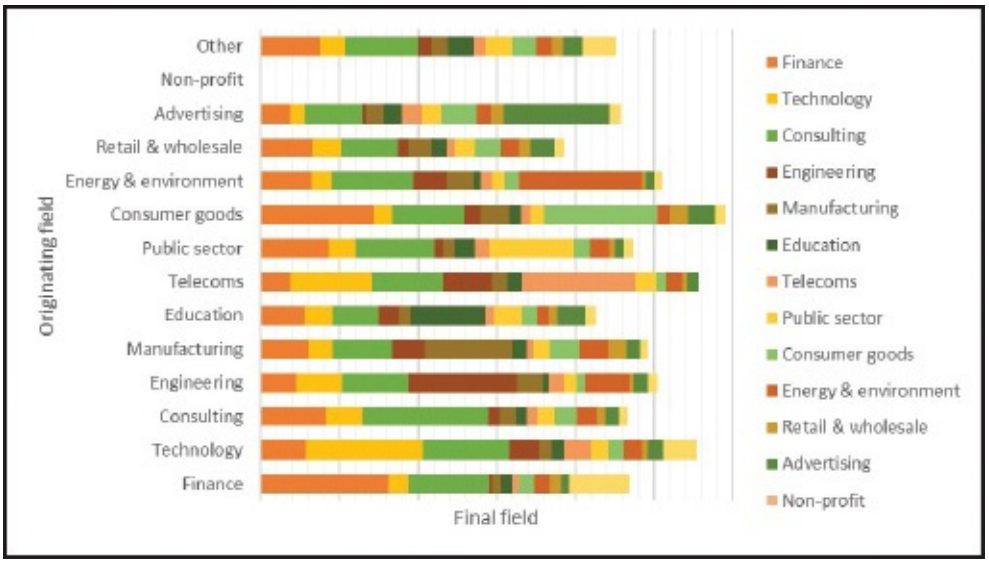


**Figure 15: Sectors in which MB Pursuers are Employed *(QS TopMBA, 2011)*.**

From the above, it is clear that Consulting and Finance are the most attractive sectors for MBAs, and that the students entering these fields tend to originate in Finance and Consumer Goods. The reality demonstrable by the pursuits of this special breed of leaders shows that MBA candidates' focus remains on matters that are important to them but not their companies or, to a much lesser extent, our nation as a whole.

These are the same people who stood at the helm of institutions that managed the financial resources of the world, yet they were unable to remember whether their companies violated the law. What is even more amazing is that, at the same time, the leaders of these banks had apparently learned enough to know beyond a shadow of any doubt that their companies were divorced from any legal requirements and/or business ethics. It is kind of difficult to believe that all these top minds—all these incredibly well-educated minds, these CEOs, CFOs, COOs, CIOs, these representatives of internal legal counsel, accountants, and other professionals of high

finance—had literally no idea that they were all part of the team that violated the law, day after day, until a single benevolent accountant blew the whistle on them.

How much longer can we tolerate these trends? How much longer can we continue to protect major financial firms at the cost of the taxpayer? How much longer can we keep sending bailouts while ignoring infrastructure demands? How much longer can the average worker over-leverage his debt while the rich get richer? How much longer can we maintain our luxurious lifestyles under wages that fail to keep up with the cost of living? How much longer can we continue to punch the clock while the bills pile up on the table?

## Mesoeconomics

You have likely heard the terms "microeconomics" and "macroeconomics," but most people are unfamiliar with the word serving as the title to this section. Well, if microeconomics is the study of everything that has to do with buying and selling and supply and demand, and macroeconomics is a study of aggregate demand, mesoeconomics can be understood as an examination of the political, social, and financial *structures* that drive these micro and macro trends.

Put simply, micro- and macroeconomics are like the players on a playing field; mesoeconomics is like the field itself. Depending on the structure and layout of that field, the game will progress in one way or another. In a country with healthy mesoeconomics, we can expect at least relatively predictable micro- and macro-economic happenings. In a country with less healthy mesoeconomics, we are likely to see financial systems going haywire.

Knowing this, what would you guess is the current state of American mesoeconomics? We have already discussed the moral decadence of those in power, and we saw how that corruption decimated the financial systems in 2008 and beyond. When you have over 45 million Americans living in poverty while the CEOs of America's top 500 companies are each earning an average annual compensation of over $10.5 million, you get an idea of the kind of unbalancing effect of that decadence. Statistics like these suggest that the country's mesoeconomics are spiraling out of control.

In the political arena, the country seems to be suffering from an overabundance of political elasticity, where the outdated traditions of the two-party system hold sway over practical and more mundane political solutions. This is how—even as millions of Americans are food insecure—health care costs continue to spiral out of control, roads and bridges collapse, and Washington shuts down over a petty squabble. The frightening thing is that "political elasticity" used to be a term reserved for developing nations. It was the concept of why and how countries in Africa or South America could not quite ascend that last lip of the economic plateau: their political parties held too violently to outdated and sometimes ancient ideals that would not allow them to cooperate.

Nowadays, that political elasticity exists inside Washington, even as developing nations overcome it. Today, most developing nations demonstrate better annual growth figures than most Western countries—and it all comes down to policymaking ability. The United States used to have it, but not anymore. Now we bear witness to things like ultra-religious senators voting against contraception because they believe that God abhors contraception. Meanwhile, science has proven that contraceptives would solve a host of social and health problems in this country.

Promoting abstinence over contraception has led to more people contracting AIDS, more people facing the abortions that the same senators so detest, and more people living in the abject poverty that comes from having children they cannot afford.

There was a time when the majority of politicians believed it was their job occasionally to vote against their conscience for the good of the people and to make way for political expediency. That time in this country appears to be over. Washington has suffered major setbacks in the practicality of utilizing political solutions to everyday legislative discourse. For example, due to political expediency, many members of the GOP refuse to support any policy bearing even the semblance of introducing alternate solutions to our current energy problems. Former House Speaker Newt Gingrich breached party protocol and supported limited alternative energy proposals during his term, but he was the exception, not the rule.

Antiquated party beliefs seem to take precedence over common-sense approaches to modern problems. For the best example, look no further than the debate over the right to bear arms. The original framers of the Constitution wrote this measure in response to a need for protection from foreign aggression and their colonial master in Britain. Two hundred years after the British permanently left the shores of the United States, we still hear those arguments from Capitol Hill to further the spread of guns, resulting in despair and pain to families confronted with the meteoric rise in gun violence.

Of course this is not the first time we have seen such posturing out of Washington. Cultural elasticity in politics has surfaced during several periods in history where lawmakers could not effectively hold their cultural beliefs in check over practical and mundane issues, but modern iterations of the phenomenon are particularly disheartening. Recently, Senator Trent Lott made disparaging comments during the 100th birthday celebration of Senator Strom Thurmond, intimating that the rest of the country should have voted to support Thurmond's call for racial segregation. In such instances, our lawmakers offered views that ran contrary to modern realities and societal needs.

If we hope to fully overcome the close call that was 2008, we need politicians who can vote for the good of the people and not for the good of their long-held cultural beliefs.

## The Case for a New Axiom

Before we get too depressed about what lawmakers are doing to the United States, let's go back to the early stages of the book, where we first discussed the new wealth formula. If you will recall, I made some comparisons between the wealth formulas of 400 years ago and some theories on the wealth formula for these modern times. I made the connection between the way slavery drove the economy 400 years ago and the way financial strapping seems to drive it today. It is a controversial claim to suggest that we're seeing a new form of slavery emerging in the modern market, but it is difficult to ignore the underpinnings that put the average global citizen under so much financial duress that they have literally no choice but to continue working jobs they hate for pay so low that they can barely cover their bills. Like a slave, such a person is beholden to his employer, making it difficult to improve his standing in life.

If you will recall, we derived from those old formulas of wealth creation our own formulas—formulas that I sincerely hope will help usher in a new era of financial independence for the

individual. Home equity can be the great equalizer when it comes to wealth creation, as both the financial institution and the homeowner benefit from the transaction of a home purchase.

There are, however, a couple of flaws in this model that you might have spotted already. One we know from this past recession (and indeed previous ones) is that economic downturns can leave the majority of homeowners with little more than dust and smoke for equity. If the climate is right (or wrong, as it were), the perceived value inherent in most homes can all but disappear. This is a good point, but I would argue that it is moot because, for the homes we are talking about during this most recent recession, that equity was never really there in the first place. Perceived equity and actual equity, after all, are two very different things.

Most (if not all) of our astute economists have preached the virtues of two existing and current ratios to evaluate homes and the equity they generate. Those ratios, as we have discussed, are the price-to-income (PI) and price-to-rent (PR) ratios. Our argument was that if the equity in homes could not withstand the pressures of a recession (or was in fact the precursor to the near collapse of the economy), then those two ratios need to be re-evaluated—hence our introduction of the price-to-energy (PE) ratio, which measures the energy (revenue/wealth) that an asset such as a home will generate over its lifetime, thereby rendering these two initial ratios dynamic. Both the PI and PR ratios will increase the more the PE ratio increases. If your income increases on a monthly basis compounded over 30 years, you will have created wealth and moved up the economic ladder.

Fortunately, there are already companies leading the way toward this new axiom. Take Georgia Power, for example. Headquartered in Atlanta, Georgia Power has spent the past few years constantly offering suggestions on how to improve the energy efficiency of their customers' homes, thereby helping reduce utility bills. The company even offers to perform energy audits to help customers figure out where they are losing energy through the outlets and walls of their houses. The question is, why would an energy company want to help homeowners save money when they are in the business of providing energy and improving their bottom line? Has their self-interest changed to a sustainable one?

We also know that prices of household electronic and technology products have been reducing while performance has improved. A computer from ten years ago was more expensive but far less powerful and efficient than today's models. We also know that driven by technology (namely the Internet), prices of electronic and technological consumer products have reduced dramatically to the point where we have the "One World Price." These phenomena are no accidents. As prices drop, the only commodity of value in the value chain will be knowledge.

I am talking about non-pecuniary constructs like intellectual property being swapped as a service in a sustainable economic environment. Georgia Power, in offering help to its customers, has converted its knowledge of electricity savings into a market advantage. It is this kind of sustainable self-interest (as opposed to Smith's rational self-interest) that drives General Motors to desire LEED certification on their building.

Think back to the original wealth formulas we discussed early on in the book. Ask yourself if you can trust these old formulas, ratios, and paradigms that have brought nothing but misery to the average person. Wealth creation has to benefit all parties in the transaction. It is in everyone's best interest—greedy financiers and gridlocked politicians and the average citizen alike—to adhere to a new paradigm that will keep this country afloat and employees happy in their jobs. Prices of goods and services can only drop enough to create an incentive to keep producing. In addition to the kinds of non-pecuniary measures Georgia Power has taken, the country's

"creators" can introduce this new wealth creation axiom into their methods of production as a matter of survival.

There is really nothing to lose here, because current trends suggest that prices for just about everything will drop enough to dilute the margins of even the healthiest companies. Yes, as prices drop, you can gain more market share because more people can afford your goods and services, but that cannot be your only incentive or motive to produce. Employers' shared responsibility of staying alive and keeping their customers happy and employees well paid, coupled with all the positives, should be enough reason to embrace this new axiom.

Do not just build a house—build a house that can generate revenue for the homeowner. Do not just assemble an automobile—think of ways to assemble an automobile that will generate wealth. It is often said in political circles that a strong EU or a strong China is in the best interest of the United States. Well, I suggest that a strong, financially independent citizen is in the best interest of the United States, and the world at large.

A financially independent citizen will depend less on the government for entitlements, will be free to choose (as Milton Friedman once proclaimed) any school without the pressure of borrowing to finance education, will bolster the US national security standing, will offer an enormous boost to the GDP, will eliminate conflicts through our shared interest of wealth creation, and will protect the environment—just to name a few of the host of positives this new axiom promises.

Milton Friedman, Adam Smith, and all those great thinkers with a libertarian stance are clearly justified in their ideas. They were great men of their time. But the world has moved on. It is time for a new model.

As I demonstrated in Chapter 1, with the current model of capitalism, the tools of production and wealth generation rest on variables such as individual skill, capital, labor (during the Industrial Revolution, anyway), and credit (a more modern bent on leverage). We have added variables such as technology and social media, land, and let us not forget the role of capital cronyism, corruption, and bribery.

With the dawning of this new era, we can revise the principles of individual growth, freedom, and prosperity into a new wealth formula that looks like so:

***Wealth = Land + Birthright***

There you have it. If the trends discussed in this chapter continue, this is what capitalism will look like in the coming years. Clear and simple. Manageable for anyone willing and able to purchase or inherit land. When I write "anyone," I mean "anyone." That is where the "Birthright" portion of that equation comes in. "A birthright?" you might say. "Wealth can never be a birthright. You have to earn it."

Remember, we are not simply talking about a new epoch of wealth creation. We are talking about a new brand of capitalism arising out of the old, tapped-out version and the politicians and greedy financiers running it. In the new era, wealth becomes a birthright because the tools for its creation are nothing more than the sun, air, and water—unalienable rights, all three.

Do not believe me? Fifty years from now, try telling a child in Singapore that he owes you a "sun tax" because he utilizes the sun to create and generate wealth or income. Would your claim to such a tariff be legitimate? No. No one (not even the most powerful nation in the world) can own the sun. Nor the air. And if recent developments continue, neither can one own water.

In 30 years (or less), when we have reached solar grid parity, the sun will by nature be a wealth generator for anyone with a solar panel. As technology advances, solar cells, photovoltaic paint and glass will gain in capacity, making them even cheaper than conventional sources of energy. With these developments, not only will an individual be able to generate megatons of energy, but all their life accessories such as their home, cars, TV sets (if they still exist), cameras, washing machines, computers, and on and on, will begin generating energy during the nano age.

All that energy turns into money. All that money derives from the heat of the sun. All that money becomes a birthright—the default opportunity for every living soul to start becoming wealthy from the moment they are born.

The old brand of capitalism had its uses. It generated the Industrial Revolution and vaulted much of the Western world into modernity. Of late, however, it has created little more than an economic divide—a chasm between rich and poor that grows deeper and wider every day. It has created a small class of mega-rich and a massive class of increasingly apathetic and misguided people still chasing "the American Dream."

For too long, propaganda has told us that it still rings true that a man or woman can rise up from poverty through hard work alone; the old bootstrapping mentality. Of course we know it takes much more than hard work. Often, it takes things (and people) not available to every person on the planet. In fact, these things (and people) are available to very few people on the planet. However, you cannot fault the *name* of the concept. "The American Dream" contains the word "dream," after all, and what we all know about dreams is this: they are rarely realistic and practical—and more often than not they are completely unattainable.

The modern fallacy of the American Dream—and the crux of why I believe it to be lacking—can be found right at the heart of what it supposedly takes to achieve the dream itself. Let us say you have excellent credit. Let us say you have a better than average job. If I am a bank, I could extend to you a 30-year loan so you can "buy" a million-dollar mansion. Surely, this will mean that you have arrived; you will have achieved the American Dream. But what happens when you lose your job? What happens when you have three kids in college at the same time and you cannot afford to meet all your financial obligations? What happens when you miss three house payments? You go into foreclosure. Ownership of your house reverts back to me, the bank. By this point, you might have already paid me three million dollars for your one-million-dollar house, but that doesn't matter. You'll still end up losing your home in the financial bait-and-switch scheme called foreclosure. Ah, the American Dream in action.

That is the true beauty of our new brand of capitalism based on environmental sustainability and wealth creation by birthright. Your ability to generate wealth depends only on your ownership of land and your birthright to the power of the sun and the availability of air and water. With assistance from technology and social media, the word "foreclosure" becomes delisted—dropped entirely from the dictionary—because mankind has finally found a way to truly generate and create wealth to the point where foreclosures are mathematically impossible. Where before, the homeowner had to work hard and save hard to pay his/her mortgage, now the mortgage is paid directly from the revenue generated by the house itself. What money the house makes by selling energy back to the grid is first sent to the lender. Whatever remains goes straight into the homeowner's pocket.

With all of that in mind, imagine the value one might gain from a simple (and very soon, cheap) solar panel. It will be the only key necessary to harnessing every person's unassailable birthright (the sun) and turning it into wealth. The implications are such that we might even

expect future baby shower invitees to replace all those Elmo toys and Diaper Genies with solar panels.

To bring this new axiom of wealth creation to a climax, imagine a home priced at $350,000. This price includes solar panels and a wind-energy generator. I will calculate the numbers based on financing at a current fixed rate of 3.5 percent over 30 years. Such a home would be subject to monthly mortgage payments of $1,567.09. Knowing this, we can calculate that the total amount the homeowner will pay over that 30-year period is (1,567.09 x 360) = $564,150.87, which is $214,150.87 more than the home was initially worth. This new axiom allows us to overcome that gap.

Let's assume a monthly savings in electrical bills of $150.00. That $150.00 multiplied by 360 months is $54,000 in savings. Now let us imagine monthly sales by the homeowner back into the grid of $600. That $600 multiplied by 360 months is $216,000. Finally, let us assume that the home appreciates in value (as any home with such capabilities would) at a constant rate of $1,800 per year, a completely reasonable expectation: $1,800 multiplied by 30 years is $54,000. Add it all up, and the total savings and equity generated by the home is $324,000. In other words, the owner of a Green X Home would come out ahead by $324,000 in the end. After 30 years, the equity in the home will equal the initial price of the home plus the amount of interest the owner had to pay. An energy-efficient home becomes a wealth-creating asset of unprecedented value. And this is just the baseline. Any increase in equity of the home that exceeds $1,800 per year would build up the wealth of the homeowner.

## The Time Is Now

Green X technologies could render just about all of the negative factors that I have covered in this chapter virtually irrelevant. They offer a model that produces income, substantial savings, and equity. A house with a rooftop that produces electricity and a cost-containing water management system will undoubtedly empower homeowners. The long-term effect will also promote community stability, as neighbors would develop ways to trade energy among themselves. The asset price containing features of such a home would price the dwelling in a unique way that would far exceed its assessed value. This differentiates the home from all other similar homes that are not built with the features that Green X technologies offer, and results in a substantially increased market value.

The economic growth of many underdeveloped nations and the denial of work permits and immigrant visas to professionals of industrialized nations are creating an unprecedented paradigm change that fosters community stability. Solar panels are now more affordable than ever, and construction costs have declined worldwide. The time for the implementation of the Green X model is definitely within our grasp.

# Chapter 10:

# BRAINS OVER MONEY

***Money won't create success, the freedom to make it will.***

***—Nelson Mandela***

To find a substantially fit-for-purpose national alternative energy policy, one needs to look no further than the European Union. Indeed, many countries in the EU subscribe to alternative energy policies that make US policies look obsolete.

Now, I should point out that I recognize we are, in some ways, comparing apples to oranges here. The EU is under different economic pressures and social rigors. It is also under greater pressure to develop alternative sources of energy because its dependence on fossil fuels is far less sustainable in the near term than that of the United States. The relative scarcity of fossil fuels on the continent necessitates a greater percentage of imports, which makes energy from fossil fuels costlier in terms of the proportion of household income required to fund modern levels of energy consumption. There is also the impact it has on the EU's balance of trade, in that the EU requires an increasingly larger portion of foreign reserves to import the fossil fuels needed by its member nations. Additionally, the world price uncertainty created by OPEC motivated the development of clear plans to decrease such dependence.

In the US, we do not observe many of these pressures, at least not on the same level. While the United States depends on foreign oil more than some would like, it does not suffer the same measure of shortage in electricity production, because it is truly independent in generating its own utility power. Its electricity needs are met by domestic means, mainly coal, natural gas, and nuclear energies.

Fuel, however, is a different story. A substantial percentage of American oil for gasoline comes from overseas. We recognize that the US is not quite as motivated politically, financially, or socially to implement alternative energy strategies because there's just so much fossil fuel material right here at home. That will change in the future, but for now, it does not seem to carry quite as much weight. We will consider shortly whether there is any sense in continuing to wear such blinders, but the point remains.

When we look abroad to Europe, it is clear that the EU's National Renewable Energy Plan represents established clear paths to attainable goals. One such goal is a policy that promotes the use of alternative energy sources in the transportation industry to the tune of 10 percent of total use by 2020. Likewise, the directive focuses on substituting 20 percent of fossil fuels with

renewable means. These numbers will be measured, tracked, and enforced by way of the periodic progress reports that the plan requires.

There is good reason for these drastic measures. According to EUROSTAT, a directorate founded in 1953 to provide statistical information about steel and coal, if we compare the decade from 1990 to 2000 with the decade from 2000 to 2010, we find a noticeable decline in the EU's primary energy production of 109.7 million tons of oil equivalent (TOE). In response to these grave findings, the EU spent much of 2009 and 2010 making a desperate attempt to increase oil production by 17.2 million TOEs. Unfortunately, by 2012, production remained on the decline as many supplies were exhausted and others became economically unsustainable. (EUROSTAT later evolved to be the premier supplier of statistical information about energy for what today is known as the EU-27.)

More grim news from the 2000 decade saw coal production in the United Kingdom fall from 28.7 percent in the previous decade to 17.8 percent of the EU's total, or 122.2 million TOEs. Meanwhile, Poland, the second largest contributor of primary energy to the EU, recorded the largest decline, 11.9 million TOEs over the same decade. The largest expansions in the production of primary energy took place in the Netherlands, where they saw a 12.4 percent increase, France, where they saw a 5 percent increase, and Sweden, which gained by 3.1 percent. Gains like these were surely welcome, but they did not offset the considerable losses in the UK and Poland.

Of course you might look at these numbers and think that perhaps the EU could solve its problems by simply shifting a larger percentage of their electricity needs from fossil fuels to other established sources. An interesting point, but let us look at the breakdown. During that 2000 decade, the EU's primary sources of energy included fossil fuels at 11.7 percent, nuclear at 28.5 percent, natural gas at 18.8 percent, and coal at 19.6 percent of the total TOEs. The remaining 21.4 percent came from renewable sources. Now here is what's intriguing: from 2002 to 2010, renewable sources grew by an incredible 70.9 percent, ultimately revealing that the EU must harvest renewable sources of energy or risk seriously compromising the economic stability of its nations.

This is where economic stability comes into play. Another factor that separates the EU from the US in terms of its current energy policy trends is that the EU continues to wallow in economic recession, even as the US continues on its slow recovery. This current European recession will likely relax the EU's efforts to invest in new renewable energy systems. Most economists believe that the EU remains in the grip of recession because many of its governments chose to meet the economic downturn with austerity budgets, including cutbacks in renewable energy programs. As we know, recessions never last forever and, as soon as economic activity increases to drive the region's return to full employment, we will see dramatic growth in their electricity demands and improvements in their grid. Consider the decline in primary energy consumption that the economic recessions in the area have caused for crude oil (down 43.6 percent), natural gas (down 24.9 percent), and coal (down 23.5 percent). Even nuclear energy, with its far, far lower dependence on a natural resource, fell by 3 percent.

A close look at the EU's dependence on foreign sources of primary energy is alarming because a high proportion of imports is concentrated in very few suppliers; 74.4 percent of the EU's oil originated in Russia. Natural gas imports came from Russia, Norway, and Algeria to the tune of 79.2 percent. Estonia, Romania, the Czech Republic, and the United Kingdom report a dependency rate below 30 percent, but the resource-poor nations of Cyprus, Malta, and Luxembourg are 100 percent dependent on primary energy imports. The outlook is getting worse as well. In 2010, the

energy dependency rates increased by a whopping 85.2 percent for crude oil, 62.4 percent for natural gas, and 29.2 percent for coal. Since such a large proportion of these resources derive from foreign countries, and because so much of a nation's economy depends on its energy supply, there can be no doubt that the significant dependence compromises the security of the EU member nations. Hence the strong push toward renewable sources.

Despite the differences between the EU and US situations, there are disturbing similarities as well. The numbers are particularly troubling. According to the US Department of Energy, in the decade from 2000 to 2009, 22 percent of our nation's energy was derived from coal, 25 percent from oil, 22 percent from natural gas, 8.4 percent from nuclear sources, and only 8 percent from renewable sources. During that same decade, oil consumption declined by only 1.1 percent.

Think about that for a moment. Twenty-five percent of the nation's energy came from oil, and yet oil consumption has only declined by just over 1 percent over the past decade. Little has changed and oil consumption is, at least, not increasing. So why is this something worth thinking about?

Even setting aside the geo-political, environmental, and economic concerns, we must remember that oil is a finite resource. In fact, it is declining more rapidly than most people realize, and has been for decades, depending on the source you follow. M. King Hubbert, author of the Hubbert peak theory, forecasted that American oil production would peak between 1965 and 1971. The forecast of negative global economic conditions after the peak period, as predicted by K. Deffeyes (2011), appears to bear this out. Every year, we depend on oil to roughly the same extent, and every year, the total worldwide oil reserve declines. We may find new reserves, but these will also be finite, and eventually there will not be enough oil to go around. In the US, millions will be either short of or completely without gasoline. What would that do to our lifestyle? The economy? Our national security?

## The Uncertainty Principle

Einstein once demonstrated that everything is relative to the observer. This is why Werner Heisenberg's uncertainty principle (1927) shook the very foundations of science. Heisenberg theorized that there is a fundamental limit to the precision with which certain pairs of physical properties of a particle known as complementary variables, such as position x and momentum p, can be known simultaneously. This puts a fundamental limit on what we can observe, and, indeed, the very act of observing influences the result. Philosophically, we can view this as meaning that the very process of science is subject to bias.

For example, let us say we are conducting an experiment about the nature of light. If we approach that experiment with a series of questions about the behavior of the light's particles, then what we will see during the examination are light particles. But, if we approach the experiment with a different series of questions—now about light waves—then what we see when we conduct the examination are light waves. The nature of man is that we see what we want to see. No scientific experiment can be completely without bias, which means that we can never observe anything with absolute certainty.

If we apply Heisenberg's uncertainty principle to energy economics, we can note that the average decline in global energy production trends toward zero. This uncertainty has already translated into social discomfort, economic inequality, high levels of unemployment, and

geopolitical alliances that further radiate uncertainty to other nations of the world. If the structured world of science cannot produce answers with absolute certainty, then what might we expect of the unstructured world of geo-political energy economics?

The divide between the US and the rest of the world on these matters only seems to be growing. Former US Secretary of Defense Donald Rumsfeld once referred to Romania as "old Europe" to the consternation of certain Europeans. Yet, America has become the "old Yankee" in reference to smart energy policy. In many different endeavors, the old Yankee attitude is clearly visible. Examine just about any American textbook on international business, and you will note its overarching presumption that American businesspersons are better than their counterparts elsewhere in the world.

These texts invariably discuss GM's experience with the Chevy Nova, a car manufactured in the US which was unsuccessful in Latin America. These books mistakenly state that the model failed because "Nova" means "It does not run" in Spanish. The truth is that Spanish has Latin roots, so "Nova" means the same as it does in English, which is "new." "No va," meanwhile, translates to "It does not run." That word space is rather important, yes? Eliminating American bias might lead us to recognize that the Nova didn't work in Latin America simply because it was an inferior car.

Since globally, there is growing consensus that sustainability is a pressing issue (or one that's at least worth our time), it is important we do not build institutional systems using unsustainable business models, which are a large part of the reason we got trapped in economic recession. Europe gets it—they recognize that during their own economic corrective period, they must employ sustainable energy sources as the new model for the future.

There are dangers, however. For example, amending the current energy policies to include companies that promote unsustainable sources would prove to be an enormous mistake. It is clear that, despite all the advertising funded by oil companies regarding their involvement in renewable sources of energy, such companies' loyalty is, in fact, with those products that generate profits—namely oil. The move would be akin to having expected

John D. Rockefeller to trade in his attachment to kerosene for electricity. We know from historical accounts of the struggle for dominance in the energy market between Rockefeller and J.P. Morgan during the late 1800s.

Unless we are to repeat such ugliness, it is imperative that modern governments face the reality that exists in the global energy sector: oil companies are manipulating the data by injecting their own biases into the uncertainty principle and ultimately preventing the emergence of sustainable sources of energy.

## The Uncertainty Structure

Now we know where *not* to go for the answer. The flipside to this discussion is that we need to recognize our own systemic institutional failure in green energy. In many ways, we are at a loss as to how alternative energy companies need to be structured. Any newly established company would face a monumental climb to relevance as it enters a marketplace flooded with deeply rooted competition. We would probably see a transition to oligopolies that could be controlled by the utilities, oil, and coal companies, which hold enough financial and political clout to eliminate any competition. The powers-that-be (pun intended!) are not likely to sit idly by and have their

domain overtaken by young upstarts. We are already seeing this play out in exactly this manner in many states.

As with any new economic segment, there may not be a stable market structure to support large, diverse alternative energy companies or to provide fertile ground for the growth of new startups. Even with major government subsidies, such companies will struggle due to the need for large operating capital and uncertainty about both market and technology developments. Alternative energy ventures will probably need some protection and support from government until reliable and sustainable market structures develop. Ultimately, the free market will determine which entities survive, but basic stability is needed to give them a chance.

That stability has to come from consistent policies and longterm programs. Markets will be developed within stable regulatory structures and with government support for fledgling industries. Of utmost importance to the support of energy markets is a fair and stable tariff and regulatory system.

Such support has long been part of our history. Examples are abundant and include the railroads, the auto industry, cotton and other forms of agriculture, forestry, fisheries, aerospace, pharmaceuticals, ship-building, the airline industry, the housing and real estate industries, and the list goes on. Subsidies can consist of cash grants, research support, interest-free loans, or government purchases. Support can also be provided indirectly through tax breaks, insurance, low-interest loans, depreciation write-offs, training programs and rent rebates. The federal government has been in the business of subsidizing business since the very first Congress, when it manipulated tariffs to protect favored industries and control imports and competition. The term "pork barrel" refers to subsidies that promoted and protected the production of barrels used for storing brined pork or cider.

In the energy area, government support dates back to 1789, when tariffs were put on British coal to help protect our fledgling coal industry from cheap imports. The oil industry was heavily subsidized in its early days, until stable markets could sustain demand for its products. These subsidies go all the way back to 1918 and average almost $5 billion per year in today's dollars, according to a study by Nancy Pfund and coauthor Ben Healey (2011). Pfund, a managing partner at venture capital firm DBL Investors, and Healey, an economics graduate student at Yale University, theorize that the first 15 years are critical to developing new technologies.

While that might seem to be only common sense, it also seems to have been conveniently forgotten by the current supporters of coal and gas. Their study finds that oil and gas subsidies, including tax breaks and government spending, were about five times as much as aid to renewables during their first 15 years of development—nuclear received 10 times as much direct support. While the aid to coal could not be quantified, it is clearly a vein that runs wide and deep, and has done so for centuries. Meanwhile, subsidies for more entrenched energy sources continue unabated, fervently supported by the same people who oppose the same for renewable energies.

While direct subsidy is one issue, the bulk of the support comes by way of research and training. Take the government's role in recent developments regarding solar panels. On July 25 2011, the US Energy and Commerce Departments agreed to collaborate by developing and disseminating climate data necessary to implement and sustain renewable energy technologies. The plan included a provision for information about short-term weather and longer-term trends, along with measurements of wind availability. The National Oceanic & Atmospheric

Administration (NOAA) was tasked with making these findings available to the public. The initiative could be construed as support for the renewable energy marketplace.

Another important effort involves installing solar panels in public schools. This plan promotes the manufacture, distribution, and installation expertise that contributes to the development of the market for solar panels.

Subsidies for industries, past and present, come in two structural forms. The first involves support to develop the basic science and technology that enable an industry. The second is in direct subsidies to the industry or government purchaser, so that markets can be established and stabilized. This becomes a chicken-or-egg situation: without government support, the industry cannot develop the product since the market does not yet exist. And there is no market because the product does not yet exist. The need may be quite plain, but the product cannot succeed until there is a viable market, and that market does not exist until there are viable products.

Let us discuss a couple of examples of this conundrum. First, take today's thriving and huge market for airplanes. In its early days, an airplane was a fairly useless thing. If you had money and land, you could buy an airplane and build a landing strip. So you could take off, fly around, and come back. Fun, but fairly useless. So airplanes enjoyed at best a very limited market. But let the government build airstrips around the country, and it becomes an efficient and effective way to get from one place to another. Improve the technology, supported again by the government, and planes can get larger, safer, and more efficient and effective.

Now, though, things get more complicated. Airstrips need to be safe; that demands standardization and regulation. Flight paths get crowded and, again, regulation and control become critical. The government has to step in to ensure the stability and security of the system and the market.

A similar example exists in the technology by which this book is published. Modern computer systems and the worldwide web did not happen by accident. The basic technology for the Internet was created for the control of battlefield operations, originally funded by the Advanced Research Projects Agency (ARPA), the predecessor of the Defense Advanced Research Projects Agency (DARPA). It was expanded and made practical into the agency's net ARPANET. In 1985, the National Science Foundation (NSF) began to fund programs for networking in the United States so that government-funded researchers could exchange information. This became the NSFNET, which developed into a major component of the Internet.

US Senator Albert Gore, Jr. later crafted the *High Performance Computing and Communication Act* of 1991, after hearing the 1988 report supporting a National Research Network submitted to Congress by a group chaired by UCLA professor Leonard Kleinrock. This bill was passed on December 9th and led to the National Information Infrastructure, which Al Gore called the "information superhighway," and is the Internet we know today (Gromov, 1995).

None of this would have been possible without the creation of advanced integrated circuit technology. The development of silicon processing methods and tools, basic material technology, and the requisite design and modeling tools were all dependent on funding by DARPA, the US Department of Defense, and the National Institute of Standards and Technology, not to mention the National Aeronautics and Space Administration (NASA), the NSF, and a host of other governmental agencies.

The Internet and early markets for advanced computer systems, telecommunications, data storage, radar, radio, etc. were all established by direct government purchasing and promotion. In a pure free-market world, none of this would or could exist. Examples of this are too numerous to

fully explore, but include the automobile and the aforementioned oil and gas industry, radio and television, railroads, pharmaceuticals, shipping, firearms, steel and others. It has been an accepted premise throughout the history of civilization that to fulfill the needs of its people, governments do well to organize and support industry.

So, why is the renewable energy market different? Why is there such fervent opposition to supporting the development of markets and technology? In reality, our time is not much different.

Vaudeville and radio fought the development of television markets. Edison's DC power industry fought Tesla's AC power. The carriage and buggy-whip industries fought the automobile. The clipper ship builders fought the steamship industry. We can be reasonably sure that the smiths who forged bronze axes were not happy when the caliph ordered his army equipped with swords made from Damascus steel.

Turns out that the powers-that-be and financial interests of the status quo can always be expected to fight to defend themselves against the progress striving to knock them from their lofty perches and cut their money tree down to size. Change is hard. New technologies and new ways of thinking have always taken a generation or two to become mainstream, although sometimes the changeover is accelerated out of necessity. You can be sure that the sheik's love for bronze disappeared as his army was destroyed by steel weapons!

What *is* different this time is that the stakes are so much higher. We are not talking of subsidizing a communications system to share recipes or humorous animal videos, or even of lending support to the latest technology for war. The fate of the planet itself, or at least human habitation on the planet, is at risk. As environmental issues grow more ominous by the day, we are faced with a question of the protection of the status quo versus the protection of the planet. That is why proponents of this issue are so passionately engaged.

## Where the Government Stands

It would be nice to believe that free markets reign and can satisfy the needs of society and our planet, and that the renewable energy sector would be best served by being left alone. That way companies could duke it out, with the most efficient and cost-effective systems declaring victory. In a purely free market that might be the case, but it simply does not exist in a nascent industry facing political opposition, heavily subsidized foreign competitors, unfavorable regulations, and a subsidized fossil fuel industry. The renewable energy companies and their marketplace face an uphill battle. The ultimate survival of a solar panel manufacturer might lie in something similar to Moore's law, which predicted that the efficiency of transistor technology would double every 18 months. Alternative energy is following a similar path, but improvements in costs and efficiencies are not likely to follow the steep curve that the semiconductor industry has seen.

As we discussed in the last section, the government might just be able to prevent these companies from shooting themselves in the foot. It could help drive technological improvements and develop stable markets.

Presently, most professionals in the alternative energy sector are focused on business programs designed to find new customers. A secondary priority is cost containment, which more easily enables those new customers to sign on the dotted line. These are requisite activities that provide the revenue to turn renewable energy system providers into viable enterprises. There are, however, other strategies that have a realistic chance of improving the outlook for some of

these companies. Better capitalization of the alternative energy sub-sector, for example, coupled with the initiatives of the Commerce and Energy Departments, would increase the industry's ability to respond to changing market conditions. As demand improves and markets stabilize, new production equipment and system innovations would lead to profitability as these manufacturers achieve economies of scale.

There are no easy answers here, as the popularized notion that prevents the American government from adequately funding research and development is not realistic or, as discussed above, consistent with the policies applied to other emerging industries. Consider the very long list of companies that have received government funding to develop everything from weapons and online universities to space exploration, pharmaceuticals, and even electric automobiles. Could it be that it is more productive to direct politicians' attention to our need to fund alternative energy projects than to live with the threats to our national security that our dependence on foreign oil creates? To think that our nation can find ever-increasing sources of oil is neither realistic nor wise.

The economic tensions created by the misrepresentation of dwindling oil reserves is reflected in the increasing oil prices we must pay, while government leaders unsuccessfully debate ways to protect their inhabitants against armed conflict. Several American presidents have clearly stated that our dependence on foreign oil is a national security issue, but with the notable exception of Jimmy Carter, they have adopted the illusion that it is a matter of improving extraction technologies and opening new areas for exploration. Catastrophic oil spills as recent as Deep Water Horizon and the Arkansas pipeline demonstrate that even if abundant oil exists in sands, freed from rock by hydro-fracking, and in the depths of our oceans, its exploitation leads to insurmountable disasters that have huge social and economic costs.

With all of this in mind, it seems clear that any plan to build our capacity for developing renewable energy should be mindful of the universal nature of the need to make energy provision and efficiency a right for all mankind. As was discussed in Chapter 3, no sovereign nation has claims over the sun, the water, or the clean air we breathe, let alone the air or water from the grounds of private real estate.

Of course, government intervention does not start and end with subsidies and renewable energy support. There is also the question of taxes. For any Green X homeowner, there will be tax implications from both the local and federal governments in connection with the benefits that the home provides.

How do you tax a household for generating energy from the sun? Currently, what we are looking at is an imbalance in what can be construed as reasonable. With all three vital human rights—the sun, air, and water—legislative groundwork ought to be done soon to examine these extremely complicated issues and to protect these basic rights. In the case of solar energy, we see a potential shift of wealth and power from your local utility company to Mrs. Smith on 123 Main Street. Mrs. Smith, after all, might now become a net producer of energy. She should have every right to do that, but you can be assured that your local power company will not give up its monopoly, its power, and its wealth, without a fight.

The institutions bridging this transition need the appropriate capacities to properly deal with the expectations of a discerning population. Much has been said of the United States' quest to become energy independent, and much progress has been made. While that sounds good, try telling it to Mrs. Smith, who has seen her utility bills steadily increase as noisemakers in Washington—from lobbyists to the talking heads—keep humming this tune. It is time to let the

world know that increases in oil production are not forthcoming, except at great cost, and that a national effort is necessary to change our dependence on fossil fuels. This is not only because they harm the environment, but also because they carry a very high social cost, and ultimately, because the availability of fossil fuels will not be sufficient for our needs.

## The Shift

We have come to the important realization that power and wealth will shift from established utility companies to startups with improved technology. This shift will be similar to the United States' gradual weaning off hostile energy sources by way of increased fracking. Figuratively speaking, the shift to technologies like those in the Green X technologies will be equivalent to individual consumers being able to frack their own land. Just as natural gas drilling portends to a decreased need for foreign oil, sustainable homes portend to a decreased need to depend on a government-backed energy grid.

As we move ahead, lawmakers who build institutions catering to companies that provide green services must be mindful of the fact that a new wealth formula will accompany this seismic change. Power players such as utility companies will have to cede a portion of their power to the individual. The wealth formula will no longer solely be the purview of major stakeholders.

Former New York City Mayor Michael Bloomberg showed exemplary leadership in regard to this new reality, which calls for sellers of goods and services to provide social benefits to buyers. There is the policy that allows the purchaser of a can of soda to resell the empty can for five cents. More importantly, Bloomberg took fast food and soft drink sellers to task with laws against selling French fries laced with fatty oil or super-large sodas containing massive amounts of sugar. In this way, he worked to take the lead in making his city healthier. The net effect of fast food and giant soft drinks is a strain on the American health care delivery system; Bloomberg simply cut out the middle man. No matter where you stand on the question of freedom of choice, it is unquestionable that Bloomberg represents a new brand of leadership, one that requires social responsibility to serve as part of the corporate bottom-line strategy. This kind of approach can and will have value in the green sector.

Of course such developments will not come without criticism from so-called "defenders of the Constitution," who will call into question laws banning unhealthy foods and drinks from kids as infringing upon their personal liberties. I suggest that a child's wanton, destructive health path can similarly infringe upon my financial rights to self-preservation. The further above a healthy weight the child becomes, the more his health care costs me. The more his health care costs me, the less free I am to pursue a productive financial life.

Perhaps it is time to begin thinking about the collective good when we assess public policy. Much as Bloomberg has done, we may make decisions that will be unpopular to the few. The benefits to the many, however, can and will far outweigh the few. The only question is whether we have the will to make it happen.

## Dream Fulfilled

Perhaps those who defend unsustainable energy practices forget that the writers of the Constitution had, through determination and sacrifice, engaged the nation in an experiment of

ideas in order to guarantee the ultimate freedom: freedom from tyranny. But where has the dream gone?

No one can engage in meaningful political discourse if they are saddled with student loans, scared about where they will live, worried about going to the hospital without insurance, or living without any possibility of a comfortable retirement. Meaningful political discourse requires the freedom necessary to dream. That dream, I believe, can be returned to its former glory with the Green X Platform.

A vibrant and robust alternative energy sector will provide new employment opportunities necessary to create the kind of financial freedom I am talking about (and worldwide, no less). By applying to the alternative energy sector the same level of financial support provided to the oil industry, the railroads, and many others, we would quickly reduce unemployment, increase homeownership, and create new values for homes. If the homeowner receives a government grant to purchase and install Green X technology, payable directly to the parties installing the equipment and hooking it up to the grid, we are looking at a major step in the right direction. This is very much within our grasp—and at a mere fraction of the cost of subsidies to many established industries.

# Chapter 11:

# SUSTAINABLE WEALTH

***The great challenge of the twenty-first century is to raise people everywhere to a decent standard of living while preserving as much of the rest of life as possible.***

***—Edward O. Wilson***

So far, we have examined the inadequacies of past formulas for wealth. We have created and modified propositions for a new wealth formula. What remains is to arrive at a formula that makes sense in today's world, a formula for true and sustainable wealth. If we are going to meet that goal, we should start by explaining what we mean when we use the word "sustainable."

Sustainability, according to the United Nations, is the means to provide at least a decent standard of living for every man, woman, and child on Earth without damaging the potential for that same decent standard of living for the coming generations. Fulfilling the first part of that definition has eluded mankind for eternity, as it denotes the complete eradication of hunger and homelessness. It is the second part, however, the elimination of environmental damage and resource depletion, which is currently proving even more difficult to attain.

There are already over seven billion people on the planet. Projections suggest that number will swell to at least nine billion by 2050. Meanwhile, a larger and larger percentage of us have achieved a lifestyle that relies on massive consumption of natural resources, damaging the environment of planet Earth. Even if we ignore our failure to end hunger and homelessness, we need to rethink how we maintain a decent lifestyle and achieve that desired sustainability.

With our sustainable wealth formula, we will espouse the need for society to revolutionize the means of wealth creation and distribution. As it stands now, the wealthiest members of society are the primary beneficiaries of the creation of more wealth. The rational self-interest of Adam Smith has created this monster. Now, it is time for the sustainable self-interest of society to take its place.

Older theories of evolution espoused that its basic operating imperative was survival of the fittest—"fittest" meaning individuals whose strength, speed, or intelligence might make them more capable of not only surviving but of passing on their genetic superiority to the next generation. Essentially, it was thought to be a solo operation. Modern evolutionary theory has recognized that even the fittest individual among us would not long survive the rigors of the jungle alone, let alone pass anything on to his offspring. Rather, it is the fittest tribe that survives,

that thrives, and that produces the next generation. The closer we get to the environmental breaking point, the closer the survival of our civilization gets to becoming an entirely collective effort.

Over the past century and more, sovereignty over that collective effort has eroded from nation states to monopolists such as John D. Rockefeller, before evolving (or devolving, depending on your perspective) to multinational corporations that control outsized chunks of the global economy. As this transition from the pre-industrial era to the post-industrial era has taken place, and as our modern knowledge-driven economy has taken hold, the formula for wealth creation and acquisition has not changed.

In many ways, we still think about wealth creation in the same way we thought about it back in the days of slavery, where cheap labor had to be factored in to rein in the Law of Diminishing Returns on the plantations. Such logic from the days of yore has taken different turns and dimensions through every historical business cycle, but it has always been there.

Do not believe me? Ask one of the politicians who appeal for international labor laws protecting sweatshop manufacturing of the running shoes worn during this morning's jog. Working conditions worldwide might have improved somewhat, but they still disproportionately favor the masters of modern-day commerce who have little, or often no, concern for the welfare of the workers. Our politician might have a sincere concern for the well-being of workers in Bangladesh, but still likes a good shoe and wants it at the best price.

Neither are the sweatshops of Bangladesh and India the only work environments prone to hazards and abuse. Modern-day white-collar environments are not immune to the ills of labor abuse. The banks are a typical example of a work environment in which "the house always wins." Some banks' CEOs make $20 million or more per year, plus bonuses, while one out of every three tellers in those same banks has to rely on government assistance just to make ends meet. So, if these same multinationals who threw the balance of earnings so out of whack are going to sit in Davos and proclaim that they have found a new economic paradigm called sustainability, then let us overhaul the entire wealth creation formula and make it sustainable once and for all.

The last time we checked in on our wealth formula, it looked like this:

***Wealth = Land + Labor + Education + Capital + Credit***

This is true for most people, but there is an entire class of magnates to whom this formula does not apply. For the ultra-wealthy—those who already hold much of the country's capital—the magnitude of the capital factor of the equation makes the effect of labor or the leverage of education insignificant. Likewise, the availability of credit or access to land resources becomes meaningless.

To the JP Morgans of the world, this equation simply reduces to wealth = wealth. To the other 99.9 percent of the population, the lack of any one of these factors results in a struggle for financial success, but the absence of two or more can trigger a struggle for survival.

Very soon, the prime movers of the planet are going to add sustainability to the right of the equation and hail it as a win for mankind. Although we are being led to believe that this will change the world, nothing will really change for the 99 percent in terms of wealth creation. I will get into why this is in a moment, but for now let's all recognize that the above model, even with sustainability worked in, does not take us far enough.

Instead, let's change the world and continue to foster peace among ourselves by making wealth creation and financial freedom a sustainable goal, not only for the financial elite but for all mankind.

## What about Luck and Risk?

One other thing missing from our wealth equation is the factor of luck. It is impossible to gain significant wealth without some degree of luck. That might be as simple and straightforward as never sustaining a major injury, or simply staying alive long enough to achieve wealth. Luck might mean picking the right investments, the right school, or the right friends, chancing upon the right opportunity, or winning the lottery. It could also mean—as for most of the ultra-wealthy—simply having the right parents. We can look at our wealth equation as part of the rules of a game in which our moves, and the luck of the draw, determine the outcome.

But our game also entails risk. "Risk", at its most elementary meaning, is just another word for uncertainty. Many business philosophies call for a measurement of the risk inherent in any decision. So, if we are going to measure uncertainty, then the best approach is to attach a percentage of likelihood that the worst is going to happen. Knowing this probability helps us to avoid, or at least plan for, disaster.

Risk management is a technical discipline taught in many business and engineering curricula. Actuaries use it to determine insurance rates and industrial engineers rely on it to govern tool changes and inspection strategies. It can be applied to manage processes effectively and to design products. Business managers apply risk management principles to evaluate market decisions, to govern investment decisions, and to set pricing and inventory practices. High-priced consultants and gamblers alike use it. The former employ standards developed by the Project Management Institute, the National Institute of Standards and Technology, actuarial societies, and strict ISO standards. The latter can be just as sophisticated and often use the results of detailed and complex probability studies weighing the likely success of their strategies.

Perhaps without being aware of it, we all use risk management in our daily lives to decide whether to buy that new car or risk the old one breaking down, to take that beach vacation and hope that the hurricane stays away, or to chance the speeding ticket to get to that meeting on time. Risk is all around us. All we can do is to try to manage it the best we can.

Obviously no one can eliminate risk completely. No matter how adept we become at identifying risk factors, we still need to make a choice, and there is no way to guarantee that our decision will turn out to be the right one. In summary, risk minimization is our goal, but the complete elimination of risk is an illusion. Still, risk aversion is not our goal: trying to avoid all risks leads to stagnation, inaction and, often, decline. Avoiding risk just for the sake of it tends to make mountains out of molehills to the detriment of almost any endeavor.

Risk management is all about understanding the probabilities. At one end of the spectrum is the improbable, as in the confluence of unlikely disasters. At the other end is the inevitable. The risk that a light bulb will burn out at some point has a probability of one. It will happen. It is only a matter of when. But if we can manage the risk so that this light bulb is not the only source of light in the building, then we can design the system so that employees can endure its outage until a maintenance person replaces it. If the fallout of a particular failure (i.e., the light bulb expiration)

does not impede major equipment or workflow processes, then even an absolute certainty of risk can be endured.

Consequences of an earthquake, tornado, flood, or some other devastating disaster can be catastrophic, while the probability of one occurring in any given place is very low. Chances of a light bulb burning out are very high, while the consequences are minimal. All risk resides somewhere along this spectrum. Now that we have identified what risk is and how it affects us all, our task is to quantify risk and its impact on the one hand, while proposing economic measures against it on the other.

## Risk Quantification

If we think about any corporation, nonprofit organization, or government agency we know it has both strengths and weaknesses. That's true whether we are talking about Google, Ford, Greenpeace, or the government of Ghana. Its weaknesses leave it vulnerable to failure. A risk management strategy will identify an organization's risk, assign a probability of adverse occurrences, and attempt to quantify the effect of that reality.

Let us take a trucking company, for example. Its health depends heavily on the price of a barrel of oil. When the price rises, profits fall because the firm must spend more on fuel to power its fleet. Let us say an analysis reveals that a 10 percent rise in oil prices would increase annual operating costs by $150 million. That would be a pretty staggering hit. The question then becomes: how likely is it that oil will increase 10 percent? To arrive at that likelihood, one needs to examine the available evidence, such as data on oil futures, economists' projections, and communications from OPEC. Other factors come into play, as well. You must figure in the potential for accidents, truck breakdowns, driver absences, or scheduling errors, all of which could have a material impact on operation.

These risks can be prioritized based on their relative impact and probability, and thus can provide guidance as to how to focus a risk mitigation strategy. That strategy might include efforts to minimize the probability of occurrence, for example preventive maintenance. It might include tactics to reduce the impact of the occurrence, like having replacement trucks or drivers readily available. It can also include financial insurance policies to provide reimbursement for loss, such as accident insurance.

## Economic Insurance

When you hear the term "insurance," what comes to mind? My first thought is of our homeowner's insurance agent, to whom I write a check every year in exchange for his company's limited financial coverage in the event of a disaster. Handing over cash in exchange for someone else assuming the risks is one of the most common risk mitigation strategies there is. The insurance company merely spreads the risk among a pool of clients in similar circumstances. Risk management is a little different in that money does not change hands. Instead, risk management encompasses the many ways that an organization can serve its best interest by maintaining better processes in all aspects of its operations and financing.

To see how this works, let's return to the trucking company facing heavy losses because of an uptick in oil prices. What if that company invested in converting a percentage of its vehicles to

another fuel source like natural gas, electric, solar, or hydrogen? While this measure would not completely eliminate the risk associated with oil prices, it would insure against the uncertain nature of the economy as well as the real-world economics of doing business. An organization might go through this process to quantify risks and use it to develop a strategy to mitigate the risks it faces. A risk management consultant may even be hired to manage the process.

All organizations exercise some form of risk management, perhaps without even being aware that they are doing such a thing. A more successful strategy is to consciously examine the potential risks the organization faces and arrive at rational responses, so as to survive and thrive.

## Guns Don't Kill People, Discordant Wealth Kills People...

Now that we have a handle on the concept of risk assessment and mitigation, let us apply it on a greater scale and ask ourselves: what risks does our civilization face? One risk with significant consequences is the problem of gun violence in the United States and around the globe. An outsider unfamiliar with the debate might think that a peaceful, stable, and economically prosperous nation such as the US would have sensible laws that prevent weapons from reaching the hands of violent or unstable citizens.

According to the FBI's *Uniform Crime Report* (2012) there were 12,664 homicides in the United States in 2011, two-thirds of which were committed with some type of firearm. That figure does not include other violent crimes perpetrated with guns, the many people who were wounded or crippled by gunshots within the period, accidental deaths or suicides. Actually, the suicide rate is nearly double that of the homicide rate: 6.3 versus 3.6 per 100,000. Meanwhile, the US has the highest rate of gun ownership in the civilized world. It is true that guns can prevent crimes, but it is also true that guns are frequently used to commit crimes.

If you were to look at the business of Smith and Wesson, Colt, or Kimber, you might note an upward trajectory in the domestic sales of firearms, despite so many high-profile shootings that have called into question the sanity of American gun laws. It can be argued that the jump in sales is precisely due to those shootings, tied to the fear that the US government will finally step forward and put some restrictions on gun sales. Many now believe that the government will even come to take their guns, stop the sale of ammunition, or put other restrictions on the ownership or use of guns. Look at the irrational hoarding of ammo that followed the election of President Obama. The empty shelves of the gun stores should tell you all you need to know about how real and how deeply felt are those fears. The lack of legislative action and administrative power should also tell you how irrational they are.

The majority of firearms produced by gun manufacturers are bought, sold, and distributed among the US population. Why would a stable country such as ours be so obsessed with gun ownership?

To understand our gun culture one must go all the way back to colonial times. The frontier held grave dangers from wild beasts, hostile natives, and oppressive governments. If you sent a man to venture into the Carolina swamps or backwoods in the 18$^{th}$ century without a gun for protection, you could not reasonably expect that he would return. While some local tribes such as the Catawba or Yamacraw became friendly allies, others remained quite hostile. Deadly battles were commonplace in our history. If these dangers were not enough to prompt almost-universal gun ownership, the oppression of the European governments demanded it.

We have already discussed the failing of the British control of its colonies, but the French and the Spanish were no better. The colonists did not gain their independence by the benevolence of their monarchs. They won it with violent up-risings—with blood and guns. This situation did not improve much as the frontier moved west. The dangers of the wilderness changed but did not dissipate. We found new tribes to fight, and new wars to wage. The need for a man to own a gun changed little. It is now an ingrained part of our culture, a right protected by constitutional authority, and celebrated and mythologized by Hollywood.

The prevalence of gun ownership in America presents us with a risk factor to consider: what is the probability that a gun owner will one day shoot someone and what might be the effect of that?

It can be rationally argued that crime in general—violent crime in particular and gun-related crime specifically—is directly related to poverty, unemployment, and desperation. While it has been often debated, it has never been proved…until lately. In 2011, the United Nations Office on Drugs and Crime supported a study which concluded that, while violence can be connected to gangs and organized crime,

> **"The largest shares of homicides occur in countries with low levels of human development, and countries with high levels of income inequality suffer homicide rates almost four times higher than more equal societies".**

One of the original studies on this topic, conducted by Ichiro Kawachi of Harvard, found that income inequality accounted for 74 percent of the variance in murder rates and about half of the aggravated assaults (Kawachi, 1999). These results were surprisingly unambiguous. Even more surprising was that poverty alone explains the results, and other factors such as unemployment, alcohol consumption, and educational attainment were only weakly associated with or had no connection to violent crime at all. Kawachi's findings have been confirmed by James Fearon of Stanford University, in a World Bank-sponsored study which confirmed these results on income inequality. It was found that on a worldwide basis, homicide rates are inextricably linked to the unequal distribution of resources (Fearon, 2010). Dr. Fearon even looked specifically at countries plagued by drug wars and civil wars and found these to be only weakly correlated. The driving factors behind homicide and other violent crimes were still found to be income inequality and a lack of economic growth.

In other words, while many things might affect the rates of homicide and, in particular, gun violence, nothing drives it more than income inequality. Poverty itself does not produce more violence as people do not fight over what others also do not have. Drug wars increase violence but that is a result of a few people acquiring great wealth and power because of the drug trade. Other factors may enter the equation but nothing drives violence quite like the deprivation of the many for the enrichment of the few. Add in the prevalence of gun ownership and a tradition or culture of violence and you have a toxic brew. The data and analyses bear out this rationale: gun violence is tied to unsustainable wealth and equity disparity.

I believe that as we establish a more sustainable path of sharing and distributing wealth, violence in general will subside. Hopefully the Green X Platform will be a step in that direction.

## Global Warming Statistics

Now, let us imagine that the organization we are examining is the planet Earth itself. What risks does the planet face? While there are a number of possible cosmological events, such as a stray comet or a gamma burst, our ability to mitigate those risks is minimal. We do not know if those dangers are coming, but we do know that our world faces a danger of accelerating global warming in the coming decades.

The question becomes how to apply solutions to stop man's destruction of the environment, to mitigate the damage caused hence far and to prevent Earth's environment from declining further due to unsustainable practices.

By now, you have read and heard plenty about global warming. In a 2013 analysis of peer-reviewed scientific publications,

John Cook and a team of scientists surveyed close to 12,000 climate abstracts from 1991–2011 that referred to either "global warming" or "global climate change." Examining those papers, they found that 32.6 percent took a position on the causes of global warming. Of those papers that did, 97.1 percent "endorsed the consensus position that humans are causing global warming" (Cook et al., 2013). Other such analyses have reported results skewed as far as 99.99 percent. But, let us not quibble; we can consider 97 percent to be "most."

Conversely, an October 2013 Pew Research poll concluded that while 67 percent of those surveyed see solid evidence that the Earth is warming (and I wonder where the other 33 percent live), only 44 percent believe that it is due to human contributions. Breaking this data down from a political perspective, only 23 percent of self-identified Republicans and 9 percent of Tea Party respondents share that belief (Pew Research, 2013).

As a whole, the American public is not entirely convinced that global warming is real, and even those who do are not convinced that human activity is the cause. When 97 percent of scientists but only 44 percent of the people agree that something is real, then something awfully strange is happening. Taken one on one, most Americans will say that they trust climate scientists as a source in the debate, however many of those people still choose to believe that global warming is not actually happening. This flies in the face of mountains of evidence to the contrary.

In case I have not been clear on this point, let me be clear now. Since the 19th century, the rise in average global surface temperature has been 0.6 degrees Celsius. For those scoring at home, that is a significant increase. We have also seen a 17.5-centimeter rise in sea level since the early 1900s. For those not on the metric system, that is nearly seven inches, or about the length of a meatball sub.

We have gotten there by releasing 31 billion tons of carbon dioxide into the atmosphere every day. The discussion of global warming could be a book in itself, and indeed many tomes are available on the subject, but that is not why we are here. Let us simply deal with the matter by showing the data. The graph below is from the NOAA website, as are the metrics above. It unarguably shows that the Earth is, indeed, getting warmer.

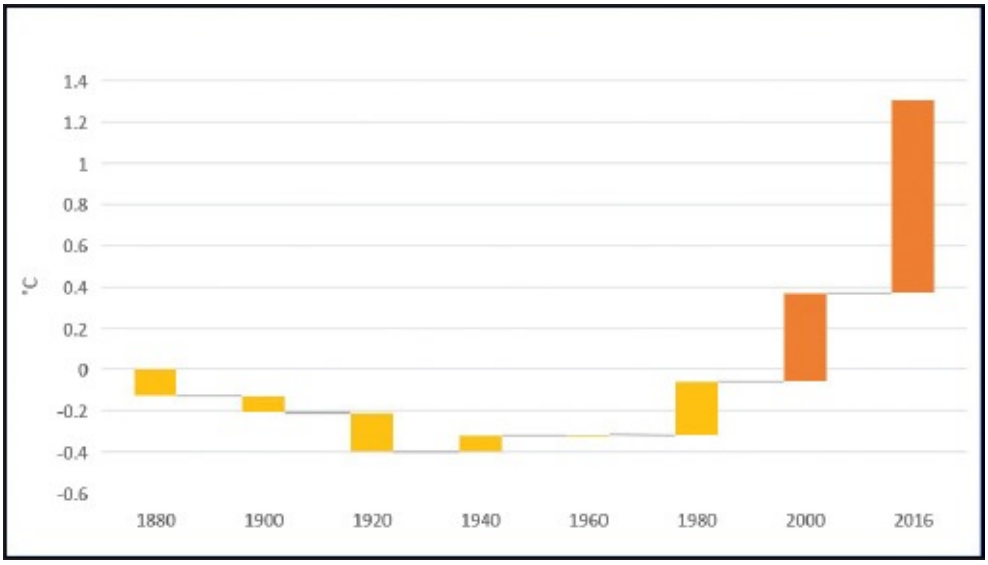


**Figure 16: Global Land and Ocean Temperature Anomalies *(National Centers for Environmental Information, 2013).***

So we know that global warming is real and that it presents a real problem. We also know that the existing wealth formula grants a significant advantage to the prime movers on the planet. Adam Smith argued that self-interest should reign supreme in corporate governance and that social responsibility should be left to the state to clean up. That is all well and good, but what a mess we have to clean up some 200 years after Smith died. The US remains undeniably the biggest economy in the world, but the rise of the East in the 21st century could put Western hegemony and the Washington consensus in doubt by the middle of the century.

It is time, therefore, that we replace the concept of self-interest with a new term: sustainable interest. We know there are risks associated with sticking with the Smith model; our examples of gun violence and global warming frame that picture. We turn our attention now to the specifics of the new model in the hope of arriving at a better and more sustainable solution for our economic, ecologic, and wealth creation needs of the future.

## The Tipping Point

I began our examination of sustainable wealth by recognizing a few hurdles we must overcome. Comparing the cost between conventional grid energy and solar energy for a residential home reveals that the latter will be the obvious choice for implementing a wealth creation model that literally puts the power in the hands of the consumer/homeowner. Unfortunately, in the United States, there seems to be a shortage of political will in the fight for renewable energy. On the contrary, we have seen that we can count on government to subsidize fossil oil and coal companies. We have already discussed the reasons for this. Suffice to say that so long as contributions from the utility companies and their fossil fuel providers keep our politicians in office, we can expect to see those politicians oppose any policies that undermine the profits of those companies or their control of the energy markets.

No, it is not likely that we will see the environmental benefits of renewable energy or the financial benefits of systems such as the Green X Platform until we achieve the tipping point in the energy cost structure that will obviate the political opposition. But can we wait for this to happen? Can the Earth wait for this to happen?

It is for these reasons that I have already devoted so much effort to arguing for the need for political will to reduce the cost of renewable energy installations, to reduce regulations, constraints and limitations, to increase tax incentives, and to diminish the risk to the companies that manufacture and install solar power systems. The technology is here, it is viable, and it could change the world for the better. The real barrier is cost. If we want a sustainable model, we must find ways to overcome that obstacle.

In general terms, the tipping point for solar power is when the cost of installing solar power is less than buying the electricity that it can produce from the grid. Beyond the obvious mathematics of a financial decision, though, even approaching that state of cost parity will allow millions of Americans to choose energy production and self-reliance over dependence on their electricity supplier.

We cannot reach that utopia without the political will to get us there or a cost structure that makes it not only viable but inescapable. So let us look at that cost structure. Using pricing information provided by the US Department of Energy on a sample of conventional grid energy prices in the United States in February of 2013, we find that prices ranged from 7.8 cents per kilowatt-hour (kWh) in Idaho to 17.6 cents per kWh in Connecticut (US Department of Energy, 2014). Hawaii is not mapped here, but takes the prize at 36.6 cents per kWh, bringing the national average to 13.8 cents per kWh.

Given a regulatory environment where profit is effectively guaranteed, what incentive does a utility company have to reduce costs? Poorly negotiated fuel contracts, construction cost overruns, or inefficient maintenance operations do not matter. The costs will simply be passed on to consumers, who have no alternatives.

In our political climate, in which politicians are on an auction block and the regulators answer to legislative committees controlled by special interest groups, utilities companies and lobbyists, it is easy to see that energy costs are not going to come down on their own. Indeed, there have been a number of recent revisions to regulatory policies that explicitly allow the utilities companies to recover the costs of strategic or operational blunders.

A utility can pass on the cost overruns on that new nuclear plant or the costs of cleaning up that coal ash dump. It could choose to use high-sulfur coal and then pass on the costs of those new scrubbers required by that choice. Ironically, this little gift to the utilities can be part of legislation purporting to promote clean or renewable energies. More ironically, the contributions that allow the utilities to control the legislatures are costs that can be passed on to the consumers.

The graph below is taken from the US Department of Energy data catalog (2012). It can be seen from this analysis that the cost of electricity increased slightly from 1990 to 1993, was relatively stable through 2000, and has rapidly increased since then.

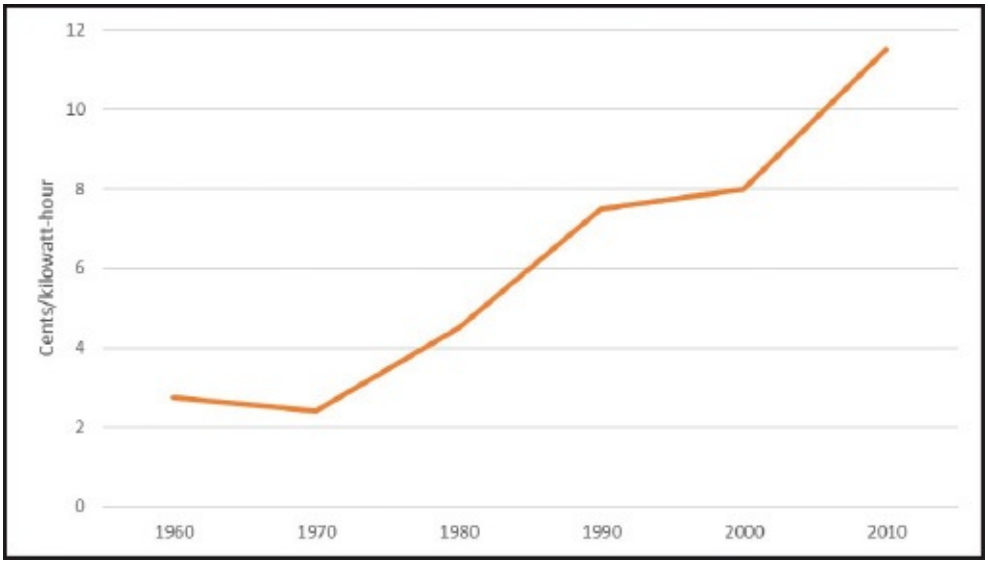


**Figure 17: Residential Energy Cost Trend *(US Energy Information Administration, 2012).***

Many factors go into the cost of generating and distributing electric power. The cost of building the generating plants, the distribution grid's physical plant and maintenance, and the price of fuels all contribute to the homeowner's electric bill. Additionally, there are many other costs of operation, such as the cost of decommissioning old plants, cleaning up smokestack emissions and coal ash pits, and fuel conversion projects that the typical utility customer never considers.

Some have proposed deregulation of the utility companies as a solution to rising energy costs. This idea took hold in the late 1990s and was implemented, to some degree, on a state-by-state basis. As can be seen by the rate curve, deregulation has not had that effect. Texas is probably the poster-child for this idea, as average rates surged 58 percent in the five years after the implementation of deregulation in 2002 (US Department of Energy, 2014). Clarence Johnson of the Texas Public Utility Counsel probably summed it up best in his understatement that,

**"Deregulation has been disappointing".**

Regulation has not been much better. The term itself implies difficulty. To regulate an electric utility is a very problematic undertaking, dependent upon costs and information delivered to the regulator by the utility itself. Even in a system of decent and honest people, this would be a hard thing to do. However, throw in a bit of greed and avarice, and you have quite a problem.

The utilities must make a profit, or they will not be able to deliver a reliable and effective service. But, what is a fair and reasonable profit? What is a fair and reasonable salary for the CEO and for the COO? What is a fair return for investors? Given their monopolistic positions, one might imagine the result of Duke Power or NStar shutting down operations.

As captive consumers whose only protections are our elected representatives, and those legislators actively work for the utility companies, what other options do we have? The answer lies in taking that power back into our own hands, both literally and figuratively. This is something that we will not and cannot do, unless the economics work to our advantage: when the tipping point of alternative energy is equivalent to that provided by the electric utilities.

A review of the historical costs for solar panels and systems is only marginally useful as the technology has advanced so far and so fast that the cost has come down exponentially. It is more useful to look at recent history. The solar panel manufacturing industry has matured to the point

where module costs are highly competitive and the price decline has become more predictable and dependent on incremental tool and process improvements.

The price of the solar module itself is, of course, only one component of the system price. The total price of utility-scale projects has been analyzed by the National Renewable Energy Laboratory of the US Department of Energy and is shown in Figure 18. It can be seen from this chart that for large-scale projects the module price in 2013 was actually less than the cost of installation and permitting.

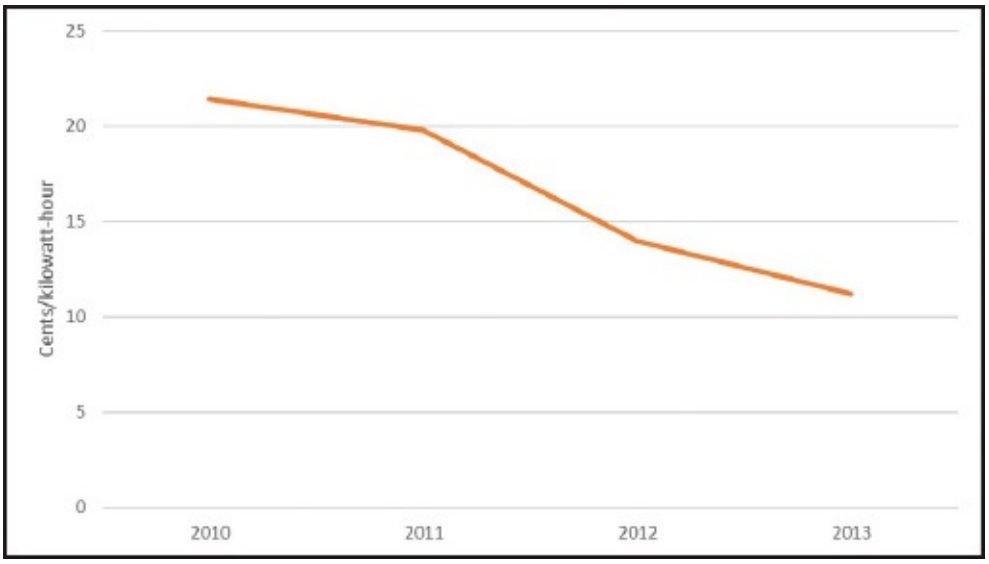


**Figure 18: The Falling Price of Utility-Scale Solar Photovoltaic Projects *(US Department of Energy, 2014).***

The costs outlined here are for utility-scale projects which, due to economies of scale for these types of projects, are less expensive on a dollar-per-kWh basis. We can expect residential costs on a typical 10kW system to run about 40 percent more than utility-scale projects. The breakdown of costs for the National Renewable Energy Laboratory analysis shows a 45 percent drop in the module costs from 2011 to 2012. This was due to advances in panel process equipment and tools and the emergence of a highly subsidized Chinese industry and can therefore be regarded as a one-off event. A more realistic expectation is for the 5 percent decline that we see from 2012 to 2013. Additionally, inverter costs have dropped with design and manufacturing improvements and installation costs are also coming down with the learning curve due to improvements in mounting and hardware design. We can reasonably expect a 2 percent year-on-year improvement in those costs as well.

Using this data and these assumptions about reductions in the cost of solar power, and applying a simple regression model to the cost of residential grid pricing, we can produce the graph shown in Figure 20.

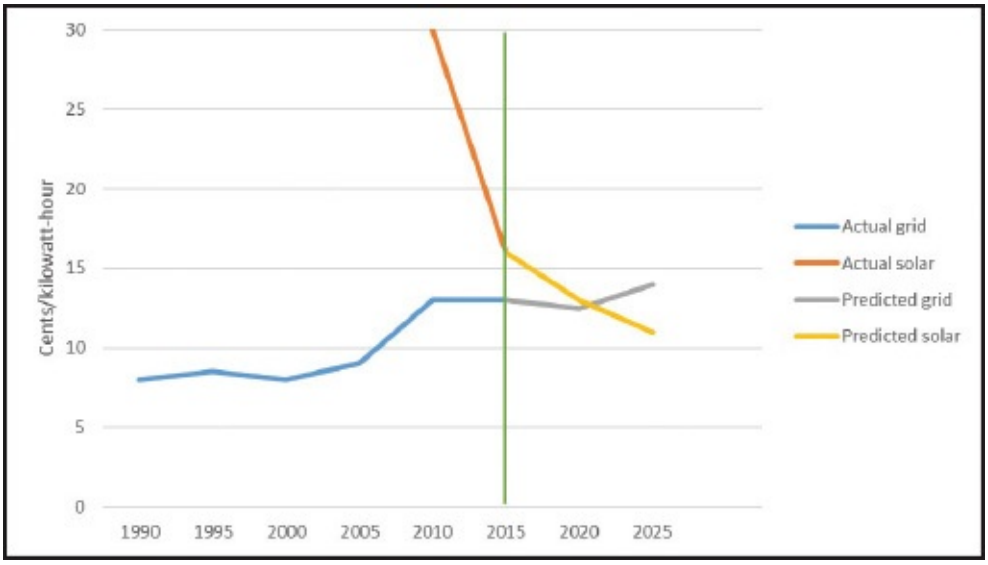


**Figure 19: Grid v. Solar Model Costs.**

We can see from this conservative model that grid parity can be expected to happen sometime within the next decade. There are many versions of this model, and there are almost as many people making these predictions as there are those predicting the next Super Bowl. If, for the moment, we assume that no disruptive technology will change the situation and that the future of solar power remains based on flat-panel silicon technology, then we can see that grid parity is coming soon.

If either of those assumptions is incorrect, then parity is coming even sooner. We could have some disruptive technological development or spike in fuel costs or supplies to drive this date earlier. Or, we could have some new technology in grid power or fuels to delay it. However, whether grid parity happens in 2020, as this model predicts, or years earlier or later, we can realistically expect it to occur.

As we approach grid parity and continue to see our utility rates increase and the costs of renewable energy sources of all kinds come down, things will start to shift. We will see an acceleration in the technological learning curve, ever more stable and lucrative markets, and an improvement in the political climate to support the use of alternative energy, and the realization of systems such as the Green X Home.

## Rights and Values

We would be remiss to discuss sustainable wealth without addressing the rights of the individual to that wealth and our social values that allow such a thing to occur. Let us start with a quick examination of the differences in the human rights asserted in the *US Declaration of Independence* from 1776 and the French *Declaration of the Rights of Man and of the Citizen* in 1793.

Both documents make it clear that the right to life is the most fundamental right of humanity. Other rights declared by each document are, however, very different.

The French Declaration heralds fraternity and equality as basic rights: we are all equal, we all have the same rights and responsibilities to society, the same opportunity for success and prosperity. But we are all in this together, and this society has responsibilities to each and every individual.

Much of this thinking comes from the extreme economic inequality in French society prior to the Revolution. Under the monarchy of Louis XVI, the feudal system put the lion's share of wealth

in the hands of the aristocrats, plunging the vast majority of the citizenry into crushing and inescapable poverty.

Consider, for a moment, our discussion of Pareto's 80/20 rule: that a stable economic system is one in which 80 percent of the wealth is held by 20 percent of the people. More importantly, in this instance, is its corollary principle: that revolutions occur when 95 percent of the wealth is held by 5 percent of the people. We do not have the data needed to verify that condition of economic disparity, but it is commonly agreed that the ratio of wealth held by Marie Antoinette to her cake-eaters was far greater than a mere 95 percent. Throw in a couple of bad wars and a few bad harvests, and it was time to raise the pitchforks and sharpen those guillotines.

The idea of equality—while a reaction to extreme inequality—did not necessarily imply a move to economic equality, but held that all men have equal rights within a social contract that provides equal opportunity for prosperity. The other side of that social contract is that all men have a responsibility to each other within a great fraternity in which, ideally, no one is hungry, homeless, or cast aside. This idea, as well, springs from the hunger, homelessness, and hopelessness that were rampant under the monarchy. The concept of a society which has a responsibility to its citizens and in which its citizens have a responsibility to each other and to society at large was reprised in the 19th century in the writings of Germans Karl Marx and Friedrich Engels.

Both the *Declaration of Independence* and the *Declaration of the Rights of Man* were carved from the excesses and abuses of the monarchy. In the latter case, it was the unsustainable inequality of wealth and the burden on society imposed by the feudal system under Louis XVI. In the case of the colonies, it was the oppression by a far-off monarchy of individuals, cities, and colonial governments. Hence, the focus of the American document is not on society and common claims but on the rights of individuals and their right to govern themselves.

While also declaring the basic right to live, the *Declaration of Independence* expresses the rights of all men to liberty and the pursuit of happiness. That latter phrase was a matter of much debate, but the final wording was specifically intended as a generalization of personal freedom within society, the right of economic opportunity to pursue prosperity, and the ability to enjoy those freedoms.

Equality is a common concept, in that it is called out as a specific right in the French Declaration, while the Americans claimed that all men are "created equal". This is a subtle but important difference. To hold that all men are born with equal rights is not to say that they are truly equal within the workings of society. Whereas the French concept of equality and fraternity implies responsibilities of society, no such idea is implied in simply being born with equal rights.

Conversely, the right to the "pursuit of happiness" is rather far-reaching and implies freedom from responsibilities to society. In modern terms, it is the difference between unconstrained capitalism and a social democracy. Happiness is generally construed in the Marxist terms of materialism but, as the Founding Fathers intended, it implies the freedom to choose one's own path and pursue one's own dreams. In today's terms, it has become more a statement of personal freedoms and social equality, rather than of economic gains and prosperity.

While the *Declaration of the Rights of Man* is an important historical document that led to the end of feudalism and helped to shape French society, it did not stop the return to autocracy under Robespierre and, later, Napoleon. However, the rights espoused by the *Declaration of Independence* are the cornerstones of America's legal, economic, and justice systems. The implementation of the right to life and the *Bill of Rights* are the basis of America's criminal justice

system, since they seek to protect the lives and rights of citizens. The implementation of the right to liberty and property is the basis of America's civil legal system, while the right to the pursuit of happiness is the foundation of America's economic system.

Contrary to the idea that equality and fraternity must be viewed together, there is a darker side to the pursuit of happiness. There are no declarations of human principles that protect people from unemployment, inflation, disease or disaster, and there is no expressed responsibility for, or by, society. Thus one's ability to pursue happiness depends greatly on family wealth and position, good health, and an element of pure luck. There is no declared protection of wealth from drought, floods, or inflation, no protection of property from taxes, nor a basic right to health care or justice.

Our formula for sustainable wealth provides the opportunity for economic stability and the protection afforded by that, but these basic rights to health care, to the protection of property from seizure, and to the protection of wealth need to be addressed by our society, for the good of all citizens. We need to take a fresh look at the values and rights of our society, and the individuals within it.

## Conclusion

Here you find the disparity between the wealthiest 1 percent and everyone else, the 99-percenters. The 21st century has seen possibly the greatest transfer of wealth in human history. It has been created by government policies, losses incurred by the middle class, and predatory practices of financial institutions. The ironic part is that the very concept of the right to the pursuit of happiness protects these gains and losses. It is that pursuit of happiness that has led to the unbridled pursuit of wealth by those who already had most of it, to the end of regulatory practices that protected the financial markets, and to the acceptance of debt and risk as a way of life for the middle class. The pursuit of happiness has therefore proven itself insufficient in today's economy because it not only allows for vast inequality but, when that inequality leads to political power, it essentially guarantees it.

The economic imperatives of our day for the middle class are the creation of new sources of wealth that are easily managed by the members of each household, and protection from the risk of losing that wealth. By having a home that produces cash revenues, adding value to the equity of a dwelling defies the threats created by inflation because these revenues are continuous and effectively tied to real values. Nothing—not even gold—has a truer value than energy. Similarly, the equity value of a home offers protection against the effects of perishable money. The new attributes of the household sector bring wealth creation into the homeowner's control and take cash resources away from the power of financial institutions. In simple terms, it is far better to invest money in real property that produces real revenues.

Ownership of a Green X Home provides independence from parasitic lenders, and the creation of energy by every household provides independence from the energy masters. Putting that energy into the grid provides a fraternal benefit to all of society, and we achieve a measure of equality, as all classes can all participate. This is the perfect melding of American independence with the French values of fraternity and equality.

For many years to come, the value of homes equipped with energy-producing capabilities will offer sustainable wealth-creation possibilities. The expense of running an electric car that is

powered from home—at a fraction of the cost of running a gasoline-powered vehicle—will create substantial cash flow savings for the homeowner. Finally, household members are able to think about running their home as an enterprise, where the maximization of the net value of their standard of living is a priority. This is the paradigm change of our time.

While mortgage lenders are focusing on the value of the brick-and-mortar structure, homebuyers will seriously consider the cash-flow-producing capabilities of a home. This disconnect will be responsible for the fastest and most substantial increase in wealth for the middle class.

Once the tipping point is achieved, the entire middle class will have an opportunity to really own a home and not just be paying a bank for the privilege of temporarily living in it. This will remove the economic risk of losing it to bad health or bad luck—providing a significant level of economic insurance and financial security that will benefit all of society.

This financial security for a segment of our society—indeed, the majority of our society, which has never in our history enjoyed such security—will be a benefit to every member and to society in general. Imagine a world where each of us is secure in our own home, where a missed paycheck or an ill spouse does not put one on the brink of homelessness, where no one is cutting off anyone's power, where hard-won earnings are put to good use and not handed over to the banks and utilities. Imagine how the elimination of desperation from a society might affect the rates of crime and violence there.

John Dillinger said that he robbed banks because that is where the money is. Imagine if the money was in our own homes, owned by each of us. Imagine a society where no one is homeless except by choice, where no one has to choose between feeding the family and keeping the lights on. What would this do for the engine of crime?

Finally, imagine a society where each home can power not only itself, but can provide the energy needed for transportation for its owners. Imagine industry running not on the burning of coal but on energy taken from our environment. Perhaps we could not only slow global warming but stop it altogether and allow the Earth to heal itself. All of this is possible and within our grasp.

# Chapter 12:

# SUSTAINABLE ENTREPRENEURSHIP

***Sustainability has to be positioned as a strategic driver, which can be integrated into existing structures, process and job descriptions.***

***—Sally Uren, CEO, Forum for the Future (2013)***

Tesla Motors: if we're talking about companies built on sustainable technology, Tesla makes for an ideal case study, since it highlights many of the issues surrounding green industry and technology. Just like we see time and again in the energy technology or green space, Tesla needed to overcome huge costs and technological obstacles. Indeed, if we consider these hurdles for a moment, it is rather remarkable that Tesla has become a successful automaker.

First, it faced stiff opposition from traditional fossil-fuel industries and automotive competitors providing traditional, hybrid, and electric cars. Next, opposing politicians made a political issue of the Obama administration's injection of federal loans to help the fledgling company. Finally, it stood toe to toe with an array of negative propaganda campaigns portraying the company's business plan as faulty and its product as inferior.

But Tesla overcame. For this reason, and many others, Tesla Motors is an inspiration for any company looking to enter the competitive alternative energy market. If we hope to get to the bottom of how they did it, let us take a look at the moral and philosophical imperatives that drove the founders of Tesla to start a highly risky business venture. We will examine the tribulations Tesla faced on its road to triumph, and, finally, learn the valuable lessons Tesla can teach the broader green industry.

## The Tesla Standard

We started our journey with the premise that it is ingrained in all human beings to strive toward improving their standard of living. It is from here that our unalienable right to the pursuit of happiness originates. With Tesla Motors, we glimpse the future of the standard of living for many people.

It all starts with the capitalist model that allowed Tesla to thrive. For those with access to resources, capitalism has certainly worked well. The spread of capitalist societies worldwide has

allowed millions of adventurous entrepreneurs and forward thinkers to attempt a unique idea in an open economic space.

Absolute conviction drove Martin Eberhard and Marc Tarpenning to incorporate Tesla Motors in July of 2003 (Badkar, 2013). They managed to raise $60M to develop their high-performance roadster, but struggled to raise the $100M needed to develop the Model S vehicle.

Tesla's current CEO, Elon Musk, showed entrepreneurs the importance for the company of prioritizing sustainability, as he fostered its recognition as a manufacturer of high quality electric powertrain components. Musk demonstrated his conviction with his own investment of $35M in Tesla, the last of his fortune at that time. A reinforcement of that conviction was the provision in the US Department of Energy's $465M loan that required Musk maintain at least a 65 percent share of the company. That loan was used to complete the Model S development and build an assembly plant.

Although sustainability has varying meanings to different organizations and authors, most seem to agree that organizational sustainability includes the ability to remain competitive and profitable with little or no adverse economic and environmental effects. That is consistent with our United Nations definition discussed in Chapter 11.

In the past, managerial focus has tended toward economies of scale and agglomeration, but this has shifted to the economy of experience, where reputation lies at the core of sustainability. The most distinctive feature of the green sector is its sustainability. Therefore, for a company like Tesla, it made sense to shift the nomenclature from the "green sector" to the "sustainable sector." In fact, the moral and philosophical imperative that led to the formation of Tesla was to,

> **"Lessen global dependence on petroleumbased transportation and drive down the cost of electric vehicles".**

Tesla's focus on sustainability gained the trust of many investors—during a period when investing in such a company might have seemed extremely risky. Since the company's foundation in 2003, right up until July of 2010, investors poured a total of approximately $700 million into the company. In 2010, the Tesla IPO raised another $226 million (Badkar, 2013).

The reason for such success in fundraising is simple: the Tesla product was established with an attractively lofty goal. Imagine owning a car that could be refueled anywhere in the world by a virtual jolt. This would eliminate the range problem with electric cars created by the need to charge them for hours at specialized, rare, and expensive charging stations. The development of this system was necessary to make Tesla's cars a realistic alternative to gas engines. The concept is remarkable: the company has developed a model for a supercharging station that could fully recharge a Tesla car in half an hour and completely free of charge. The company claims that by 2020, supercharging Tesla stations will be accessible throughout the United States and parts of Canada. They also suggest that the speed of recharging will only improve over time. With such promises, money has naturally followed.

## Sustainability First

The next lesson from Tesla is that sustainability can and should be the corporate cultural imperative. These days, the promise for sustainable technology is such that if you nail down that

sustainability factor first, the rest of the needs of entrepreneurial success will be met. The new order of entrepreneurial discipline is sustainability first—seeking economy of scale through research and development later.

Our society's preference has always been for products or services that provide simplicity and value yet, as time goes by, living gets more complicated and individuals have a harder time achieving self-sustainability. This trend has led to the preponderance of large condo and apartment complexes. We have already discussed the potential for a single-family home to produce its own electricity, but imagine how much energy could be harnessed by way of the huge rooftops sheltering these massive condo and apartment complexes. The revenue could be staggering.

As soon as property boards discover an additional and sustainable source of revenue, the industry will confirm to the market that there is value in sustainable products. This important goal for the industry will come through education, because implementation and harnessing of that value require special skills.

Green architecture has every bit as much potential as Tesla, as it works in conjunction with a need for aesthetic scenery, fills a demand for skilled labor, and jump-starts the economy through housing and construction projects. Green architecture also provides opportunities for entrepreneurial projects that provide support services to the market.

The sustainable sector works well with the services sector. Service companies create sales tax revenues, and their payrolls benefit those who live in their neighborhood. As the sustainable sector gains market momentum, the services sector will develop in a way that allows it to accommodate new demands with increasing efficiency. This will be reflected in the invention of new supplies, tools and processes that are necessary for the development and support of green architecture and systems.

A common way to achieve sustainability is by entering into service agreements with customers to develop a common value with the market, similar to what Jigar Shah of SunEdison is doing by installing and maintaining solar panels on SunEdison's customers' roofs in exchange for service contracts (SunEdison, 2013). By providing these services to their customers, SunEdison enjoys steady revenue—so steady that other have replicated this model and it has been institutionalized in solar power legislation.

Linux is another example of how entrepreneurs use sustainability values to drive their business to the next level. Take Linus Torvalds, creator of Linux. With Linux, he designed an operating system meant to compete with Microsoft. But instead of pricing it in a way to compete, he instead gave it away for free and opened it to all programmers with the agreement that the code would remain open source. Through this gift to the world at large, a company called Red Hat found ways to profit from the popularity and shortcomings of Linux by supporting, customizing, and developing applications for Linux.

Companies like Google, meanwhile, are successfully transitioning to sustainability. The education market is shifting slowly toward sustainability as well. Just look at the liquidity and sustainability of the online universities that have popped up so quickly. This is the new engine of global economic development: entry and exit into the digital market is not costly, the marginal cost to increase revenue is very low, and services can be supervised comfortably. These are very simple and affordable products or services that people can easily buy. Digital products can be examined, warehoused, sold, charged, and delivered electronically. The power in these factors is tremendous.

## Conclusion

As all of these companies show, we are looking at a new era of entrepreneurial imperative. Whereas before it was a matter of getting the financials and business model squared away first, it now appears that sustainability has become a central focus. Investors, governments and, increasingly, consumers, are all drawn to companies that promote or employ sustainable practices. It appears that, as we move forward into the 21st century, those companies that focus most directly on this sphere will be the companies most likely to succeed.

# Chapter 13:

# SUSTAINABILITY AND LEADERSHIP

***You are not here merely to make a living. You are here in order to enable the world to live more amply, with greater vision, with a finer spirit of hope and achievement. You are here to enrich the world, and you impoverish yourself if you forget the errand.***

***—Woodrow Wilson***

Throughout his eight years as US President during World War I, President Wilson championed the economic interests of children, farmers and railroad workers. His pioneering spirit as activist and reformer also led him to create the Federal Reserve System, bolstering his contention that banks' interests should be primarily to serve, and not to rule, the business sector.

## Chancellor Angela Merkel of Germany

Many political leaders of our time seem to be role models of sustainable leadership. Angela Merkel, Germany's chancellor since 2005 and *de facto* leader of the European Union, has established a direction toward unification, health-care reform, and energy development. She has created institutions, structures, and processes to support her vision, and inspired Germans as well as Europeans to align around financial discipline.

Chancellor Merkel successfully initiated The Economics of Ecosystems and Biodiversity (TEEB), a unique and major international initiative managed by the United Nations Environment Programme and funded by the European Commission, Germany, the United Kingdom, Norway, the Netherlands and Sweden. The commission draws attention to the global economic benefits of biodiversity, measuring the increasing costs of the loss of biodiversity and ecosystem degradation. The group tasks itself with bringing together scientists, economists and political researchers to develop practical actions for sustainable practices worldwide.

This green economy initiative gave birth to the *Convention on Biological Diversity*, an international agreement aimed at promoting sustainable development. The agreement has drawn together a group of multidisciplinary scientists who study the use of biological diversity by indigenous people to promote conservation and sustainable innovation. Chancellor Merkel's

ability to create sustainable political alliances among global institutions, generously funded by nations of the First World, is perhaps one of the most far-reaching green initiatives of our time.

And she is not done yet. Under Chancellor Merkel's guidance in May 2013, the National Electromobility Initiative (the *Nationale Plattform Elektromobilität*, or NPE) was created. The NPE is an agency of the Ministry of Economics and Technology, in collaboration with the Ministry of Transport and Building and Urban Development. Its aim is to make Germany a leading market for electromobility—one that aims to put one million electric cars onto German roads by 2020.

Germans are convinced that the essential technologies for electric drives, energy storage, and grid infrastructure have already been developed, but they concede that the need for research and development persists, especially in these areas. To facilitate introducing one million electric cars by 2020, the NPE, German municipalities, and the private sector have committed substantial funding. They aim to build a vast grid of recharging stations and further develop efficiency in 1) public and individual transportation systems, 2) intelligent power grids and 3) empowering homeowners to generate electricity.

Germany's most important automobile manufacturing region, Baden-Württemberg, has welcomed this initiative. The carmakers believe the NPE will further integrate small and medium-size companies into the electric mobility field, boosting job creation, technical education, and sales tax revenues.

Dr. Jan-Hendrik Olbertz, chairman of the Long Night of the Sciences, believes that this initiative broadens academic programs and provides new and exciting insights, especially in the fields of the humanities and social sciences. On June 8 2013, scientists and students presented over 2,400 new multidisciplinary projects to support the NPE initiative. The popularity of this initiative has created a new sense of German patriotism, similar to the one that existed in Brazil during the early 1980s with the implementation of the ethanol project known as The Gasohol Initiative.

The development of these initiatives has taken great foresight on Chancellor Merkel's part. She recognized the potential of these programs for Germany, the European Union and the world at large, and looked beyond the immediate view of German politics to the future of her country. Merkel also looked past her own borders to see the effects of civilization on the world's climate and ecology. To push these initiatives at a time when Germany was still clawing its way out of the Great Recession took great political courage and personal will—and not a small amount of political capital.

## Barack Obama

It is no easy task to lead a global giant. The US once led the world with conviction, poise, and an informed and dedicated population who cared about global events—who invented multilateralism. Compare the sacrifices of the Greatest Generation, as coined by Tom Brokaw, to the MTV Generation. The ambivalence in the latter leaves a giant cross-section of the population disinterested in politics and majoring in massage therapy.

Obama makes my list of qualified leaders for actually accomplishing policy change, despite a contrary and difficult Congress still turning in circles over the misguided belief that the effects of global warming may not be real. The Republican-led Congress spent much time courting Riyadh (America's favorite "frenemy"), currying favor with the fossil fuel giants and Congress' defense

industry contributors. It has spent little effort in cultivating brilliant science students in labs across the country from MIT to Cal-Tech—minds that could invent the next sustainable energy-saving device or inspire the next paradigm shift.

A less-informed electorate becomes susceptible to political manipulation, and so it is with great commendation—or at least it should be—that former President Obama took such strides to lift a once-great giant back onto its feet. President Obama's green initiatives have inspired America's entrepreneurs to create sustainable green ventures such as Tesla automobiles. His administration provided economic incentives to the users of green products and the developers of many startup projects generating electricity from sustainable sources such as wind and solar. Perhaps the most beneficial of Obama's impacts is the one that can be experienced by homeowners as they convert their rooftops into power-generating facilities for their homes, transportation, and income.

The impact of these policies is already visible in bright states like Colorado, where sunlight is abundant and the number of households that generate electricity is increasing exponentially, alongside the number of electric automobiles sold each year. Without a doubt, Obama's administration is clearly responsible for one of the most successful clean energy initiatives in the world and for the creation of the most meaningful increases in technological development of sustainable clean technologies.

It is regrettable to note that public power utilities perceive energy-generating homeowners as potential business threats. Despite this negative influence, in 2011 the household sector of Yuma, Arizona, increased its clean energy-generating capacity by 50 percent compared to the previous seven years (Keane, 2012).

Obama's July 2013 proposal was aimed at protecting the environment from air pollution. The President capitalized on the Supreme Court's 2007 ruling making the Environmental Protection Agency part of the executive branch of government, giving it the power to regulate carbon dioxide emissions without needing Congressional approval. This political strategy is backed by the endorsement of most environmental groups, although some believe that this is not sufficient in the face of the air pollution challenges affecting most metropolitan cities of the world. This green initiative,

> **"Directs the Department of Interior to approve enough renewable energy projects on public lands to power six million homes by 2020 and offers up $8 billion in loan guarantees for energy efficiency and advanced fossil fuel projects" (Wogan, 2013).**

Leveraging on the *Clean Air Act*, President Obama also called for a doubling of gas mileage standards for automobiles, SUVs and pickup trucks until 2018. If only more world leaders thought as green as he does.

Like Merkel's, Obama's green initiatives took foresight and commitment and were accomplished while the country was still mired in recession. Unlike Germany however, where the recession was met with an austerity budget which prolonged the crisis and spiraling deficits, President Obama had the foresight and wisdom to stimulate the economy. The US has seen a far faster recovery and shrinking deficits. Lacking support in Congress, it has taken great effort and will to achieve both the economic recovery and these green initiatives.

## The Chinese Politburo Standing Committee

In contrast to the environmental protection actions of Western societies, it is interesting to note that the Central Politburo of the Communist Party of China is an institution whose leadership must be distinguished as one of the best examples of sustainable leadership. They have created a vision for a new China and have accepted a capitalistic attitude in their people. Their creation of political and socioeconomic institutions that teeter between their centralist regulatory systems and the productive and innovative capacity of the newfound freedoms of their people has brought millions out of poverty. The ancestral environmental consciousness of the Chinese people is largely responsible for motivating the Politburo to enact legislation and funding to become the world's largest producer of renewable energy—with a goal to generate up to 20 percent of all China's energy needs from renewable sources.

Even so, not all is rosy in China. There is sufficient evidence to suggest that the country may soon become the greenest nation on Earth while having the darkest skies (Larson, 2009). This dichotomy motivated the Politburo to welcome innovators and investors from all over the world to solve public transportation problems and to produce renewable energy to power their nation's substantial manufacturing capacity. The transition is ongoing.

According to many followers of the International Electric Vehicle Free Trade Agreement, Tesla is negotiating with China to exchange the production of the Model S vehicle in China for the development and implementation of a new electric public transportation system. This will allow Tesla to produce the Model S at affordable prices for the populations of industrialized nations and would commit them to developing an efficient public transportation system for the people of China. This is perhaps the most interesting and far-reaching environmental agreement between a company in the private sector of a capitalist society and one of the most strictly controlled socialist governments on the planet. And it is all in the name of promoting business efficiency with environmental responsibility. One might even call it a form of capitalist imperialism.

Tesla is only one example of an emerging trend of which China is taking advantage. The trend is that research and development of many innovations happens in the First World, but the production in marketable quantities occurs in emerging markets, where labor is less costly and government support and subsidies are prevalent. This trend is evident in the production of solar panels, which China produces at affordable prices for customers in developed nations. Expect more of this in the future and more breakthroughs to follow.

It took great personal and political courage for the leaders of China to break from Maoist communism and allow entrepreneurship along with a large degree of economic freedom and local control to empower the people of China. It is a country in transition and the management of that change requires great skill, foresight and courage. The successful transition to capitalism and China's booming economy are proof that its leaders possess these traits.

## Conclusion

Many authors (Frankel, 1998; Hart, 1997; Willard, 2002) agree that leaders must change their organizations' view of success from a concept based solely on economic measurement to measurements based on sustainability. The global corporate community, however, has consistently fallen short because its leaders have not been able to articulate a clear vision of sustainability for their organizations, often failing to even see one for themselves. The framework

of leadership requires the successful setting of direction, the creation of alignment, and the ability to maintain organizational commitment.

Setting direction includes establishing actions and behaviors to articulate the goals, vision and objectives related to sustainability in the organization or workplace. The creation of alignment relates to the introduction of structures and operations to support organizational pursuits toward a specific direction over the long term and to ensure that the members of the organization have a common culture and common goals. Maintaining commitment is a function of leadership that secures the adoption of specific goals by employees and other stakeholders toward a stated direction over the long term, the ability to achieve short-term objectives while staying focused on long-term goals, and the ability to do the things that are necessary to maintain the organization and its momentum.

From these definitions, it is clear that sustainability and success are intricately connected, and that the ability to formulate sustainable goals for an enterprise requires visionary leaders. Crucially, sustainable leadership includes the capacity to formulate an entrepreneurial vision that transcends the lifespan of the leader, the ability to create operational structures to support that vision, and the ability to inspire others into embracing the leader's mission. The leaders highlighted in this chapter demonstrate all of these qualities and abilities. The world needs more like them.

# Chapter 14:

# TOWARD WORLD PEACE

***Peace comes from being able to contribute the best that we have, and all that we are, toward creating a world that supports everyone. But it is also securing the space for others to contribute the best that they have and all that they are.***

***—Hafsat Abiola***

The world faces a major problem. Every day, more people demand access to the kinds of resources enjoyed in the First World, and every day, those resources dwindle. The shortages we face have led—and will continue to lead—to war between nations in need. Thankfully, the privatization of many resources, the trading interests between nations transcending political boundaries and generating interests that promote compromises for peace have minimized those wars.

Throughout this book I have outlined a vision for the coming era of the wealth of individuals. The subject of personal wealth today is, in a sense, its own war over resources—perhaps the most important war currently being fought.

The financial crisis of 2008 showed that an abusive financial sector, backed by politicians, is capable of destroying the wealth of individuals. One of the consequences of that financial crisis was the creation of the Occupy Wall Street movement, which voiced the discontent popularly felt with the financial and political sectors, not only in America but throughout most of the industrialized nations of the world.

In the emerging and underdeveloped nations that have monarchical or stale forms of government (e.g., Egypt), the discontent of their inhabitants became evident during the Arab Spring. Likewise, in nations that have embraced socialism, the dissatisfaction of their constituents is clearly visible through the social unrest prevalent in South America, especially in Venezuela.

In short, the world is changing. The balance of wealth has grown too far out of proportion, and we have reached a breaking point—economically and socially. Economic recovery or not, we are now teetering on the brink of a major reformation of wealth distribution worldwide. That reformation can come by way of revolution, through collapse, or as we look forward and embrace new technologies. Surely we agree that the last scenario is preferable.

The war of this current era is against forms of government that are not flexible enough to welcome drastic changes designed to empower people with opportunities to pursue happiness. The devastating effects of the financial crisis returned varying punishments for the offenders. Countries like Greenland and Finland—nations that imposed severe and criminal penalties on the agents of the financial sector while bailing out the individual rather than the corporate behemoth—are, in many ways, the heroes of the aftermath. The enactment of legislation protecting account holders and borrowers from agents in the financial sector in countries like Bolivia is yielding important political victories for their leaders.

Not so in the US, but hope is not lost. Where politics and greed stand as roadblocks, disruptive technologies and innovative ways of thinking about economics can still exact the change we need. This is, after all, the land of freedom and opportunity. People migrate in droves to the United States because it is the only nation in the world that assures and protects its inhabitants' freedoms. One of those freedoms is the ability to pursue entrepreneurship as the logical answer to long-term unemployment.

Unfortunately, certain agents of the financial sector continue to empower as few as 1 percent of the population. This does not suggest that the US financial sector is broken—its opposite on the spectrum does not work, either. Socialist regimes have proven time and again that they are not economically feasible because implementing the policies of any socialist society requires the generation of tax revenues that are only possible through a strong and vibrant private sector. Then, of course, there is the undesirable and unpopular alternative, a unique form of widespread poverty found in countries like Cuba and Venezuela.

There are signs of willingness for change among Americans, aimed at fixing the problems that have plagued this country in the 21st century, but progress has been slow. The past several election cycles, however, have provided sublimely positive momentum. We have seen the legalization of recreational drugs like marijuana, the legitimization and legalization of gay marriage nationwide, the prioritization of the development of multiple sources of income, the increased utilization of online education, and the passage of universal health care.

Threats posed by America's two-party system will continue to test our capacity to develop agreements between politicians and the people. But if we overcome them, there will surely be casualties that result from the changes to come. We could see the loss of bureaucratic empires like the Drug Enforcement Administration, brick-and-mortar office space, the political and legislative systems that prevent the legitimization of gay marriage, the preference for rental property at a time when banks hold substantial portfolios of foreclosed properties, and consumers' inclination toward online purchases threatening retailers. The future will look quite different indeed.

In 1977, in a creative attempt to increase tax revenues and attract small businesses, Wyoming enacted legislation that legitimized and legalized a new form of business ownership limiting risk exposure but allowing the easy flow of profits to owners' personal accounts. This form of business ownership was very popular all over the world but was unheard of in the US. The proliferation of limited liability companies, partnerships, and professional associations is a clear entrepreneurial mandate to protect startup investments from the legal systems prevalent in nations where the rule of law does not exist. Although in America the rule of law is clearly evident, there seems to be an unspoken partnership between unscrupulous people and cunning attorneys in pursuit of the purses of business owners.

The enactment of an ownership structure protecting the business interests of the affluent middle class is meaningful because it is the first political change protecting entrepreneurs' right to the pursuit of happiness. Many policies championed by Senator Elizabeth Warren of Massachusetts are designed to bring media attention to the unbridled appetites of agents in the financial sector that undermine the public's confidence in the purpose of the rule of law. These policies aim to safeguard private ownership of assets and the integrity of public goods (such as education and the environment).

The fallout of sociopolitical changes brewing in America cannot be underestimated. The clear defense of the human and civil rights of Americans by one political party seems to be seriously undermining the continued existence of a two-party system. These are pieces of the puzzle that make up the war for the creation of individual wealth.

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1 President Bill Clinton used this phrase in his 1992 presidential campaign against President George H. W. Bush.

2 In a letter written to Pierre Raymond de Montmort, Daniel Bernoulli's cousin Nicholas proposed a paradox. Daniel proposed the first resolution of the paradox in a paper that he submitted to the Commentaries of the Imperial Academy of Science of St. Petersburg in 1738.