



Earth Manifesto

Sustainability Index

Latest update: December 31, 2016

This Sustainability Index has been designed to gauge the true status of the sustainability of human activities on our home planet, and to provide people with a good measure of where we stand in our efforts to leave a fairer legacy to our heirs in future generations.

This Index assesses the most significant factors that contribute to human well-being. It contains 45 indicators that together reveal a grand struggle between a status quo that is driving a deterioration of biological living conditions on Earth and an emerging understanding of better ways forward that could restore the potentialities for outcomes that are consistent with the greater good for humanity.

This Sustainability Index began to flash an ominous red warning signal in May 2013. The tipping point for this development occurred when the 400-ppm threshold in the concentration of carbon dioxide in the atmosphere was exceeded for the first time in human history. The on-going annual net increase of this greenhouse gas in the atmosphere has tipped this Index from the evaluation, "Risky prospects, with transformative changes needed to be sustainable", to a more serious evaluation, "Poor prospects, and definitely unsustainable, with epic future disruptions likely."

One of the proverbial canaries in the coal mine had just dropped dead, warning us of a worsening state of biotic conditions on Earth. This development highlights a growing urgency for us to understand the big picture impacts that our aggregate human activities are having on Earth's biosphere. In 2005, after more than 1,200 experts in 95 countries had spent four years assembling the comprehensive *Millennium Ecosystem Assessment*, the findings of this evaluation were published, ominously revealing far-reaching details of how 60% of Earth's vital ecosystems are being degraded. This depletion of natural capital is "putting such strain on the environment that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted." This is not good!

A review of the 45 specific parameters assessed in this Index makes it clear how challenging it will be for us to achieve long-term sustainability. The risks are radically increasing for us to continue misusing Earth's resources. The total number of human beings alive has tripled since 1940, and the carrying capacity of damaged ecosystems is less than the carrying capacity of healthy ones, so it is becoming increasingly urgent for us to reduce the harms we are causing to natural habitats and ecosystems.

It is startling to realize that the growth of our global population has shown a net increase of more than 70 million people each and every year since 1965. This increase in human numbers is equivalent to adding almost 100 new cities the size of San Francisco every year, and to locate most of them in poor nations. Surely this is a bad plan for future well-being of the human race! We would be smart to begin to recognize that there is a strong Population Connection to ecological challenges, and to act accordingly to ensure a more propitious future.

See the important Observational Commentary below this Index for valuable perspectives. All readers are encouraged to help refine both the categories assessed and the evaluations made. I am open to constructive critiques of every assumption and correlation in this Index. The goal should be for us to be honestly realistic with ourselves, and others, in our assessments at this crucial juncture in history. As Nelson Mandela once said:

"Education is the most powerful weapon which you can use to change the world."

Evaluation Parameters of Sustainability

Ecological, economic, societal and political factors are each valued on a scale of 1 to 5. These numbers are evaluated as follows:

- 5 - Sustainable for an indefinite period of time
- 4 - Sustainable, if important reforms are made
- 3 - Unsustainable, but remediable with concerted efforts
- 2 - Unsustainable, and requiring transformative changes in incentives and human behaviors
- 1 - Definitively, shortsightedly and likely disastrously unsustainable

Initial Rating	Latest Rating
<u>July 4, 2011</u>	<u>Dec. 31, 2016</u>
<u>(Lower number = Worse state)</u>	

I. Ecological Factors

1. Global deforestation rate	3	3
2. Depletion rate of oil reserves	2	2
3. Depletion rate of coal and natural gas reserves	3	3
4. Status of clean fresh water supplies worldwide	2	2
5. Success in recycling, reusing, and reducing wasteful consumption	2	2
6. Proportion of power generated from renewable sources	2	2
7. Depletion rate of agricultural phosphate minerals	2	2
8. Carbon-dioxide concentration in the atmosphere (see Footnote 1)	4	3
9. Wetlands protection trend	3	3
10. Fisheries health and extent of overfishing	2	2
11. Adherence to the Clean Air Act and Clean Water Act	3	3
12. Ecological footprint impact (see Footnote 2)	3	3
13. Rate of species extinctions	3	3
14. Living Planet Index status evaluation	3	2
15. Progress toward a more holistic and ecologically sane worldview	2	2

II. Economic Factors

16. Level of U.S. national debt	1	1
17. Total government debt in nations worldwide	1	1
18. Retirement security for the majority of people	2	2
19. Progressive/regressive structure of graduated income tax rates	2	2
20. Commitments to infrastructure maintenance and investment	2	2
21. Financial volatility gauge of the Dow Jones Industrial Average	2	2
22. Unemployment in the United States and Europe	2	3
23. Inflation rate and interest rates	4	4
24. Cost of weather-related natural disasters	3	2

III. Societal Factors

25. Inequality status	1	1
26. Global population growth rate	2	2
27. Teenage pregnancy rate	3	3
28. Rates of child mortality and maternal death rate in pregnancy	3	3
29. Poverty gauge in aggregate	2	2
30. Improving overall average quality of	2	2
31. Life span of people worldwide	4	4
32. Legal open-mindedness in personal right-to-die decisions	3	3
33. Educational awareness of proper long-term priorities	2	2

IV. Political Factors

34. International level of violent conflicts	2	2
35. Global spending on guns, munitions and wars	1	1
36. Ascendancy of cooperation over ruthlessness of competition	2	2
37. Commitment to curbing the externalization of costs onto society	1	1
38. Climate Change Denial Danger *	2	2
39. Anti-environmentalism fervor gauge	2	1
40. Balance between conservatism and liberalism	1	1
41. Concentration of wealth and political corruption gauge	3	2
42. Fairness of the criminal justice system in the U.S.	2	2
43. Corporate and government transparency and accountability	2	2
44. Status of women's rights worldwide	2	2
45. Progress toward a Bill of Rights for Future Generations	<u>1</u>	<u>1</u>
Totals	<u>101</u>	<u>97</u>

SUSTAINABILITY STATUS EVALUATION:

Under 100 - Poor prospects, and definitely unsustainable, with epic future disruptions likely.

100 - 140 - Risky prospects, with transformative changes needed to be sustainable.

140 - 180 - Encouraging progress toward sustainable existence.

180 - 225 - Salubrious progress toward sustainable existence.

HISTORICAL RECORD OF CHANGES IN ASSESSMENTS:

Factor 24. Worse evaluation, December 2012. Heat waves in the summers of 2011 and 2012 set record hot temperatures in thousands of locations across the United States and around the world, and when Superstorm Sandy struck one week before the presidential election in November 2012, it became the second most costly natural disaster in U.S. history after Hurricane Katrina.

Factor 8. Worse evaluation, May 2013. The concentration of carbon dioxide in the atmosphere reached 400 ppm for the first time in human history. Geologic evidence indicates that the last time the amount of carbon dioxide in the atmosphere was this high was 3 million years ago. The resulting overall global warming trend is altering normal weather patterns around the planet, upsetting crop production and causing severe storms, floods, heat waves, droughts, wildfires and even record snowfalls and cold snaps in some locales.

Factor 22. Better evaluation, October 2014. The unemployment rate in the U.S. has dropped below 6% from a high that exceeded 10% in 2009. Caveat: the real inflation-adjusted median family income continues to decline.

Factor 39. Worse evaluation, November 2014. The victory of Republican politicians in the Nov. 2014 national elections who deny the disrupting impacts on the global climate of burning fossil fuels, and who pander obsequiously to big corporations, bodes ill for cooperation in addressing crucial environmental issues.

Factor 14. Worse evaluation, January 2015. The latest version of the Living Planet Index declares that there has been a stunning 52% decline in the number of mammals, birds, reptiles, amphibians and fish around the globe in the past 40 years alone (from 1970 to 2010). This is shockingly bad news.

* Factor 38. Better evaluation, January 2016, when the Paris Climate Accords made a considerably big step forward in international cooperation to help reduce climate-altering greenhouse gas emissions -- AND then downgraded again to a worsen evaluation on December 7, 2016 after the election of Trump and his moves to put climate change deniers in charge of the EPA and reverse progress on reducing emissions.

Factor 41. Worse evaluation, June 2016. Concentrated wealth in the hands of billionaires has been radically increasing, and this is critically tainting our national priorities and decision-making, as revealed by Donald Trump's

ascendancy and Jane Mayer's incisive investigative journalism in her sensational book *Dark Money: The Hidden History of the Billionaires Behind the Radical Right*.

The footnotes that follow the commentary below provide more information about the assumptions and assessments made related to Factor 8 - Climate Change and Factor 12 - Ecological Footprint.

Observational Commentary by Dr. Tiffany B. Twain, creator of this Index:

Forests, wetlands, rivers, oceans, wild areas and natural systems provide human beings with critically valuable ecosystem services. These services include nutrient recycling, flood control, regulation of the climate, water purification, oxygen generation, and the providing to human beings of lumber, food, clean water, and mineral resources. Pollinators like bees also play a crucial role in our well-being. Healthy natural habitats and undamaged natural systems are basic underpinnings of our prosperity and survival, so we humans should begin to give them much more respect and protection. We should seek ways to stop mindlessly messing with Mother Nature and harming her ability to continue providing these essential ecosystem services.

Scientists estimate that ecosystem services contribute twice as much value each and every year in the international economy as the total global gross national product. The implications are clear: it would be prudent for us to give much better protections to Earth's ecosystems, and thus help ensure a providential future that is sustainable for ourselves and our heirs.

Western religions all posit a notion of redemption through the grace of some savior. Astonishingly, we are now beginning to realize here in the 21st century that we humans ourselves are the best potential answer to our own prayers. Hope is to be found in our ability to use attentive foresight to accurately understand the challenges we face and the best courses of action. We can succeed in saving ourselves by changing our mission from one based on lavish enrichment of a relative few individuals who are exceedingly financially fortunate to a smarter mission that encompasses the flourishing of our species as a whole in the long run.

Aware of desperate circumstances that seem to be converging toward far-reaching calamity, we are beginning to see that we must work together to accomplish this new mission by seeking inspired solutions to the challenges we collectively face. The more closely we calibrate our aggregate behaviors to sustainable activities, the better off we will be. As asserted by the authors of the fascinating book *Spontaneous Evolution*, we humans can choose to heal ourselves once we accept our true responsibility "to collectively tend the Garden rather than fight over the turf."

Think About It

One of the main objectives of the *Millennium Ecosystem Assessment* was to evaluate the options we have for restoring, preserving, conserving or enhancing the sustainable use of natural resources and ecosystems in the face of increasing demands being placed on them. One conclusion reached in the MEA was that many good options exist, but that they involve "significant changes in policies, institutions and practices that are not currently under way." It seems obvious that our overarching obligation should be *to get these new policies and practices underway!* Those who oppose these epiphanies, repent!

It would be smart for us to find ways to make transformational changes in our political and social institutions so that we will be able to adapt, rather than resisting or obstructing change. Our failure to take bold steps in the face of looming challenges exposes us to undesirable trade-offs and negative feedback loops, and to "increased risks of nonlinear changes". Such developments could cause severe adversities to billions of people worldwide. Even the U.S. Pentagon has given consideration to the possibility that "abrupt climate change" might occur if we deny the problem, and thus create grave national security risks and threats.

"These problems, unless addressed, will substantially diminish the benefits that future generations obtain from ecosystems." Doggone it -- just when people in the future are very likely to want less severely compromised ecosystem services! There are positive synergies in natural systems and the services they provide, and we are well advised to better understand their complex nature. This is a needed first step toward finding the resolve to fairly deal with these challenges. Awareness of the wisdom contained in precautionary principles is needed. These ideas are explored in *Intelligent Precautionary Principles Enunciated - Holy Cow!*

Stunningly, Republicans in the dumbed-down House of Representatives passed an amendment to the National Defense Authorization bill in 2014 that would prevent the Department of Defense from using funds to assess climate change and its implications for national security. "Conservatives" in Congress thereby do not want to know that experts say it is an inadvisably dangerous "threat multiplier" to continue to allow recklessly uncontrolled emissions of greenhouse gases into the atmosphere. Revealingly, 227 Republicans basically voted for ignorance, and these scheming politicians have accepted over \$40 million in campaign contributions from fossil fuel industries. Institutionalized bribery corrupts! This is why these unapologetic pandering partisans advocate that we stick our heads in the sand and contend that it's the absolute best national plan. In the national elections of November 2014, Republican politicians gained control of the U.S. Senate, despite the fact that they are irresponsibly denying both science and rationality by refusing to help solve big problems like anthropogenic climate disruptions. In November 2016, an alarming climate change denier became president-elect. As Thomas Paine succinctly put it, "Where knowledge is a duty, ignorance is a crime."

Bold Actions for Improving Prospects

It would be natural to wonder if this Sustainability Index reveals that we are in completely desperate straits, or whether there are smart things we could be doing that would radically improve our future prospects. Here are three proactive initiatives that should be undertaken to improve future prospects and reverse the downward spiral in hopes for living sustainably on Earth far into the future:

First, we should adopt a farsighted Bill of Rights for Future Generations, as proposed in this manifesto. This should be done in every nation worldwide. Let's be bold, and try to make sure that the USA leads the way!

Second, we should convene an International Sustainability Conference to study and report on the implications of the trends reflected in the Sustainability Index, and to identify steps that should be taken to improve the quality of life for people alive today, together with the prospects of our descendants in future generations. Representatives of all nations should be included in efforts to make this determination, and concerted actions should be taken that are consistent with the findings.

Third, we should make a sustained international effort to slow the growth of human numbers and improve the quality of life for those alive, and to mitigate future problems of hunger, water scarcity and losses of biological diversity. These efforts should include a global effort to provide free contraception and family planning services to all women who want them. Such actions would help reduce pressures on natural resources, and more importantly, they could help improve the quality of life of many of the world's poorest people. This would allow them better hopes of rising out of poverty and enjoying life-enriching things that many people take for granted.

"Man is a strange animal, he doesn't like to read the handwriting on the wall until his back is up against it."

--- Adlai Stevenson

A Cause of Great Worth

Thomas Paine reckoned that Americans were living in times that severely tried men's souls. He expressed this sentiment on the eve of the Revolutionary War for independence of the original 13 colonies from Great Britain. Paine passionately proclaimed that the long-suffering colonists had it in their power "to begin the world over again" and to take control of their own fates. He judged that the American people were at a crucial juncture, declaring: "The sun never shined on a cause of greater worth. 'Tis not the affair of a city, a country, a province, or a kingdom, but of a continent ..."

Today, we are beset by more serious challenges that are daunting in their complexity and global scope, and consternating in their impactful implications. The good cause of dealing effectively and fairly with these challenges critically affects all of humanity. This is not merely the affair of a city, a country, a province, a kingdom or a continent, but of all of humanity, and of all life on Earth.

Once again, bold leadership and the courage of enlightened convictions is called for. And once again the tyranny of power-abusing dominating factions is blocking the path to a good resolution of our dilemmas. Once again we need to declare independence from the powers-that-be to ensure a better future for posterity. The option supported by

"conservatives" of clinging to the status quo or making retrogressive moves creates unnecessary risks that are too grave to be accepted. The long-term well-being of the human race is now at stake, and maybe even its survival. Decisive commitments must be made to finding prudent, sensible, fair-minded, visionary, and broadly advantageous solutions to the really big challenges we face.

An online Happy Planet Index claims to be "the leading global measure of sustainable well-being." The Happy Planet Index measures how well a country converts the finite resources of the Earth into the happiness and well-being of its citizens. The Happy Planet Index currently ranks the United States as 108th out of 140 countries analyzed. This is surely a national disgrace! The reason the U.S. ranks so low is because our ecological footprint is very heavy and the amount of inequality in our society is extreme. These factors contribute to a lower level of "experienced well-being", and a lower life expectancy, on average, than for people in many other nations. We could, and rightly should, do better!

"When we are planning for posterity, we ought to remember that virtue is not hereditary."

--- Thomas Paine

The Role of the Rapture Index

One of the inspirations for the genesis of the idea to create this Sustainability Index came from the "Rapture Index". Google this online Index, and review the 45 components listed in it. Then think objectively about the implications of the doomsday biblical dogmas that are assumed by the person who cooked up this ridiculous Rapture Index. This must be a true believer, because the Index makes bizarrely confused presumptions about correlations of cause and effect in the real world. Contemplate the laughably superstitious suppositions that went into the choice of categories in the Rapture Index, and in the odd assessments made in each category. This Index supposes, for instance, that things like volcanic eruptions, earthquakes, droughts, floods, "wild weather", "liberalism", and "Satanism" are signaling the coming advent of calamitous End Times, as supposedly foretold in the Bible. Such presumptions and fatalistic attitudes mislead us, and divert us from applying our energies toward positive ways to make the world we live in a better place.

"Every man has a right to his own opinion, but no man has a right to be wrong in his facts."

--- Bernard Baruch, prominent member of Franklin D. Roosevelt's "Brain Trust"

In dramatic contrast to the Rapture Index, the Sustainability Index is based on common sense, extrapolated trends, curiosity-enriched knowledge, intelligent evaluation and intuitive understanding. Each of the 45 factors measured in the Sustainability Index has a direct bearing on our ability to live sustainably in the future. The criteria chosen in this Index are designed to measure the real state of conditions on Earth. These important criteria have a direct measurable impact on the overall level of human well-being. This assessment is being made with empathetic awareness and clear visions of an achievable better future. Only by making an overarching commitment to greater good goals can we create improved hopes for a more sustainable society.

Our economic system, as currently constituted, can be seen to manifest critical shortcomings. We must reform and restructure it, taking into account the mounting costs and escalating harmful impacts of our collective activities. Common sense tells us that greater good goals will be found in reversing current negative trends and making concerted efforts to improve our rating in the Sustainability Index in coming years. The wisest course of action is probably to be found in utilizing market forces and smart targeted incentives to achieve fairness-oriented objectives.

It is staggering to realize there are now more than 7.4 billion people alive on Earth, up from 1 billion in the year 1800 and 2 billion in 1930 and 3 billion in 1960. An estimated 15 billion more people will be born in the next 100 years. These numbers are stunning, and they provide compelling evidence that better ways must be found to reach a consensus about the optimum means to achieve common good goals.

Using collaborative problem solving and feeling empathy in understanding, we could formulate positive win/win solutions to intergenerational conflicts that so bedevil our societies and undermine the prospects of our descendants. By working together for the common good, we could ensure that we will be able to continue to live on

Earth without destroying the vital balance of Mother Nature's ecosystems and the health of the natural world upon which we depend.

To slow down the ecological catastrophe unfolding on planet Earth and to better prepare ourselves for the challenging days that lie ahead, we should boldly require a revolutionary policy shift in all nations. Instead of giving top priority to maximizing profits and perks for the richest 1% of people, we should require all costs currently being externalized onto society to be internalized. By mandating the inclusion of externalized costs in the price of every product sold and every service rendered, a fairer calculus will be made in all resource usages and buying decisions. The costs being externalized today include those related to air pollution, water pollution, greenhouse gas emissions, resource depletion, harms to people's health, and the introduction of systemic risks. This new method of full-cost accounting would not only influence people's purchasing choices, but it would also raise money to help finance fairness initiatives and more ecologically sane courses of action. And it would help defray the substantial expenses currently being unfairly foisted onto everyone in future generations.

See "A Vibrant and Sound Economy", the 7th initiative in *One Dozen Big Initiatives to Positively Make America Great Again*, for a plan that would help rectify the undesirable aspects of misguided laws that allow too many costs to be externalized onto society.

Glory Or Degradation? GOD!

More than 2,500 years ago when the Old Testament of the Bible was being written and revised, it may have been good advice for God to have instructed humanity to be fruitful and multiply, and to subdue the earth and have dominion over every living thing. There were less than 100 million people on the entire planet back then, and human impacts on animal life and ecosystems were negligible, compared to today. But many events have taken place since then, and during this time the human population has grown dramatically. When our total numbers first exceeded 7 billion people just before the beginning of 2012, people at the respectable organization Population Connection once again sounded a reverberating clarion call.

To be fruitful and multiply was a good decree back when people were writing the Bible because big families were a good source of cheap labor in agrarian communities, and it was a form of old age security to have lots of children so that parents would have younger generations to take care of them later in life. Besides, child mortality rates were extremely high in those days. Since then, things have changed significantly, and having big families has become expensive for parents and exceedingly costly for our heirs. The biblical prescription to multiply was suspiciously correlated with the narrow self-interest of Church establishments to gain and maintain power and influence and material wealth through the indoctrination of followers.

Today, rapid growth in numbers of faithful adherents in Christian and Islamic churches has become a danger to peaceable coexistence and a potentially serious adversity, when considered from the standpoint of the long-term greater good. Vigorous opposition by religious authorities to family planning, contraception, and respect for the reproductive prerogatives of women in male-dominated societies is now creating a new set of overarching obligations. We now need God to tell us to GO FORTH AND ADD, because only by calculating properly will we comprehend the ominous ramifications of pro-natal reproductive policies and opposition to women's prerogatives in countries worldwide.

An Aside on God

Many people believe that a personal God exists, a deity that apparently has a Dr. Jekyll and Mr. Hyde personality. This God is supposed to be caring and loving, yet at the same time 'He' is judgmental and harshly punitive to human beings for their shortcomings, weaknesses, foibles and "sins". An image arises of this caring God being deafened by a cacophony of prayers from people pleading for 'His' good grace to spare them an infinite litany of anxieties, hardships, suffering, pain and humiliations.

Each and every one of us will leave a personal legacy, and it is the ultimate moral obligation for us all to leave a legacy *in aggregate* that is reasonably auspicious for the generations of people who will follow us. We are doing much too lousy a job today of creating a positive legacy for future generations.

Moral, *adj.* Conforming to a local and mutable standard of right. Having the quality of general expediency.

--- Ambrose Bierce, *The Devil's Dictionary*

The word sin, ironically, was originally derived from the sport of archery. It literally meant "missing the mark". The Bible borrowed this little word and twisted it into meaning disobedience to God's injunction against eating the fruit of a unique Tree of the Knowledge of Good and Evil in the Garden of Eden. The Bible alleges that ever since Adam and Eve disobeyed God by eating the fruit of this tree, every human being has been paying the price for this Original Sin in struggle, adversities, enmity and eventual death. God cursed females even more harshly, on account of Eve's disobedience, making them suffer sorrow and pain in childbirth and the impactful ignominy of being relegated to subservient roles under males ever since then. We're all paying the price of this terrible divine retribution for the errors of Adam and Eve. This story is a whopper! We've been framed!

Humanity is, however, definitely missing the mark, as measured by the extent to which we are failing to create societies that are fairer to the female gender, and more secure, more inter-generationally considerate, more environmentally sound, and more ecologically sustainable.

The Bible also says that not long after God had created man and woman in 'His' own image, God "saw that the wickedness of man was great in the earth, and that every imagination of the thoughts of his heart was only evil continually." Yikes! The LORD was so grievously disappointed in his creatures that 'He' decided to destroy them all, along with all the beasts and birds and creeping things that 'He' had created on this outpost of life in the Universe. After hatching a plan to save two of every kind of animal, 'He' brought a terrible flood upon the earth and drowned everything except the few saved humans and a couple of each kind of animal aboard Noah's ark (and, presumably, except for all the fishes and marine mammals!).

In my opinion, God would have been significantly more pleased with 'His' pet project human beings if they showed more love, compassion and brotherly and sisterly good will, and less violence, greed, mean-spiritedness, selfishness, ignorance, corruption, and slavish obedience to materialistic consumerism.

During Adlai Stevenson's 1956 presidential campaign, a woman called out to him, "Senator, you have the vote of every thinking person!" Stevenson called back "That's not enough, madam, we need a majority!"

Left brain, right brain, corpus colosum. For an enlightening introspection into the homespun "rest of the story" related to mystical topics like these, see *Revelations of a Modern Prophet* online. Also, check out the essay *Rapture Mania: Bizarre Beliefs and Epic Epiphanies* for interesting perspectives. The Buddha would have looked on with contemplative approval, and he would likely have been quietly astonished at what has come to pass in the 2,500 years since he lived.

Another Glance toward the Rapture Index

I'm serious -- check out the Rapture Index! It is a veritable triumph of a torturous imagination, and it is impressive how finely hewed it is to a bizarrely lopsided version of "the absolute truth". Mark Twain would have delightedly roared in disapprobation. When one honestly reflects on the absurd ideas that underlie the Rapture Index, it could easily seem like the cynically astute observations made by Mark Twain about the Bible and religion in *Letters from the Earth* are well justified.

What, one might wonder, are the chances that an angry God is going to destroy the Earth in a way prophesized in ancient "holy book" scriptures? Are prophesies credible that are part of a manipulative sublapsarian Garden of Eden story that contains a shrewd hook holding that the main condition for believers to be saved is that they absolutely believe this creation story? How could millions of people really believe the Word of a book written by many authors over a thousand-year period, long ago, that alleges there will be a desirable afterlife in Heaven for believers, and a grotesque burning in Hell forevermore for everyone else who does not accept this story as literal truth?

"We don't see things as they are, we see them as we are."

--- Anais Nin

It is certain that the world is not going to end the way the Bible says. An enormous amount has been learned about the geologic nature of the Earth in the last 50 years alone, including the earth-shaking understandings of Plate

Tectonics, which shed wondrous illumination on the true physical causes of earthquakes and volcanic activity. We have become increasingly aware of the real nature of the serious predicaments we face, and of the probable ecological adversities we will encounter in coming decades. These understandings provide a much better idea of the unfolding fate of Earth's denizens than the laughable postulates of the "prophetic speedometer" found in the Rapture Index.

Suddenly a new perspective comes to me, informed by non-violent activist Mahatma Gandhi, who once observed, "Every conflict is one between different angles of vision, illuminating the same truth." Maybe the Rapture Index isn't just the delusions of a gullible guy predicting doomsday and professing blind faith in literal interpretations of biblical prophecies. Maybe the Rapture Index should be more accurately regarded as a reflection of people's feelings of deep psychological angst in the face of the formidable challenges confronting us, individually and collectively. "Fasten your seat belts!"

The world will surely not end the way the Bible tells us in its final few pages. Think about it! In Revelations 19, 20, 21 and 22, the Bible basically says almost everyone except blind believers will be cast into a lake of fire burning with brimstone, and then a holy city will come down from God in heaven, and this city will have curiously cubic dimensions and 12 foundations "garnished with all manner of precious stones", and the foundations will support a great wall with 12 gates, and no one will be allowed to enter this holy city who "maketh a lie", excepting, I imagine, the apparently ardent and manipulative numerologists who proclaimed the words of these overly wrought Revelations.

It is much more likely that, if we fail to courageously heed the understandings related to factors assessed in the Sustainability Index, human activities will cause terrible and extensive damages to the natural ecosystems on our providential home planet, and millions of species of life will be driven to extinction. This unraveling of the health of the terrestrial biosphere will pose a dire threat to our own continued existence. God will not be the cause of this damage and danger; it will be caused by us truly, *Homo sapiens sapiens*. Since "*Homo sapiens*" means "wise humankind", it would be auspicious for us to wise up and work together to improve the prospects of our long-term thriving and survival.

"If there must be trouble, let it be in my day, that my child may have peace."

--- Thomas Paine

A Matter of Debate

The carrying capacity of the Earth for our kind has been the subject of contentious debate ever since political economist Robert Thomas Malthus speculated that the number of human beings alive would inevitably grow faster than our ability to produce food to sustain them. It was just over 215 years ago in the year 1800 when Malthus made this prediction, at a time when the human population on the planet was only 1 billion. Malthus sensibly asserted that human numbers were subject to constraints similar to every other kind of animal, and that eventually we would be unable to feed our growing numbers. Malthus would no doubt have been incapable of imagining that the average human life spans would double in the two centuries after he lived, intensifying the demands that humanity would place on natural resources, or that the carrying capacity equation would be further complicated by significant increases in per capita amounts of resources used, on average, by every person. He also could not have been able to anticipate how successful a Green Revolution would be in developing an industrial agriculture system that could produce a vastly expanded harvest of food.

Malthus would likely have supposed that the human population would never reach 7 billion people, but sure enough, they now do. Malthus was more-or-less wrong, right? Not so fast! Malthus did have an exceedingly valid point. It is crazy to deny this. Every species of life is constrained by limiting factors that include food supply, fresh water availability, competitive forces, and vulnerability to diseases and harsh weather events.

A quietly sensational story about an introduced population of reindeer on St. Matthew Island in the Bering Sea cautions us to pay close attention. A biologist named David R. Klein tells this thought-provoking story about a spike and then crash of this population of reindeer. The U.S. Coast Guard had released 29 reindeer on St. Matthew Island in 1944 to provide a potential "roaming food source" for military personnel stationed in this remote area during World War II. The Coast Guard left the island soon after the war ended, so it was "a fine situation for the animals

at first -- their only predators had disappeared, leaving them on a 32-mile long and four-mile wide island rich with their favorite food, lichens." The numbers of reindeer began to increase steadily. Within 20 years, there were more than 6,000 animals on the island. By then, the reindeer had severely depleted the supply of food, and all but 42 of them died off during a severe winter in 1964. Eventually these reindeer too died out, and there are no longer any reindeer on the island.

The carrying capacity of St. Matthew Island for reindeer was obviously not 6,000, even though it had reached that number at its peak. This casts a bright light on the notion that there is likely a carrying capacity of island Earth for our ingenious kind. There are already an estimated 800 million people in the world who suffer from hunger and malnutrition, and more than 10 million persons starve to death every year, so we are obviously pushing our luck by banking on there being no depletionary threat or harsh climate event that will batter food production in the future. Precautionary principles and reasonable foresight counsel us to take bold measures to limit our population growth to avoid increasing the risks of a massively tragic crash in our human numbers.

What the future holds is uncertain. The depletion of resources like topsoil, fresh water, phosphate fertilizers, and fossil fuels will make things much more challenging. Risks related to industrial monoculture agriculture and diminishing crop diversity will get worse, and vulnerabilities will increase due to species extinctions being caused by human activities. Anthropogenic emissions of greenhouse gases into the atmosphere are having the effect of altering normal temperature, precipitation and storm patterns worldwide, and Mother Earth seems to be developing a fever. The famous Hippocratic Oath of physicians suggests that a doctor should "First, do no harm." We are all doctors here; and we all need to see the biggest possible picture of ecological well-being.

Crusade for a Transcendentally Good Cause

The long run is not far off, and it seems to have suffered a kind of foreshortening effect as the pace of civilization has sped up with the advent of the Industrial Revolution, and as a rapid acceleration has taken place in the last century in the exploitation of Earth's renewable and non-renewable resources. NOW is the time for clearer foresight, and for us to take safer and more sensible courses of action.

The central idea assessed by the 45 measures of the Sustainability Index is how humanity is faring in the struggle to make our societies into thriving and sustainable concerns rather than ones suffering slow and deteriorating declines. The objectively reasonable assumptions made in this Index have been chosen to reflect transcendent ecological truths. They are the context of our future, and a rough outline of the defining influences of our destiny. A clear comprehension of the categories analyzed in this Index reveals a good case for us to collectively choose to make bold course corrections in our human civilizations, as advocated in many of the recommendations in this manifesto.

Conservative people tend to simplistically claim we can only solve our national and global problems by shrinking the size of the federal government -- to the point of "drowning it in the bathtub" -- and by giving the "free market" and wealthy people and giant corporations and religious authorities more power and influence. There are cogently convincing reasons to doubt these contentions, as explored extensively throughout the Earth Manifesto. Conservatives have been hijacked by shrewd operatives who are basically advocating that we allow rich people to grab more power to rig economic and political systems in the U.S. and abroad even more to their extremely narrow advantage.

Liberals tend to say that corporations and religious establishments are highly undemocratic, and that our best hope is to seek governance by honest, wise, fair-minded leaders who will be able to manage our economic systems more effectively and more fairly, and with better far-sighted intention. These progressive-minded people sensibly maintain that the best hope for humanity will be found in solving problems together and finding a consensus oriented toward making the world a truly better place.

'Tis not the concern of a day, a year, or an age; posterity are virtually involved in the contest, and will be more or less affected, even to the end of time, by the proceedings now."

--- Thomas Paine

A Call for Peaceable Revolution

Dr. Martin Luther King Jr. spoke on April 4th, 1967, one year to the day before he was assassinated in Memphis, delivering inspiring words of wisdom that echo from those days down to our own strife-torn times with ringing and reverberating relevance:

"I am convinced that if we are to get on the right side of the world revolution, we as a nation must undergo a radical revolution of values. We must rapidly begin the shift from a "thing-oriented" society to a "person-oriented" society. When machines and computers, profit motives and property rights are considered more important than people, the giant triplets of racism, extreme materialism and militarism are incapable of being conquered. True compassion is more than flinging a coin to a beggar. It comes to see that an edifice which produces beggars needs restructuring."

"A true revolution of values will soon look uneasily on the glaring contrast of poverty and wealth with righteous indignation. It will look across the seas and see individual capitalists of the West investing huge sums of money in Asia, Africa and South America, only to take the profits out with no concern for the social betterment of the countries, and say, 'This is not just.' It will look at our alliance with the landed gentry of South America and say, 'This is not just.' The Western arrogance of feeling that it has everything to teach others and nothing to learn from them is not just."

"A true revolution of values will lay a hand on the world order, and say of war, 'This way of settling differences is not just.' This business of burning human beings with napalm, of filling our nation's homes with orphans and widows, of injecting poisonous drugs of hate into the veins of peoples normally humane, of sending men home from dark and bloody battlefields physically handicapped and psychologically deranged, cannot be reconciled with wisdom, justice and love. A nation that continues year after year to spend more money on military defense than on programs of social uplift is approaching spiritual death."

"America, the richest and most powerful nation in the world, can well lead the way in this revolution of values. There is nothing ... to prevent us from reordering our priorities, so that the pursuit of peace will take precedence over the pursuit of war."

"Since I am a preacher by trade, I suppose it is not surprising that I have seven major reasons for bringing Vietnam into the field of my moral vision. There is at the outset a very obvious and almost facile connection between the war in Vietnam and the struggle I, and others, have been waging in America. A few years ago there was a shining moment in that struggle. It seemed as if there was a real promise of hope for the poor, both black and white, through the (Lyndon Johnson) poverty program. There were experiments, hopes, new beginnings. Then came the buildup in Vietnam and I watched the program broken and eviscerated, as if it were some idle political plaything of a society gone mad on war, and I knew that America would never invest the necessary funds or energies in rehabilitation of its poor so long as adventures like Vietnam continued to draw men and skills and money like some demonic destructive suction tube. So I was increasingly compelled to see the war as an enemy of the poor, and to attack it as such."

It is notable that worse toxins have been injected into our blood stream as trickle-down Big Lies and "the war on terror" and the "war on drugs" have led the United States to become a profligate spender on the military, and a more inequalitarian country, and an *Incarceration Nation*. Martin Luther King concluded in his 1967 speech:

Our only hope today lies in our ability to recapture the revolutionary spirit and go out into a sometimes hostile world declaring eternal hostility to poverty, racism, and militarism. With this powerful commitment we shall boldly challenge the status quo and unjust mores, and thereby speed the day when "every valley shall be exalted, and every mountain and hill shall be made low, and the crooked shall be made straight, and the rough places plain."

Real good leadership involves a willingness to honestly address difficult issues, and not to merely kick the can down the road. We can do better. We must do better. People of the world, unite! Let's resolve to make the near future a time of Progressive Economic Populist Awareness -- and of Peaceful Populist Egalitarian Deep Ecological Revolutionary Change!

Truly,

Dr. Tiffany B. Twain

December 31, 2016

Feedback? Contact me at SaveTruffulaTrees@hotmail.com

Footnote 1 (re: Factor 8). Bill McKibben is the founder of 350.org, an international organization that is striving to get people worldwide to limit climate-disrupting greenhouse gas emissions. McKibben's primary premise is that a carbon dioxide concentration in the atmosphere exceeding a safe level of 350 ppm will cause dangerous disruptions to global weather patterns. As this gaseous concentration continues increasing, risks are growing and damages are burgeoning. The carbon dioxide concentration was about 394 ppm when this Index was first published in July 2011, and it first exceeded 400 ppm in May 2013. Greenhouse gas emissions associated with the burning of fossil fuels and animal husbandry have caused this concentration to increase every year since 1958, as confirmed by measurements done high atop the Mauna Loa volcano on the Big Island of Hawaii in the remote reaches of the Pacific Ocean. Widespread logging is exacerbating this problem by impairing the rainforest "lungs of the planet" that serve to remove carbon dioxide from the atmosphere through the vital process of photosynthesis. The *Merchants of Doubt* cannot be allowed to deny this evidence and to cultivate doubts that help prevent constructive actions that could deal effectively with this exceedingly serious issue.

I encourage readers to review the Keeling Curve online for impressive information on the precise measurements involved in this understanding. These indicators reveal that the concentration of carbon dioxide in Earth's atmosphere has reached a level today that is more than 25% higher than carbon dioxide levels anytime in the last 800,000 years. Scientists have made this determination by drilling cores from ice sheets in Antarctica and analyzing carbon dioxide bubbles trapped in the ice during past millennia and eons.

The Sustainability Index assumes the following:

- Carbon dioxide below 350 ppm = Sustainable for an indefinite period of time (5)
- Carbon dioxide at 350 to 399 ppm = Sustainable if immediate remediate reforms are made (4)
- Carbon dioxide at 400 to 450 ppm = Unsustainable, but remediable with concerted efforts (3)
- Carbon dioxide at 451 to 500 ppm = Unsustainable, and requiring major changes (2)
- Carbon dioxide above 500 ppm = Definitely unsustainable and highly disruptive (1)

Footnote 2 (re: Factor 12). The Average Carbon Footprint of all people on Earth indicates that we would need 1.5 planet Earths to sustain current levels of production and consumption. If everyone consumed at the profligate per capita rate that people in the U.S. do, more than 5 planet Earths would be needed. There is, of course, only one planet Earth to provide for us.

The Sustainability Index assumes the following:

- Global need for 1 planet Earth = Sustainable for an indefinite period of time (5)
- Global need for 1 - 1.5 planet Earths = Sustainable if far-reaching reforms are made (4)
- Global need for 1.5 - 2 planet Earths = Unsustainable; remediable with concerted efforts (3)
- Global need for 2 - 3 planet Earths = Unsustainable, and requiring radical changes (2)
- Global need for 3+ planet Earths = Definitely unsustainable and inevitably disruptive