Historic Climate Change Agreement Adopted In Paris
"As democracy is perfected, the office of the President represents, more and more closely, the inner soul of the people. On some great and glorious day, the plain folks of the land will reach their heart’s desire at last, and the White House will be occupied by a downright fool and complete narcissistic moron."

— H.L. Mencken
The Baltimore Evening Sun
July 26, 1920
Trump carried 20 of the 21 states with the largest per capita carbon emissions.

He routed Clinton in all 12 of the states at the top of the list, including Wyoming, North Dakota, West Virginia, Alaska, Louisiana, Montana, Kentucky, Indiana, Nebraska, Oklahoma, Iowa and Texas.
Cut GHG emissions 15% - 2005 and 2015, vs 10% for the rest of the U.S. On track to meet Paris 26% reduction by 2025,

Economic output grew by 14% from 2005 to 2015, vs 12% for the rest of the country.
Trump Administration Won’t Withdraw from Paris Climate Deal, EU Official Says

U.S. has stated it will ‘not renegotiate the Paris accord’ but will review its terms

Emre Peker  Wall Street Journal, Sept. 16, 2017 5:01 p.m. ET

In a June 1 speech at the White House, President Donald Trump said the U.S. would leave the Paris climate accords. On Saturday, European Commissioner for Climate Action and Energy Miguel Arias Cañete said the U.S. won’t withdraw from the deal.

Photo: saul loeb/Agence France-Presse/Getty Images
Nov 4, 2020
Earliest the US can actually leave the Paris Accord. This is one day after the next election

January 2021
Even if the US leaves, a new president could, on Jan. 20, 2021, submit a written notice to the UN that the US would like to rejoin the Paris accord.

Within 30 days, the United States could re-enter the agreement and submit a new pledge for how the country plans to tackle climate change.
We Are Still In

14 states,
240+ cities,
~350 universities
1000+ companies representing
120 million Americans and 35% of carbon emissions

More than 1,200 tech companies, states, cities and universities just said #wearestillin the Paris Agreement buff.ly/2rqQQz4

2:27 AM - Jun 18, 2017

State and Corporate Climate Action Just Got Serious

More than 1,200 businesses and states have reaffirmed their commitment to the Paris Agreement following Trump's decision to climatecentral.org
More than 1,000 cities committed to 100% renewable energy – urban environments responsible for 70% GHG and energy consumption
The five states that get the largest percentage of their power from wind turbines — Iowa, Kansas, South Dakota, Oklahoma and North Dakota — all voted for Trump. So did Texas, which produces the most wind power in absolute terms. 69 percent of the wind power produced in the country comes from states that Trump carried.
Transition to the Next Economy

A new solar array goes up in America every 150 seconds.

100x Growth
13 Years

1.3 GW

Evolution of global cumulative installed capacity 2000-2013 (MW)
Republican Mayor of Miami, Thomas Regalado “This is the time to talk about climate change. This is the time that the President and the EPA and whoever makes decisions needs to talk about climate change. If this isn't climate change, I don't know what is. This is a truly, truly poster child for what is to come."
That Sinking Feeling

Five of the top 10 global cities vulnerable to coastal flooding are in the U.S.

Estimated exposure $1 trillion
"You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete."

Buckminster Fuller
The future is already here;
it’s just not widely distributed.

We have all the technologies we need
to solve all the challenges facing humanity

William Gibson
There are no technological or economic barriers to converting the entire world to clean, renewable energy sources. It is a question of whether we have the societal and political will.

– Mark Jacobson
Director, Atmosphere/Energy Program
Stanford University
German Economics


Major industrial economy now fully engaged in wholesale transition to renewables.
How fast can a shift to renewables happen?

World will be 100% solar by 2030, says Tony Seba, Stanford Professor and Silicon Valley entrepreneur,
2015 – Clean Disruption of Energy & Transportation

- The technologies, skills, organizations, and culture of the industrial revolution have run out of steam
- They are being replaced by the technologies, skills, organizations, and culture of the "Silicon Valley" technology revolution

1. Solar
2. Energy Storage
3. Electric Vehicles
4. Self-Driving Vehicles

- Generation, Storage, and intelligence are pushed to the edges
  - Distributed, Mobile, grid-independent
- Bits + photons are replacing atoms (coal, nukes, gas, oil)
  - Electric + ICT replacing combustion

Clean Disruption - Copyright © 2001-2015 by Tony Seba
Image: © Tony Seba
“This is the era of renewables”

“Alarming fall in cost of solar”

“Fossil fuels further up the cost curve are most at risk, and new projects built now will will face competition with new technologies within the first quarter of their anticipated 25-year life. These projects entail significantly more risk than is widely recognised”
National Bank of Abu Dhabi: Even at $10 per barrel, oil can't match solar on cost.

In the U.S. solar jobs are growing 17 times the rest of the economy.
Solar will drop below two cents in 2017: GTM

By John Parnell | Apr 06, 2017 9:45 AM BST | 1

The Saudi tender structure will be similar to those used with success in Dubai and Abu Dhabi. Credit: First Solar.

A solar power project is likely to register a per kWh price below two US cents at some stage during 2017, according to analysis firm GTM Research.
China has already installed 112 GW: more solar than they pledged to do in 2020. 45GW for 2017. Total German capacity is 41 GW
China just announced it will ban ICE cars.

Will launch world’s biggest carbon market late 2017

So CA followed suit
Oil groups ‘threatened’ by electric cars

Fitch says investors could sell out of energy companies
How the world has changed

Tesla is valued at more than GM – despite producing 300 times fewer cars.

GM announced it is moving to an all electric future.
It’s a battery company
Aliso Canyon Battery deployment
Tesla to the rescue

Quietly sending hundreds of powerwalls to Puerto Rico. Elon donated $250,000 personally.
25% of global corporate debt—$3.4 trillion—is linked to utility- and auto-industry bonds that rely on fossil fuel activities.

Batteries May Trip ‘Death Spiral’ in $3.4 Trillion Credit Market

By Brian Parkin
October 18, 2016, 8:44 AM MDT

- Energy storage technologies impact a quarter of corporate debt
- Fitch urges utilities to diversify to limit risk of disruptive

Battery technologies starting to disrupt the electricity and automobile industries may also emerge as a trillion-dollar threat to credit markets, according to Fitch Ratings.
Autonomous electric vehicles

...may spell the end of smokestack industries as we know them, and the beginning of successor industries. $10b committed to development. Such cars should be widely available in 5 years, dominant in 10.
Consequences: Financial Overshoot

THE $22 TRILLION CARBON BUBBLE

BURNED 1850-2000
1500 GtCO2

BURNED 2000-2010
321 GtCO2

PROVEN FOSSIL FUEL RESERVES
2795 GtCO2
$28 TRILLION

UNBURNABLE
2230 GtCO2
$22 TRILLION

BURNABLE
565 GtCO2
$6 TRILLION

PUBLIC COMPANIES
($7 TRILLION)

NATIONAL & PRIVATE
($21 TRILLION)

On our present pathway, humanity is expected to burn through proven fossil fuel reserves by 2050, with global warming greater than 5°C (9°F) likely. To have an 80 percent chance of keeping warming below 2°C, 80 percent of proven reserves need to stay unburned. The present estimated value of these civilization-threatening reserves is approximately $22 trillion.

Sources: Meinshausen et al. 2009, Allen et al. 2009; Sokolov et al. 2009; Carbon Tracker Initiative 2011. Carbon reserves as of the start of 2011; since then approximately 50 gigatons of carbon dioxide have been burned. Total fossil reserves are projected to be four times larger than proven reserves, and exploration for new reserves continues.
Significance of Oil and Gas Investments

- Late 1980’s seven of top ten companies in SP 500 were oil and gas
- Today, only one – Exxon Mobil
- Exxon from 70’s to early 90’s drove the Standard and Poors Index
- From late 1990’s to 2014 led the index, no longer dominated Since 2014 Exxon has lagged the SP 500
- Most Institutional Funds hold between 1.5% and 2.0% of Equities in Exxon. Additional Private Equity and Bonds.
Nearly two-thirds of carbon dioxide & methane emissions can be attributed to 90 entities.

Half of this has been emitted since 1986

“Where capital goes over the next fifteen years is going to decide whether we’re actually able to address climate change and what kind of a century we are going to have,”

Christiana Figueres UN FCCC
Free Cash Flow to Equity Does Not Cover Shareholder Payouts

Exxon: Free Cash Flow to Equity to Total Share Distributions (2011-2015)
# Exxon Performance 2006-2011

<table>
<thead>
<tr>
<th>Category</th>
<th>Trajectory</th>
<th>Peaks and Troughs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>Down</td>
<td>2011: $486 billion; 2015: $268 billion</td>
</tr>
<tr>
<td>Costs of Production</td>
<td>Up</td>
<td>Conv. +100%; Oil Sands: 50%; Syn: +33%</td>
</tr>
<tr>
<td>Net Income</td>
<td>Down</td>
<td>2008: $45 billion; 2015 $16 billion</td>
</tr>
<tr>
<td>Debt</td>
<td>Up</td>
<td>Average 2006-2013: $8 bil; Today: $29 bil</td>
</tr>
<tr>
<td>End of Year Cash</td>
<td>Down</td>
<td>2007:$33.98 bil, 2015: $3.7</td>
</tr>
<tr>
<td>Capital Investment</td>
<td>Down</td>
<td>2013: $34 billion; 2015: $26 billion</td>
</tr>
</tbody>
</table>
Fossil Fuels Divestment

Dec 2016: $5 trillion divested:
Arabella Advisors

That is double the amount a year ago

“It is entirely plausible, even predictable, that continuing to hold equities in fossil fuel companies will be ruled negligence.”

- Bevis Longstreth, former Commissioner of the Securities and Exchange Commission
Divestment

Heirs of oil magnate John D. Rockefeller

Decided Sept 2015 to divest their family fund of fossil-fuel Investments

$3.4 trillion pledged to be divested before Paris Climate COP
Warren Buffett dramatically cut Exxon, other fossil fuels shares.

Has close to 10% of Berkshire’s market cap in renewables:

“The fuel is free.”
Moodys:
The commitment by the United States and more than 190 other countries to reduce their carbon pollution will “reshape the global financial landscape in terms of investment flows into clean energy”.

Moody’s estimates that as much as $114 trillion in finance will be needed over the next 12 years for the clean energy transition.
Advanced energy is a $1.4 trillion market.

Global Revenue by Industry, 2016

Source: Navigant Research for Advanced Energy Economy

- **$455.6 billion** advanced electricity generation
- **$447 billion** advanced transportation
- **$271.6 billion** building efficiency
- **$118.1 billion** advanced fuel production
- **$99.1 billion** electricity delivery and management
- **$8.3 billion** advanced industry
- **$953 million** advanced fuel delivery

- **$718 billion** Airlines
- **$1.4 trillion** Apparel
- **$1.4 trillion** Advanced Energy
- **$1.7 trillion** Media
Unilever, Apple, Google, Ikea, Walmart....

Committed to be 100% renewably powered
Mars chief urges companies to ramp up climate change fight

Grant Reid says failure to hit Paris targets will be ‘catastrophic for the planet’
2014 CDP report:
S&P 500 companies that build sustainability into their core strategies outperform those that fail to show leadership. Corporations that are actively managing and planning for climate change secure an 18% higher return on investment (ROI) than companies that aren’t 67% higher than companies who refuse to disclose their emissions.
April 2017 Kentucky Coal Museum installs solar because it’s cheaper than buying coal fired power from the local utility
We have achieved a universal legal agreement to limit future man-made climate change, the greatest existential threat to life on earth
A recent paper in Nature showed that to keep warming below 2 degrees C, emissions reduction is necessary, but that ways must be found to capture carbon and return it to the soil.
FACILITATING THE LARGE SCALE RESTORATION OF THE WORLD'S GRASSLANDS

http://savory.global
Wyoming – both taken same day

Left-side upstream, managed holistically - 260% stocking increase in 10 years

Right-side is downstream land managed ‘conventionally’
How much carbon can be sequestered?

Marin Carbon Project – spreading compost: 1 metric ton per hectare per year

Adam Sacks: Climate Code Red: 1 ton per acre or more. Over the 12 billion acres of degraded land could pull 12 billion tons of carbon a year = 6 PPM. Even if add 2 PPM each year we will return to pre-industrial 280 PPM in 30 years

US DOE: natural sinks remove 2 gigatons a year. National labs believe can increase that 5x + 10 gigatons = more than 50% of projected excess CO2 that will have to be managed over the next century
Gabe Brown numbers
Runs cows, sheep, broiler hens ($5 a pound for these) corn costs him $1.35 to produce, it’s now selling at ~$3.50

Cannot keep up with demand

Started in 1993 with shallow soils, 1.3% organic matter.

In ‘95 started no-till, diversifying cash crop, using rotations. In 1997 focused on cover crops. In 2006 planting multi-species cover crops, mob grazing and different livestock species.

2013, have plot with 11.1% organic matter – can increase soil health fast

If healthy soil will have clean water, clean air, healthy plants animals and people – healthy ecosystem
Long Root Ale
A finer future is possible

A world that works for 100% of humanity will arise from ensuring the dignity of all

We have all the technologies we need to solve all of the problems facing us: As William Gibson said: The future is already here, it’s just not widely distributed.

There is enormous wealth to be made transforming how we deliver energy, grow our food, finance our industries....

A successful transition requires an inspiring vision of a future of greater wellbeing, deep engagement with nature and each other. This will overcome resistance to change because people want to belong to it

We CAN redefine and reform an economy that seeks only to maximize shareholder value to an economy in service to life
Each person must see himself as though the entire world were held in balance and any deed he may do could tip the scales

Maimonides
Who is responsible?

Winner of the "Not My Job" Award - ADOT
Litchfield Park, AZ 85
Amount of carbon emitted per unit of GDP is declining around the world
The Circular Economy and Benefits for Society
Jobs and Climate Clear Winners in an Economy Based on Renewable Energy and Resource Efficiency

A study pertaining to Finland, France, the Netherlands, Spain and Sweden

Authors: Anders Wijkman and Kristian Skånberg
Modelling: Kristian Skånberg and Mårten Berglund
LanzaTech
Capturing carbon, fueling growth

Gas Feed Stream
Compression
Fermentation
Recovery
Product Tank

✓ Steel
✓ Refining
✓ Ferroalloy

Proprietary Microbe
Enabling the Circular Economy
We’re still going to need airline fuels
Top 20 European utilities have lost $600 billion in value over the past 5 years.

First 9 month of 2014:
RWE profit fell 60%
Eon profit fell by 91%

"RWE and Eon, Germany's top two energy companies, confirmed within twenty four hours this week the existential struggle consuming the industry amid a national shift to alternative fuel sources."
95% of experts on the economics of climate change said U.S. should follow through on Paris pledges.

NYU economists calculated that climate policies of other nations have already benefited the U.S. economy by more than $200 billion.

The pledges other nations have made in the Paris climate accord could save the United States more than $2 trillion by 2030 and more than $10 trillion by 2050.
How to transform finance

The Fortune 1000 drives about 50% of the global economy. Their cap-ex budget drives half of global impact.
Global 1000 firms & many smaller imitators collectively hold the fate of humanity in their hands. They are trapped in the grip of short-term financial speculators and passive index investors, neither of whom are part of the regenerative financial system we need.

Imagine big pension funds & endowments investing in and genuinely owning, with like-minded steward investors, with all associated responsibilities and benefits, 10 or 20% of real enterprises over the long run.
Financial obligations met out of enterprise cash flows, rather than “total return” of speculative portfolios of securities that are at the whim of boom-bust cycles caused by the excess of (their own) speculative capital in the system.

There’s no place for self-serving interests of predatory Wall Street agents who extract endless and egregious fees though needless and non-value adding transactions: trading shares in a speculative frenzy, buying, selling, merging, leveraging, and recapitalizing companies.
Food Trends

1. Locally sourced meats and seafood
2. Locally grown produce
3. Environmental sustainability
4. Healthful kids’ meals
5. Natural ingredients/minimally processed food
6. New cuts of meat
7. Hyper-local sourcing
8. Sustainable seafood
9. Food waste reduction/management
10. Farm/estate branded items
Modern industrial agriculture has not ended hunger and is particularly vulnerable to climate change.

Small-holder peasant farmers could easily feed the populations of developing countries with existing labor-intensive, environmentally friendly agricultural technologies—were it not for corruption, extreme inequality, and misguided attempts to impose inappropriate “modern” crops and techniques.
Thomas Berry says:

“We are in trouble just now because we do not have a good story....

The old story - the account of how the world came to be and how we fit into it...sustained us for a long period of time. It shaped our emotional attitudes, provided us with a life purpose, energized action. It consecrated suffering, integrated knowledge, guided education....

We need a (new) story that will educate man, heal him, guide him”
Growth Of Family Income

1947-1979: We All Grew

1980-2007: We Grew Apart

Avg $1.9 Million/yr

Bottom 20%: +116%
Second 20%: +100%
Middle 20%: +111%
Fourth 20%: +114%
Top 20%: +99%

Bottom 20%: +15%
Second 20%: +22%
Middle 20%: +23%
Fourth 20%: +33%
Top 20%: +95%


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Inequality

Almost half of the world’s wealth now owned by just one percent of the population.
Your greed is hurting the economy!

The $26.7 billion of bonuses Wall Street banks paid out last year would be enough to more than double the pay of every one of America's 1,085,000 full-time minimum wage workers.
Is this the end?
Poverty is not an accident. Like slavery and apartheid, it is man-made and can be removed by the actions of human beings.

- Nelson Mandela
“The key to the future of the world is finding the optimistic stories and letting them be known.”

- Pete Seeger, 1919-2014.
Who Are We?

Dr. Paul Lawrence – Four Drivers

Drive to acquire

Drive to defend

Drive to bond

Drive to comprehend
What's wrong with this picture?

Desired Outcome

Finance

Economy

Planet
Natural systems are sustainable because they are Regenerative.
8 elements of regenerative capitalism

- in right relationship
- holistic wealth
- innovative and adaptable
- empowered participation
- edge effect abundance
- robust circulation
- seeks balance
- honors community and place
Winning alone is not enough, it’s about winning with purpose.

Paul Polman
...there is no more strategic issue for a company, or any organization, than its ultimate purpose. For those who think business exists to make a profit, I suggest they think again. Business makes a profit to exist. Surely it must exist for some higher, nobler purpose than that.

— Ray Anderson —
If we insist on ruining the planet, we have to stop calling ourselves A superior species
SINCE 2013

30
HUBS ESTABLISHED

6,500,000
HECTACRES OF GRASSLAND INFLUENCED

3,131
LAND MANAGERS TRAINED

OUR GOAL

1 BILLION
HECTACRES OF LAND AND 100 HUBS

2025

GLOBAL IMPACT

Climate Change Mitigation

Water Security

Food Security

Decreased Poverty

savory.global
Natural Capitalism Solutions
LONGMONT, COLORADO

Email: solutions@natcapssolutions.org
Visit: www.natcapssolutions.org