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Moment of Converging Forces



Urgency of Climate Change + Threat it Presents
+
Recognition of Fossil Fuel Risks
+
Clean Energy Innovations and Cost Declines
=
Recognition of Low Carbon Economy Opportunity
=
Global Political Agreement

*Will we build our bright future fast enough
to turn our risks into opportunities –
in the Northwest and beyond?*

The answer to that question I believe depends on all of us. It is a global question, and it is a local question. In Sun Valley it is our question, and I hear companies, presidents, governors, mayors, all asking the same one.

Urgency of Climate Threat: IPCC



*Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia...atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have **increased to levels unprecedented in at least the last 800,000 years**. Carbon dioxide concentrations **have increased by 40% since pre-industrial times**...Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes...**It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.***

Report of 5th Assessment of the IPCC (April 2014)

Threat to Business: 2014



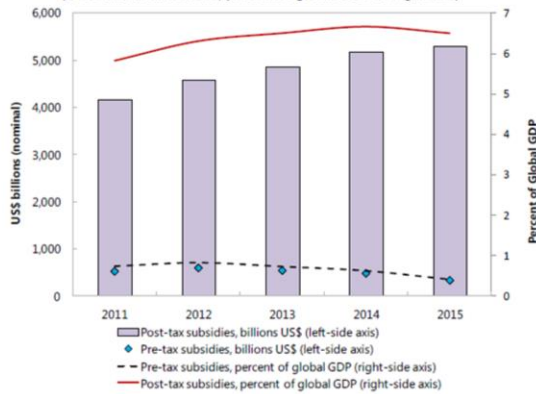
Physical infrastructure, supply chains, government liability (as insurer of last resort)

Fossil Fuel Subsidies: G20



Figure 4. Global Energy Subsidies, 2011–15

(US\$ billions on left axis; percent of global GDP on right axis)



Source: Authors' calculations, based on sources in Appendix Table 2.

Energy Subsidies = \$5 Trillion (IMF)

Fossil Fuel Investment Risk



Financial specialists making carbon investment risk
real today in the capital market.

Stranded Assets =
\$20 Trillion (IMF)
\$22 Trillion (IEA)

Fossil Fuel Investment Risk



Coal

- Took **82 years** to reach peak value
- Took just **7.5 years** to lose 97% of that peak value
- US power plants are consuming 29% less coal for power generation today than they were in the peak days of 2007

Oil

- \$380 billion in projects have been cancelled or deferred since late 2014
- Saudi Arabia, Venezuela

Risk: Suffering, crime

Opportunity: investment flows to renewables

Saudi Deputy Crown Prince (age 31) announced \$2T new fund to wean the country off oil and is selling 5% in IPO of Saudi Aramco transforming it from an oil company into an industrial conglomerate. So investments will become the source of revenue for Saudi Arabian government, not oil.

Fossil Fuel Investment Risk



**One-fifth to one-third are burnable
to keep world at 2 degrees C**

If that estimate is even approximately correct it would render the vast majority of reserves 'stranded' — oil, gas and coal that will be literally unburnable.

The challenges currently posed by climate change pale in significance compared with what might come. Once climate change becomes a defining issue for financial stability, it may already be too late.

- Mark Carney, Governor, Bank of England

Carbon budget: between one-fifth and one-third of the world's proven reserves of oil, gas and coal.

Mitigate Risk: Divestment



Rockefellers, Heirs to an Oil Fortune, Will Divest Charity of Fossil Fuels

The New York Times



September 2014

Rockefellers – Standard Oil Co heirs. Now over 500 organizations worth more than \$3.4 trillion have pledged to divest from fossil fuels – foundations, individuals, universities. Most recently the City of Copenhagen announced its plans to divest its \$1.1B investment fund from fossil fuels

Confluence: Climate & Fossil Risks

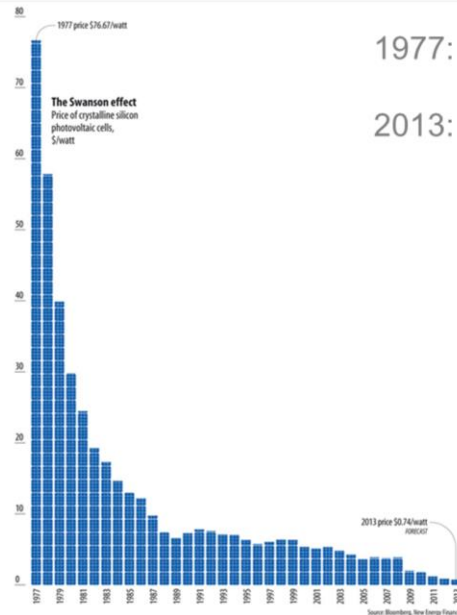


Fort McMurray

- Evacuation of over 80,000 people in the oil sands gateway city of Fort McMurray, and the destruction of over 1,600 structures.
- According to insurance industry reports, losses from the fire are approaching \$1 billion, and will likely set records for the country.

**The Opportunity:
Build Our Bright Future**

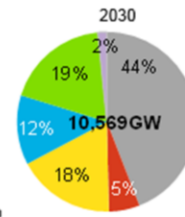
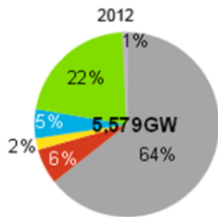
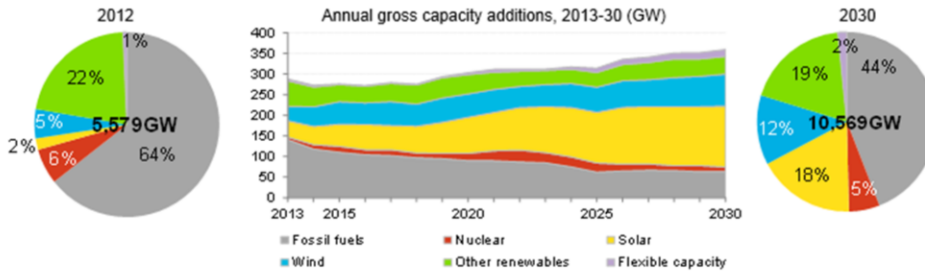
Solar PV Costs: 1977 – 2013



1977: \$76.67 / watt

2013: \$.74 / watt

Bloomberg: 2030 Energy Outlook



Bloomberg New Energy Finance, July 1, 2014

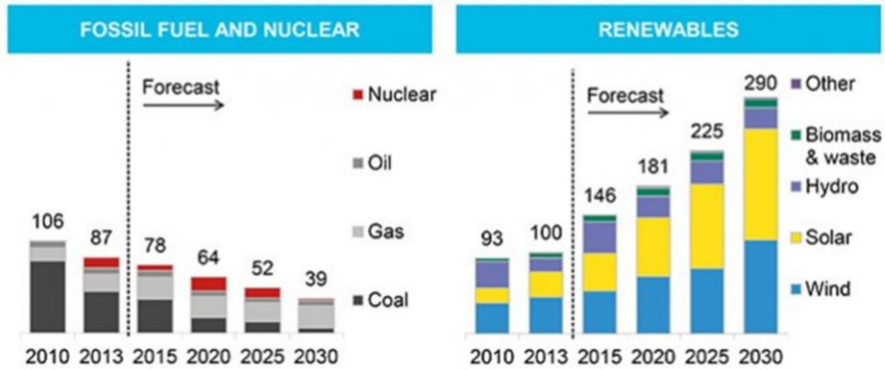
Solar will grow 10x by 2030.

Fossil fuels will fall to less than half of total power capacity globally, as they already have in the United States.

Bloomberg: 2030 Energy Outlook

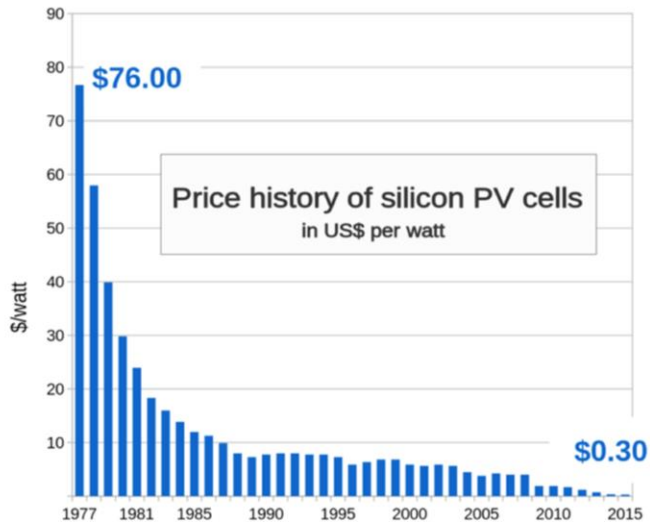


GLOBAL POWER GENERATION CAPACITY ADDITIONS 2010 – 2030 (GW)



Bloomberg New Energy Finance, July 1, 2014

Solar Cost Reductions Continue



Source: Bloomberg New Energy Finance & pv.energytrend.com

Renewable Energy is Winning



Bloomberg New Energy Outlook 2015

- By 2040 renewables will command 60% of new capacity and 2/3 of power investment globally
- New onshore wind & solar will be cheaper than new & existing fossil fuel plants by 2030

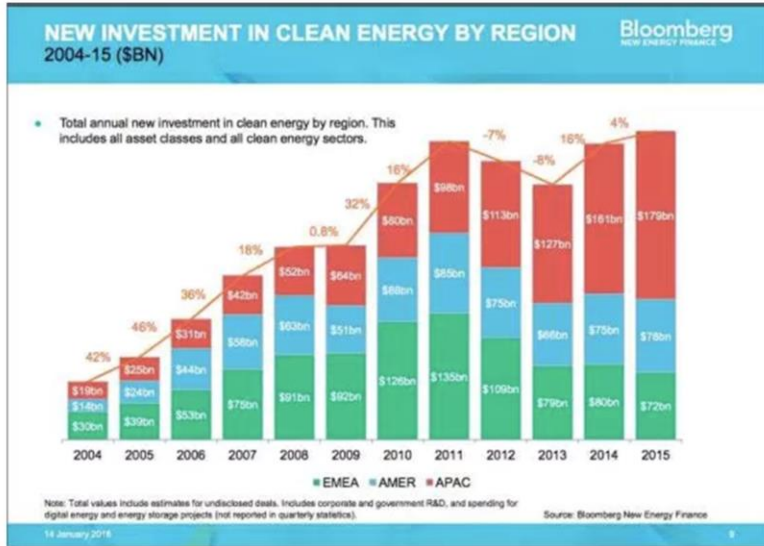
2015 Actuals

- \$329 billion in investment—6x total in 2004
- Record new installed capacity

**In 2015 renewable energy =
90% of new electric capacity!**

Solar and wind in 2015 added 121 GW (record new capacity)

2015: Record Investment





24 leaders from government, business, finance and economics in 19 countries advised by panel of leading economists chaired by Lord Nicholas Stern released the New Climate Economy Report, Better Growth, Better Climate, finding that **over the next 15 years**, about \$90 trillion will be invested in infrastructure in the world's cities, agriculture and energy systems. The world has an unprecedented opportunity to drive investment in low-carbon growth, bringing multiple benefits including jobs, health, business productivity and quality of life.

2014: Global Political Momentum



UN week 2014 – CPLC **74 nations and over 1000 companies** representing 52% of GDP and 54% of GHG emissions and half of population.

U.S. – China Climate Accord



November 2014

US – China agreement – US set ghg intensity targets; China agreed to get off ghg emissions growth path by 2030.

US 26 percent to 28 percent less carbon in 2025 than it did in 2005. That is double the pace of reduction it targeted for the period from 2005 to 2020.

China will carbon emissions by 2030, if not sooner; pledged that renewables would account for 20 percent of China's total energy production by 2030.

September 2015: The UN SDGs



SUSTAINABLE DEVELOPMENT GOALS

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION 
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 
13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE, JUSTICE AND STRONG INSTITUTIONS 	17 PARTNERSHIPS FOR THE GOALS 	

The UN SDGs: Why They Matter



1. The MDGs drove dramatic improvements in development outcomes. Targets and accountability matter.
1. Climate change and conflict undermine development.
2. Environment has been integrated into development.



1. The SDGs are the follow on to the Millennium Development Goals (MDGs) and these issue-specific targets by a set date focused global action and resulted in real impact.
2. MDGs – global poverty reduced 40%; maternal mortality reduced 45%
3. Environment = development not environment vs. development
4. The world is finally integrating environment into development, not seeing them at odds, but supportive of each other

Paris: December 2015



Carbon Pricing

75+ Commitments

THE GOLD STANDARD

WMB

(We Mean Business)

690+ Company Commitments
226+ Investor Commitments

RE100

(100% Renewable Power)

58+ Commitments

SBTs

(Science-Based Targets)

124+ Commitments



Cities, business, governments, all taking action, real momentum and focus on action
58 companies have made the commitment to be 100% renewable energy with RE 100, including Microsoft, Apple, and Walmart

Paris: December 2015



WHAT WAS AGREED TO – 195 countries signed agreement; 186 announced “nationally determined commitments” regarding how they will reduce ghg emissions (solar targets, forest targets etc.)

2015: Urgency of Climate Risk



2015: Hottest Year on Record

- 15 of 16 warmest years on record occurred since 2001
- 2015: first time global average temperatures were **1°C or more above pre-industrial temps**
- On December 30, 2015 temperatures at the North Pole were above 32°F – **50°F above normal!**
- At the same time, record-breaking floods in mid-west, normally spring run-off is when records are broken

Syrian unrest: climate-fueled drought

- 1 million food insecure, 1.5 million fled to cities

**56 percent of Republicans believe climate is warming
5 years ago = less than 40 percent**

Syria: Secretary Kerry, climate scientists

Northwest Climate Risk



In the northwest these climate impacts are very real including on our iconic species, our salmon.

Must assess and address

Sun Valley Climate Risk



In Sun Valley – second largest fire in the country in 2013, major impact on tourism economy. Snowfall changes.

Sun Valley: ID Risks & Assets



The Challenges and Assets of our Community

Urgent, Globally Relevant Threats

- Fires
 - Energy reliability and costs
 - Concentrated economy: Tourism
 - Hi-Moderate Correlation = \$1.2B (70%)
 - Low-No Correlation = \$0.6B (30%)
 - Lack of access / isolation: food, energy, communications, transport
 - Significant wealth inequality
 - Drought: water rights litigation
 - Globalization
 - External economic impacts
- Climate change = threat multiplier**

Historical, Natural & Community Assets

- Rich human capital + “pride of place”
- Quality of natural resources
- Committed partner organizations
- Representative demographics
- Optimal size, scope, agility
- Inputs & outputs easily measured
- Prominence of Sun Valley

Match with Community Values

- 2013 Economic Summit: Quality of Place
- 2014 Economic Summit: Resilience

Urgent Need, Opportunity and Assets
Ideal Petri-Dish for Innovation
Resilience is a Global Priority and We Can Lead

So we are assessing our risks and how we can mitigate them by mobilizing our resources/assets to address specific areas of vulnerability and diversify economy.

Resilience



*"The capacity to survive, adapt and thrive in the face of chronic stresses and acute shocks."
- Rockefeller Foundation*

Mission Statement

The Sun Valley Institute for Resilience advances economic prosperity, environmental protection and human wellbeing in its home community of Idaho's Wood River Valley and beyond.

Mitigate Risks & Build Opportunities



“Integrate prevention and care.” - Dr. Paul Farmer



The Institute builds community resilience with global impact

Northwest Climate Risk

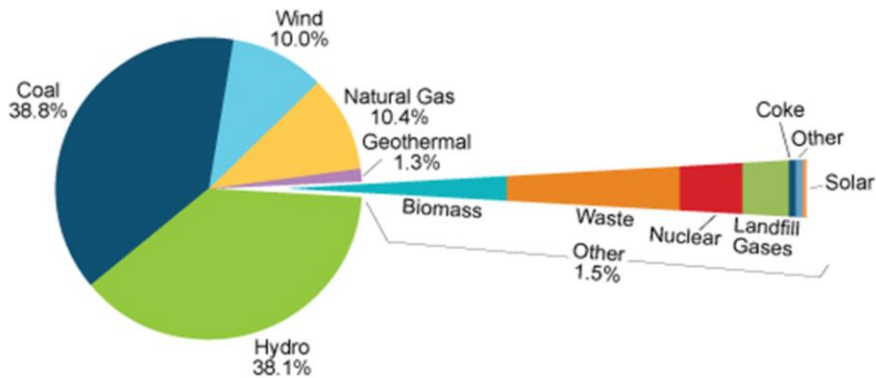


For the salmon, with climate change it is now finally t(past) time to breach the dams

Mitigate: New Energy Cities



Climate Solutions.



ERC brought CS New Energy Cities to help us identify our climate situation and how to act.

Local Energy Resilience



Risks:

Reliability, Economic, Environmental

Opportunities:

Reliability, Economic, Environmental

Plan: Distributed, Local, Collaborative =
Resilient



Now we are acting on that information by building a resilient energy system.

Local Energy Resilience



Energy is a **RISK** that can be an **OPPORTUNITY**

Energy goal: transform our grid into a reliable, economically and environmentally sound energy system, providing:

- Reliability
- Protection of our natural environment
- Reduced power prices
- Local job creation

Start: Local solar generation through...



Let's Put the Sun in Sun Valley





Partners with whom we are working to address our energy risk, build a resilient system toward an islandable microgrid.

The Role of Optimism



“Impossible is not a fact, it’s an attitude.”

- Christiana Figueres, UNFCCC Executive Secretary



Christiana – optimism critical

We Can Do This



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What gives me hope – was a small group of us when I started in DC working on climate and clean energy, now are millions

We Can Do This



TESLA

nest

SolarCity

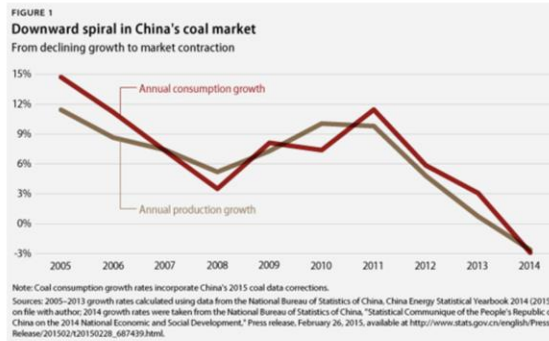


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Innovative companies bringing us the new clean economy – with products that are BETTER

We Can Do This

1. Globally, we are decoupling emissions from GDP
2. China is creating largest carbon market in the world
3. In 2015, coal generated less than 70% of Chinese electricity, 10% less than four years prior (in 2011).
4. Over the same period low-carbon sources jumped from 19% to 28%



Remember the 2030 target for China to turn down its emissions, well it's happening

We Can Do This: Investors



Climate & Capital



\$1T in the room in paris at Climate & Capital – new investors learning science, policy, investment risks, investment opportunities

Mercer's research – a 4 degree world is chaos, a 2 degree world can be prepared for and investments aligned

We Can Do This: Investors



2015: The Power of Ideas

2016: The Future of Human Kind

Milken last week – 3500 leaders – many focusing on how to invest in climate, sustainable development

The investment opportunities are not in fossil fuels, they are in clean energy

We Can Do This!



 **Climate Solutions.**

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Final thing that gives me hope – the incredible people working tirelessly on climate at all levels, particularly galvanized by the leaders like these.



**From Risk to Opportunity:
Building Our Bright Future**

