



# Fracking to Plastic: The Lost Opportunity & the Cost

January 26, 2020

14th Ward Political Forum in honor of Barbara Daly Danko



# Earth - Our Life Support System

**Fueled by Solar Power**

Clean Water



Fertile  
Ground



Fresh air



Biodiversity  
of Species



# Our Life Support System is Under Stress

Fossil Fuel  
Combustion



Resource  
Extraction



Increasing  
Population



Hyper-consumption



# Existential Crises of the 21<sup>st</sup> Century

## *"We face a climate emergency!"*

### Climate Change



<https://www.epa.gov/climate-indicators/climate-change-indicators-us-and-global-temperature>

1/26/20

<https://patriciademarco.com>

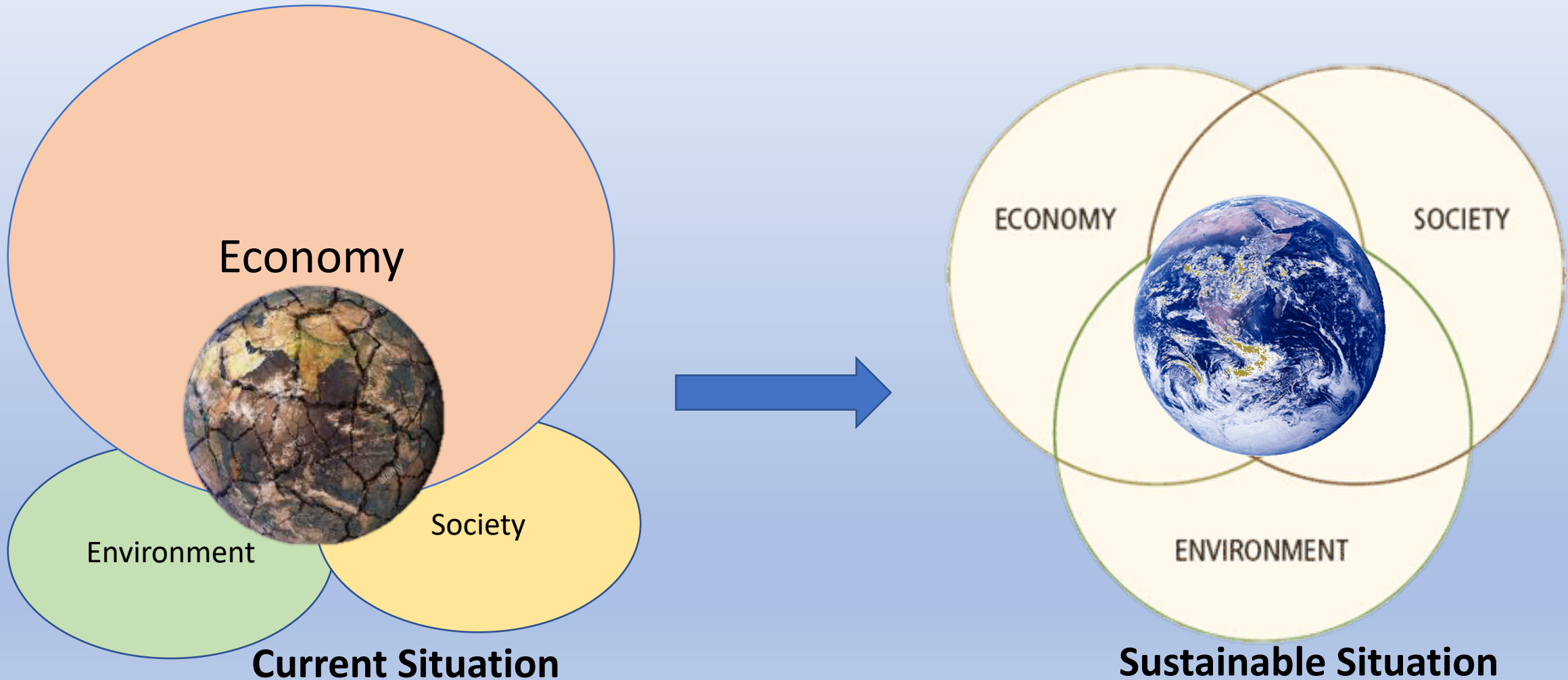
### Global Pollution



<https://www.fws.gov/news/blog/index.cfm/2012/10/24/Discarded-plastic-distress-albatross-chicks>



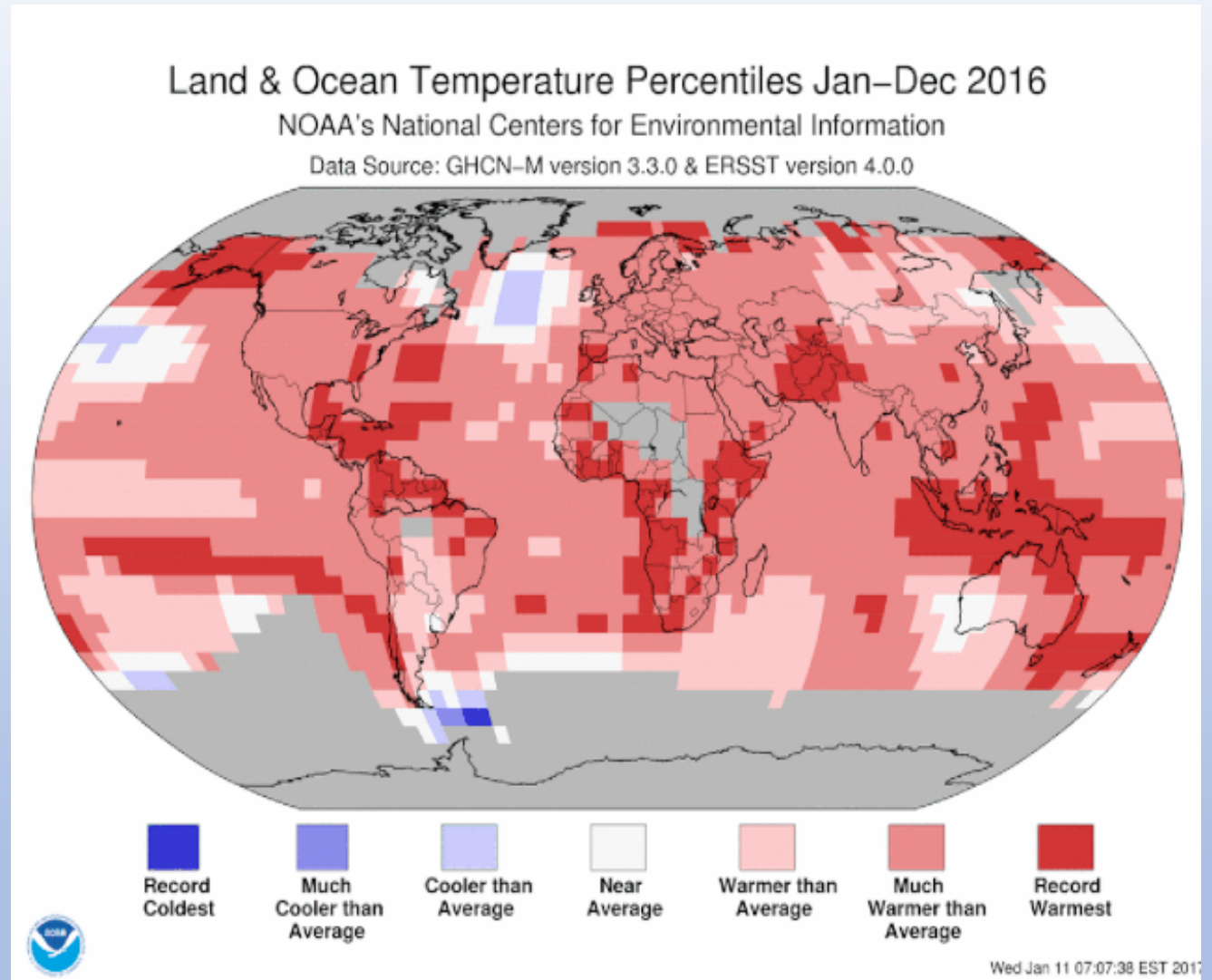
# Sustainability as a Goal





## The Laws of Nature are NOT Negotiable

- Solving the climate crisis is not a technology problem
- **It is a moral and ethical problem**
- **Do we preserve the living planet for our children and their great-grandchildren.... or not?**





# The Laws of Nature & Rights of Nature

- Earth is a living system of which humans are a part
- Not human property to be owned and destroyed



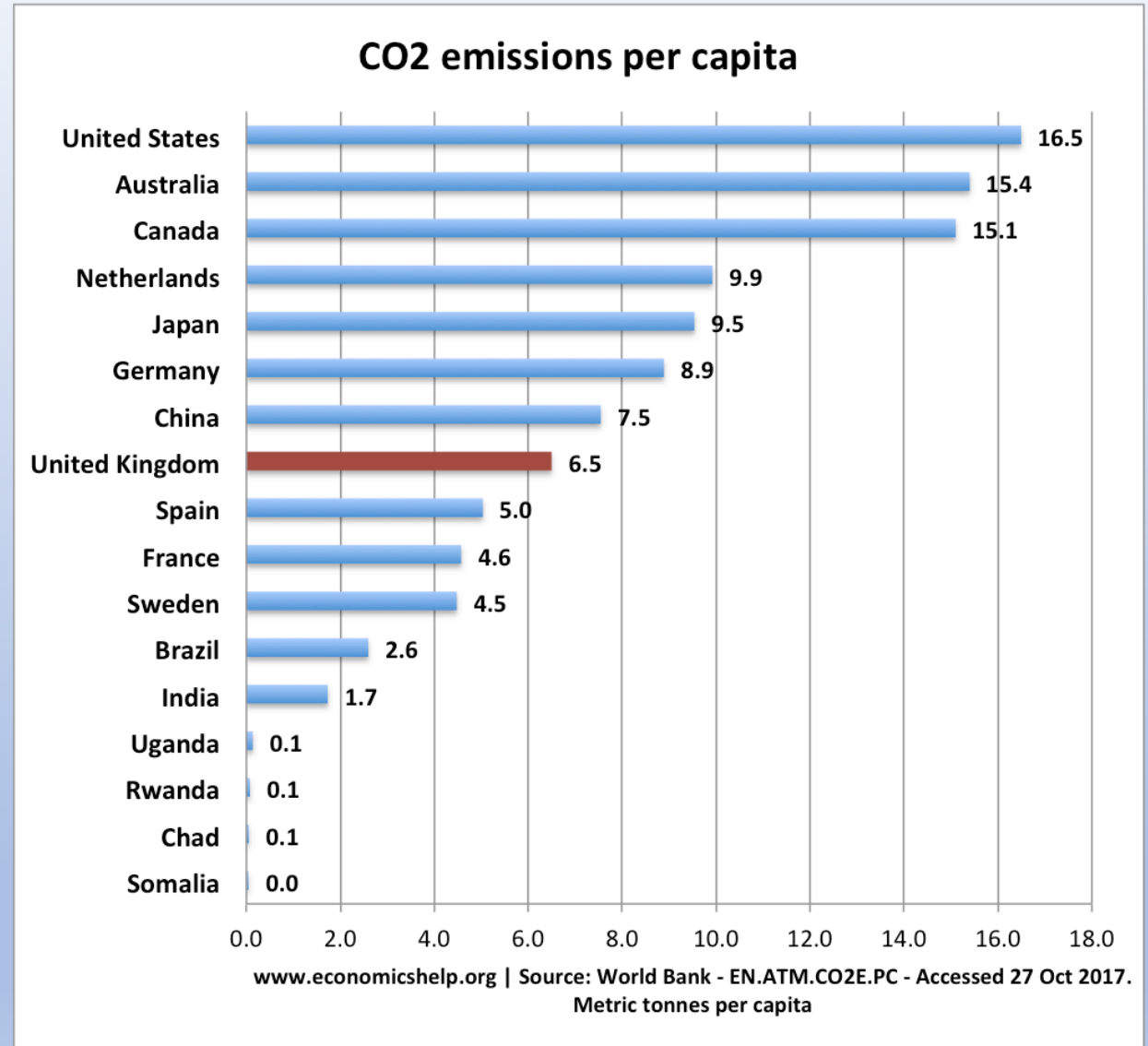
*The Amazon rain forest provides close to 50% of the Free oxygen in the atmosphere*

<https://fee.org/articles/how-property-rights-can-help-preserve-the-amazon-rainforest>



## US has largest GHG emissions/capita

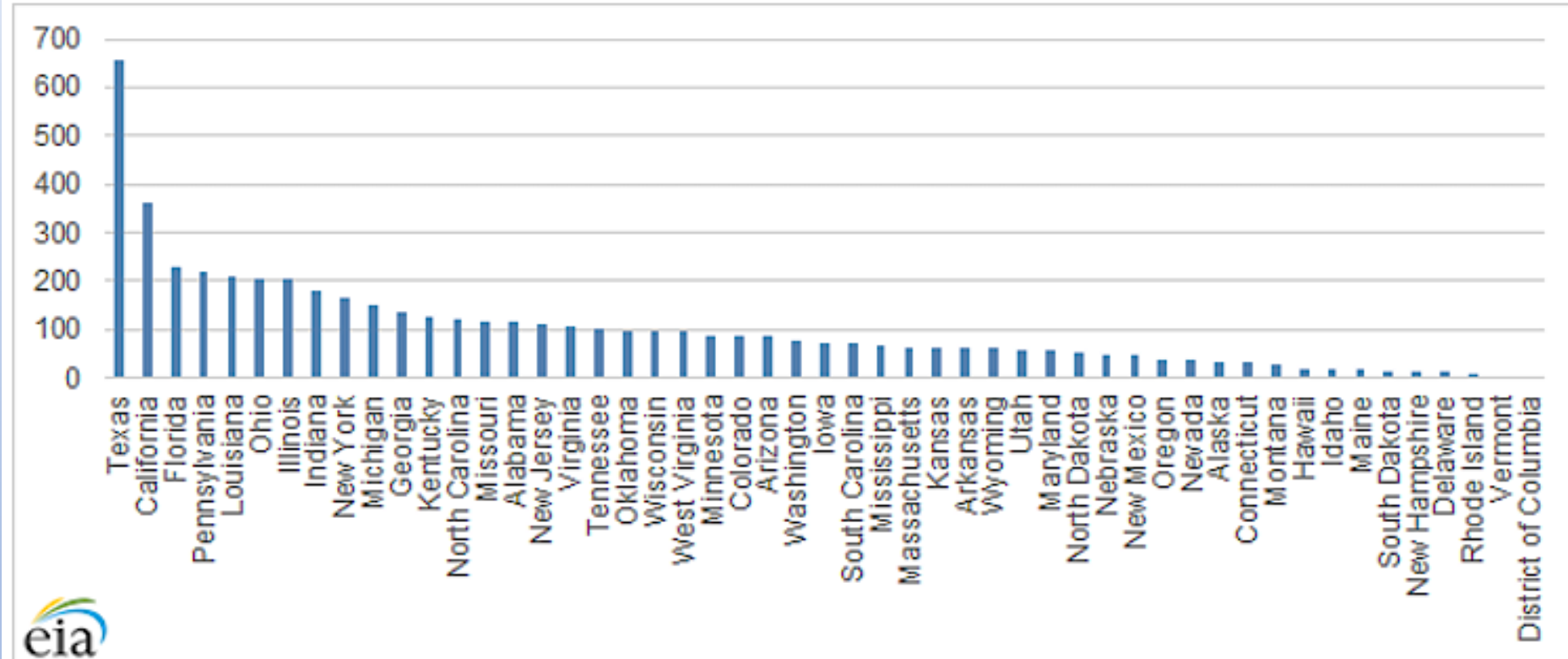
- 16.5 metric tons of GHG emissions per person in US
- Twice that of Germany
- More than twice of China
- Ten times that of India



# PA is the fourth largest CO2 emitter in the US

**Figure 1. Energy-related carbon dioxide emissions by state, 2016**

million metric tons of carbon dioxide



Source: EIA, State Energy Data System and EIA calculations made for this analysis.

<https://www.eia.gov/environment/emissions/state/analysis/>



- EIA expects gas exports to double by 2050
- Oil production from offshore drilling at record levels
- Correlates low energy use with lower economic growth
- Energy efficiency keeps demand growth flat

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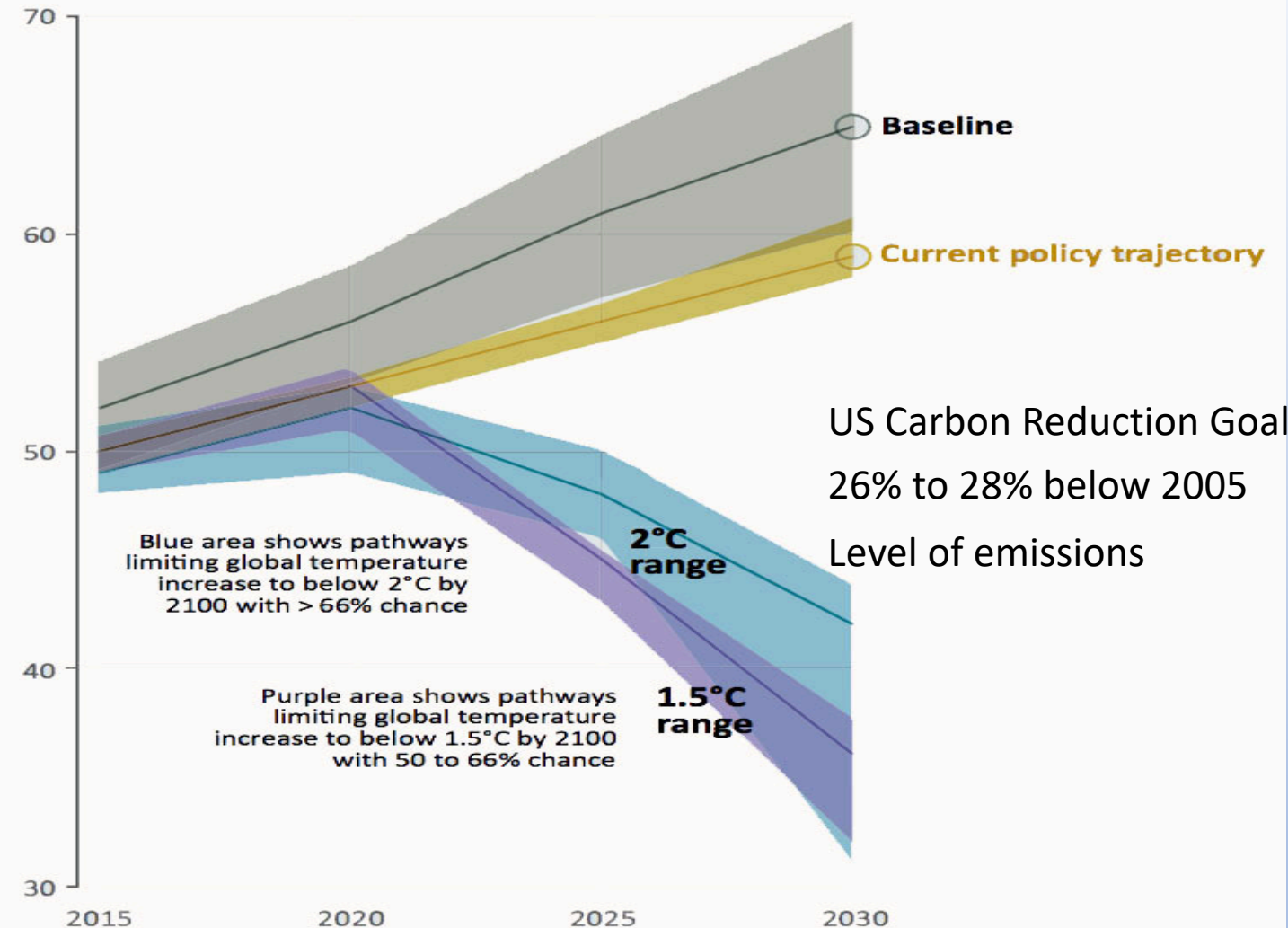


Status Quo will not achieve sustainability

Current policies (2018) expected to achieve 11% to 13% reduction From 2005 levels

US has potential to reverse direction

Annual Global Total Greenhouse Gas Emissions (GtCO<sub>2</sub>e)



US Carbon Reduction Goal:  
26% to 28% below 2005  
Level of emissions

<https://e360.yale.edu/features/why-post-paris-climate-challenge-is-even-harder-than-we-thought>

<https://patriciademarco.com>



A Time to Choose...  
within our control  
to shape the next 10,000 years



Shell Ethane Cracker Operation



WindStax<sup>®</sup> Energy



TharProcess<sup>™</sup>

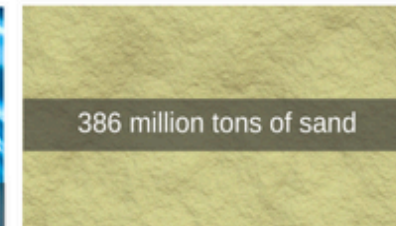
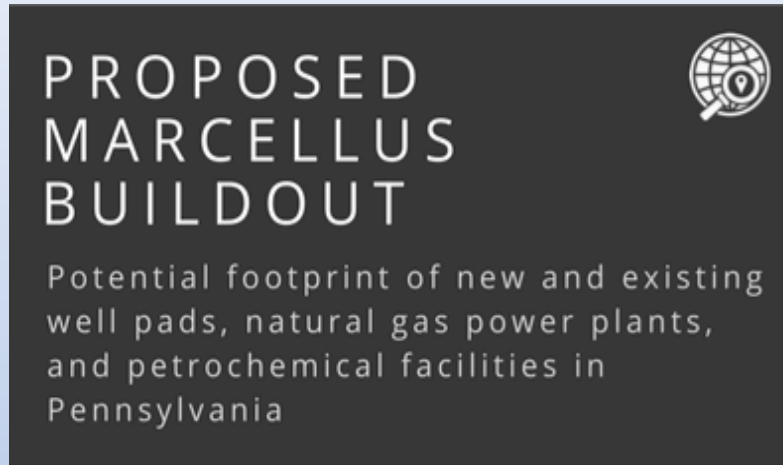
The future of hemp extraction and purification.

Pittsburgh, PA  
Buffalo, NY  
Pueblo, CO (coming soon)



# The Precautionary Principle

- “*Underlying all these problems of introducing contamination into our world is the question of moral responsibility - responsibility not to our own generation, but to those of the future*”
- Rachel Carson



Matt Kelso. *A Hazy Future- Pennsylvania's Energy Landscape in 2045.*  
*FrackTracker Alliance Issue Paper. January 10, 2018.*



# The moral Imperative

- Today we use plastic- a material designed to last forever - for products designed to be used for minutes
- “The future of all life now depends on us.”
- *David Attenboro-Blue Planet II*



Dan Clark/Planet PIX/ZUMA



# Replace Fear With >>>>>>



Demonstrations in Pittsburgh at Clean Power Plan EPA hearing 2015



# Corporations are not PEOPLE!



- The plan for a just transition **MUST** include a plan for taking care of the workers
- Protecting pensions and benefits
- Meaningful re-training
- Community re-investment

# UN Sustainable Development Goals

- Adopted in 2015
- Recognize the interconnectedness of global civilizations
- Provides a shared global blueprint for peace and prosperity
- For People and the Planet now and into the future



<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

# A Plan for a Sustainable Economy



“A just transition of the workforce that creates decent work and quality jobs.”

AFL-CIO Climate statement at Copenhagen <https://www.scribd.com/document/96838350/Final-Report-from-the-AFL-CIO-and-International-Trade-Union-Confederation-on-the-Copenhagen-Accord-on-Climate-Change>



# Pathways for Our Sustainable Future

- **Renewable Energy Systems** that conserve and restore resources
- **Regenerative Agriculture** for a non-toxic food system that captures carbon in fertile ground
- **Pollution Prevention** and A Circular Economy for materials designed for re-use from benign materials
- **All contribute to reducing carbon emissions**



**Forest Hills Borough Building**  
Net Zero Energy solution  
(December electric bill **-\$2,581**)

# A Metamorphosis- not a simple transition



# Better Choices: The Green Jobs Economy

- What is a “Green Job”
- “Jobs in businesses that produce goods and services that benefit the environment and conserve natural resources.”
- U.S. Bureau of Labor Statistics

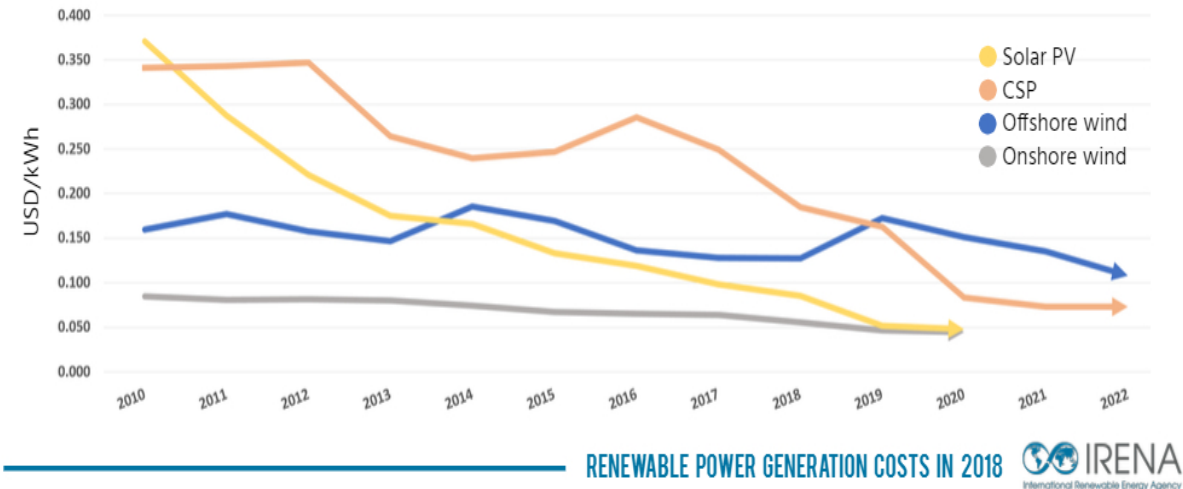




# Better Choices: The Green Energy Field

- Technology costs in renewables are dropping sharply
- Demand increasing for efficiency and clean energy solutions
- More supportive policies emerging (state level mostly)
- Private Investment in renewable infrastructure increasing

By 2020, **onshore wind** and **solar PV** will be a less expensive source of new electricity than the cheapest fossil fuel alternative.



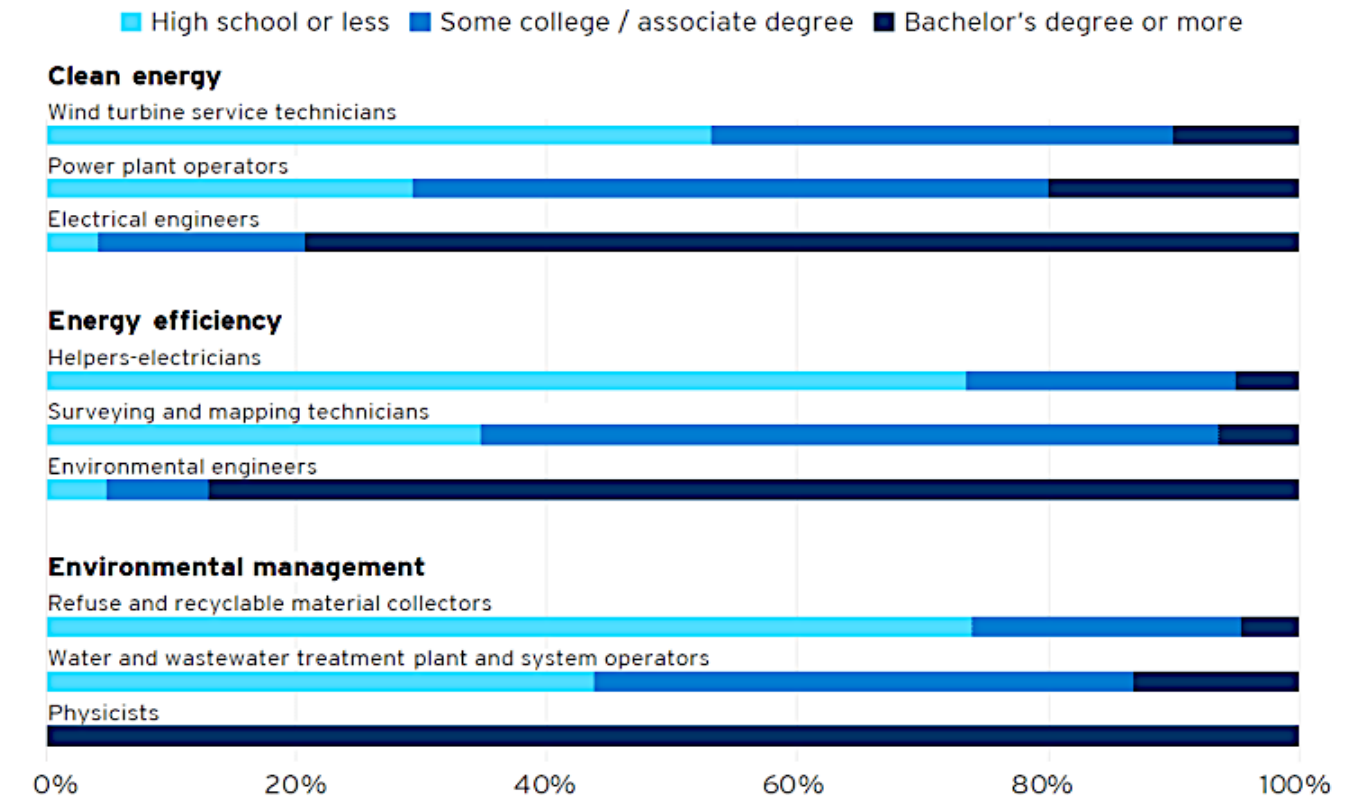
<https://www.irena.org/newsroom/pressreleases/2019/May/Falling-Renewable-Power-Costs-Open-Door-to-Greater-Climate-Ambition>

# Nature of Work in the Clean Energy Economy

- 1. Clean energy production
- 2. Energy Efficiency
- 3. Environmental Management

FIGURE 3

**Educational attainment, by share of employment in selected occupations, 2016**



Source: Brookings analysis of Occupational Employment Statistics and Employment Projections data



# Better Choices: The Green Energy Field

What are the sectors of clean energy?

- Renewable energy- solar, wind
- 777,000 jobs in 2016
- Solar increased by 25.5%
- Wind increased by 16%
- Tariffs against China have hurt the industry, as well as uncertainty in the policy arena since 2017

## US energy employment

In 2017, 2.3 million of America's 6.5 million energy jobs were in efficiency -- such as upgrading windows, installing insulation or high-efficiency air conditioners and appliances, and manufacturing LED lighting systems.



Chart: The Conversation, CC-BY-ND • Source: [U.S. Energy and Employment Report](#) • [Get the data](#)

# PA Green Jobs employ workers that:

- Promote energy efficiency (65,137)
- Contribute to the sustainable use of resources or renewable energy (41,141)
- Prevent pollution (30,566)
- Provide green education/training, awareness, or compliance (23,991)
- Clean up the environment (11,672)
- Promote the reduction of harmful emissions (10,522) <https://www.usenergyjobs.org>



<http://plus.usgbc.org/retraining-american-workers-for-green-energy-jobs/>



# Better Choices: The Green Energy Field

What are the sectors of clean energy?

- Energy Storage and Advanced Electric Grid
- 235% surge in growth 2016-2017
- 98,800 jobs in storage
- 55,000 jobs in advanced electric grid

<https://www.usenergyjobs.org>



Workers at a battery storage facility in Escondido.  
Credit Coley Brown for The New York Times

# Better Choices: The Green Energy Field

What are the sectors of clean energy?

- **Energy Efficiency** –includes diagnostics, engineering modifications, retrofitting, adapting and installing energy efficiency improvements to commercial and residential buildings
- **2.2 million workers** , mostly in construction trades



Midwest Energy Efficiency Alliance

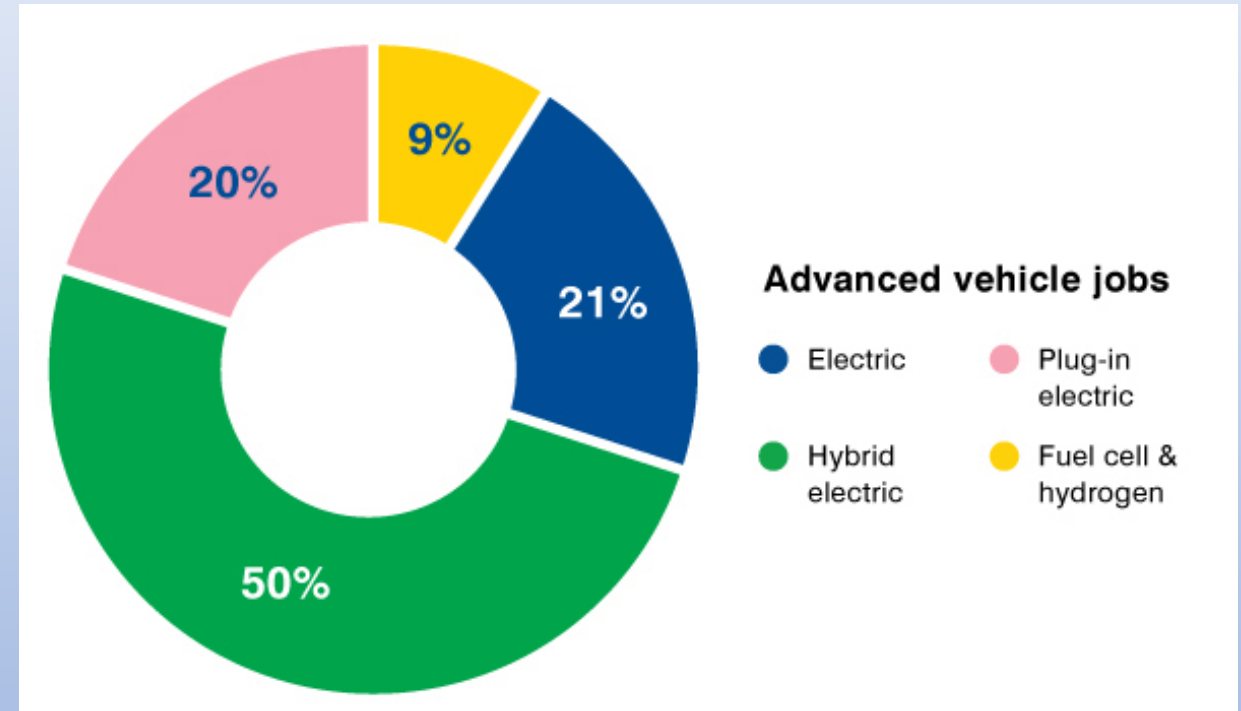
<https://www.usenergyjobs.org>



# Better Choices: The Green Energy Field

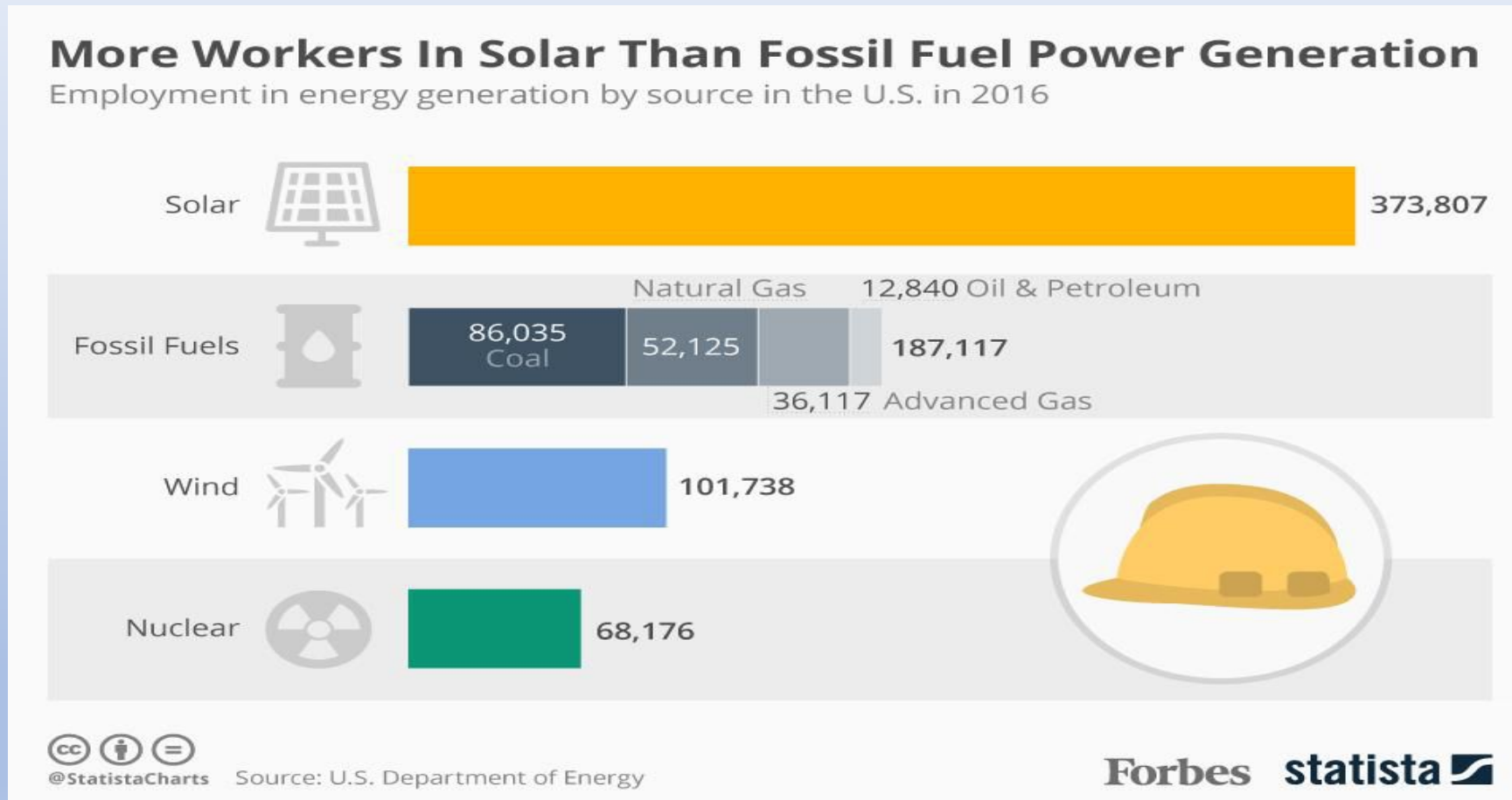
What are the sectors of clean energy?

- **Advanced Vehicles and Transportation**
- Develop and manufacture electric vehicles and hybrid vehicles
- 174,000 jobs in 2016-2017
- \$11 Billion in investment announced by Ford for 40 EV and Hybrid vehicles on the market by 2022



<https://www.forbes.com/sites/niallmccarthy/2017/01/25/u-s-solar-energy-employs-more-people-than-oil-coal-and-gas-combined-infographic/#7cc2b7228000>

# Better Choices: The Green Jobs Economy



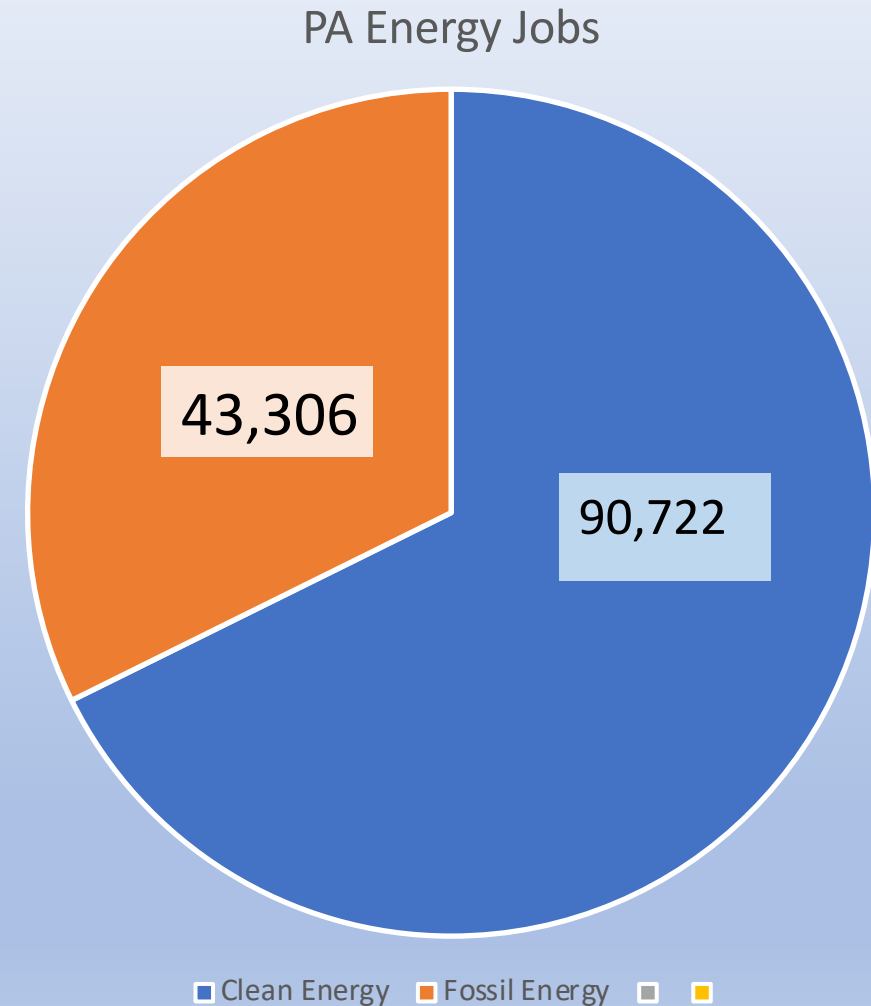
<https://www.forbes.com/sites/niallmccarthy/2017/01/25/u-s-solar-energy-employs-more-people-than-oil-coal-and-gas-combined-infographic/#7cc2b7228000>



# Pennsylvania Energy Sector Jobs

- Energy Efficiency – **68,820 jobs**
- Renewable Energy – **9,209 jobs**
- Clean Vehicles – **7,788 jobs**
- Solar Energy – **4,846 jobs**
- Wind Energy – **2,815 jobs**
- Energy Storage – **1,692 jobs**
- Grid Modernization – **1,861 jobs**
- **ALL Clean Energy Sectors – 90,772 jobs**

<https://www.e2.org/reports/clean-jobs-pennsylvania-2019/>

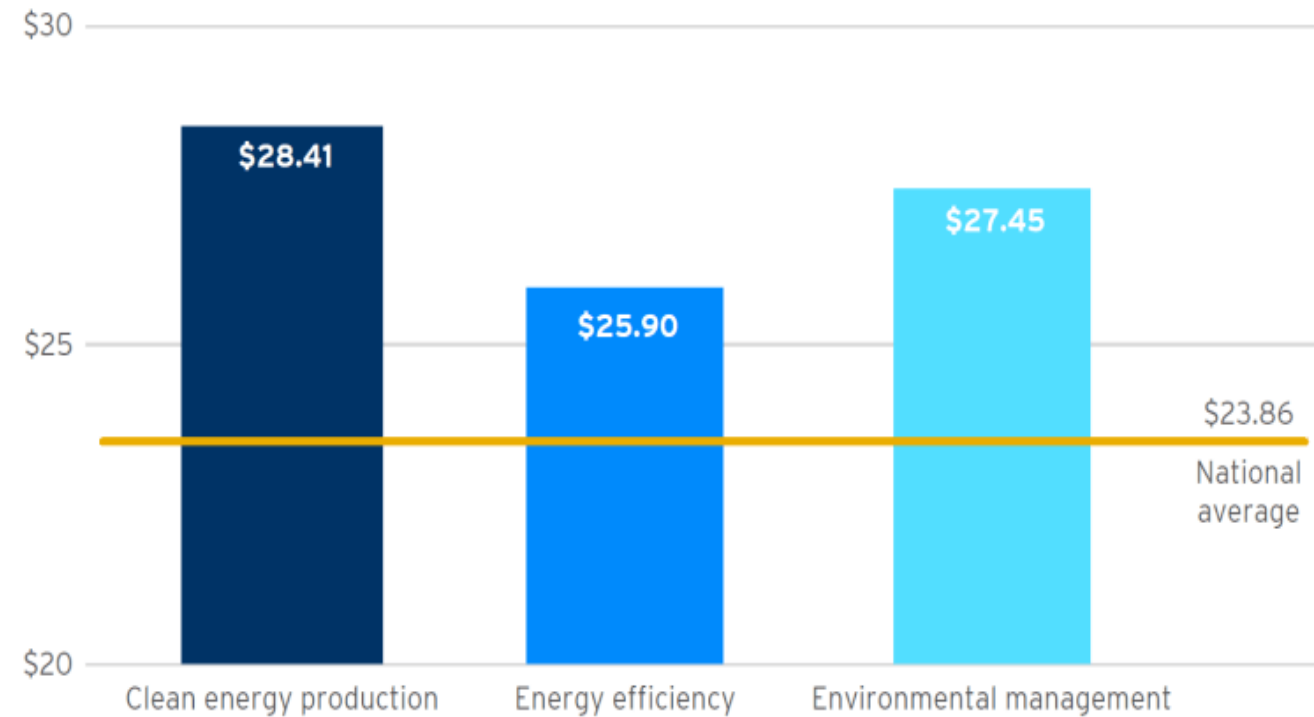


# Nature of Work in the Clean Energy Economy

## Wages and Skills

FIGURE 2

Mean hourly wages by clean energy economy sector, 2016



Source: Brookings analysis of Occupational Employment Statistics data

- Wages in all three clean energy sectors are above the National Average = \$23.86/hr
- Clean Energy Production = \$28.41/hr
- Energy Efficiency = \$25.90/hr
- Environmental Management = \$27.45/hr

# Nature of Work in the Clean Energy economy

## 1. Clean energy production

- Electricians
- Electrician helpers
- Solar Installers, repairers
- Nuclear Power plant operators
- Electric power plant operators





# Nature of Work in the Clean Energy economy

## 2. Energy Efficiency

- Roofers
- Roofer- Helpers
- Pipe-layers
- Plumbers
- Pipefitters
- Steamfitters
- HVAC Mechanics
- HVAC Installers



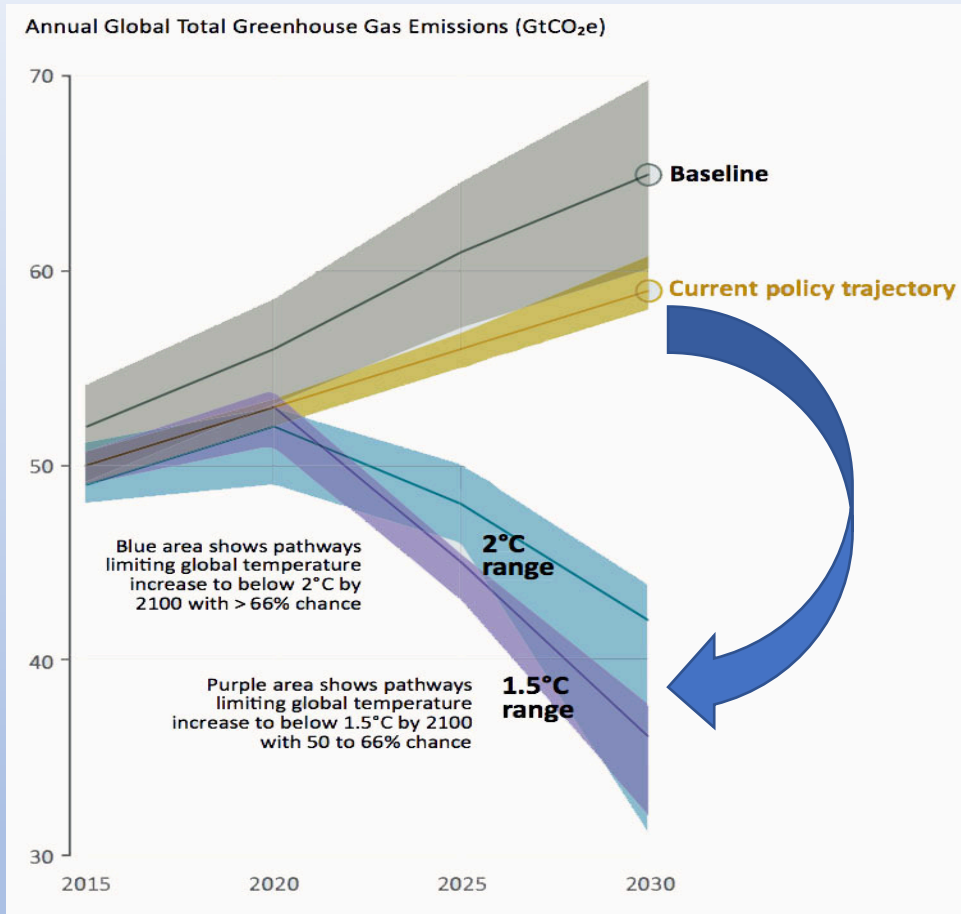
# Nature of Work in the Clean Energy economy

## 3. Environmental Management

- Hazardous waste management
- Refuse Recycling management
- Septic system engineers
- Plant and system operators
- Conservation scientists



# How do we make a Policy U-Turn?



Move awareness ➡ **OUTRAGE!**

- Articulate Policy actions
- Build support for action
- Increase political pressure
- Increase social pressure
- Mainstream change
- **VOTE FOR CLIMATE ACTION**

<https://e360.yale.edu/features/why-post-paris-climate-challenge-is-even-harder-than-we-thought>



# Re-Framing the Problem – What Is Measured?

$$\text{GDP} = C + I + G + (X - M)$$

**Gross Domestic Product**

- Consumption
- Investment
- Government Spending
- (Exports – Imports)

**“Priceless” Life Support System = 0**



Fresh Water  
Clean Air  
Fertile Ground  
Ecosystem functions

# Re-Framing the Problem – What Is the Result?

## 1. Profits go to a few multinational corporations

- “Today we have a temporary aberration called “industrial capitalism” which is inadvertently eliminating its two most important sources of capital:
  - The natural world and
  - Properly functioning societies.
- It is incapable of meeting the challenge of these times to **prevent** life on Earth from slipping away.”

*Amory Lovins*



# Re-Framing the Problem – What Is the Result?

## 2. Consumers do not see consequences

- Environmental damage to land and ecosystems
- Waste disposal
- Air pollution
- Health effects

**These are not reflected in the price.**

- Policies support continuing fossil fuel use



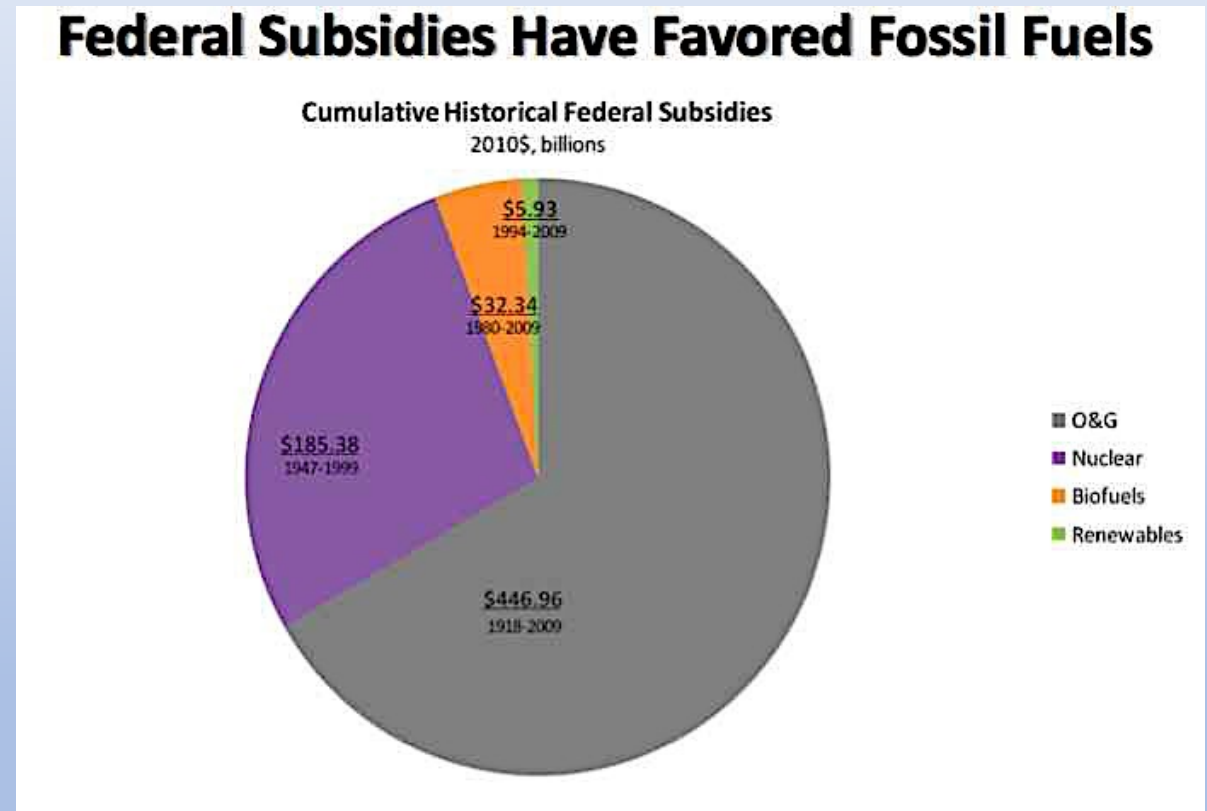
Hydraulic fracturing in Hickory PA



# Re-Framing the Problem – What Is the Result?

## 3. The taxpayers pay through subsidies and hidden costs

- **\$20.5 Billion/year** in direct production subsidies for oil, gas and coal extraction
- **Permanent** Investment Tax Credits for oil, gas, coal of \$7.4 Billion/year
- (compared to \$1.3 billion for renewables, ending in five years)
- **Cost to each taxpayer = \$142/YR**  
\$20 Billion /141 Million taxpayers



<https://www.nature.com/articles/s41467-018-07999-w>

*Fossil Fuel Subsidy Study OMB 2018*

1/26/20

<https://patriciademarco.com>

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# Tax credits and loopholes –nearly \$10 billion/yr

- Intangible drilling oil & gas deduction (**\$2.3 billion**)
- Excess of percentage over cost depletion (**\$1.5 billion**)
- Master Limited Partnerships tax exemption (**\$1.6 billion**)
- Last-in, first-out (LIFO) accounting (**\$1.7 billion**)
- Lost royalties from onshore and offshore drilling (**\$1.2 billion**)
- Low-cost leasing of coal-production in the Powder River Basin (**\$963 million**)



<https://www.nature.com/articles/s41560-017-0009-8>

<http://priceofoil.org/2017/10/03/dirty-energy-dominance-us-subsidies/>

# The Status Quo- “Just the way it is”?

## Subsidies matter

- 98% of all operating coal plants are unprofitable if environmental controls are updated.
- 50% of yet-to-be-drilled oil and gas wells are not profitable (at \$50/barrel oil price) if they do not have tax preferences

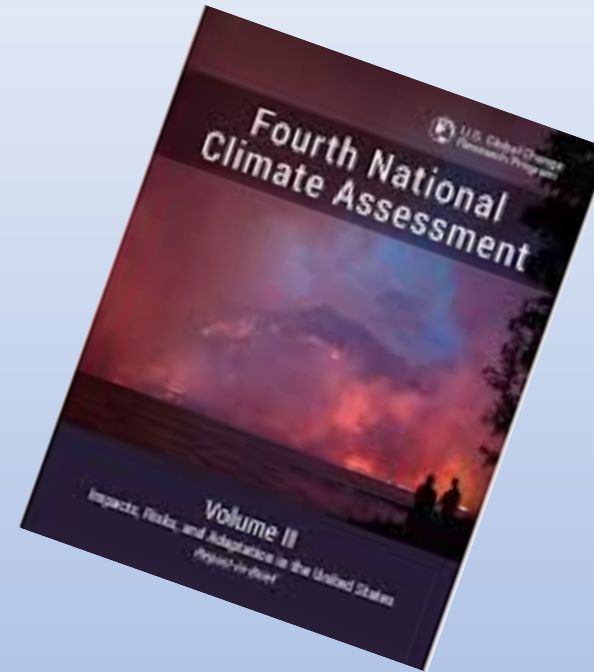




# Re-Framing The Problem: Cost of NOT Acting

## *“Green is too Expensive”*

- NOT addressing Climate Change will be very expensive
- *Fourth Climate Assessment* in November 2018, by 17 CURRENT federal agencies
- Analysis mandated by Congress Global Change Research Act of 1990



<https://nca2018.globalchange.gov>

# Re-framing the Problem- The Cost of Not Acting

## Labor Losses:

- Heat-induced productivity reduction
- \$160 billion in lost wages a year



# Re-framing the Problem- The Cost of Not Acting

## Higher Energy Costs:

- \$87 billion a year by 2100
- due to mounting demand on a power system made less reliable by extreme weather.



*Utility crews work to repair downed power lines along Bailey Avenue in Uniontown Friday morning. (Darrell Sapp/Post-Gazette)  
Feb. 16, 2018*



# Re-framing the Problem- The Cost of Not Acting

## Infrastructure damages:

- \$507 billion worth of real estate is at risk of being inundated by rising sea levels by 2100.
- \$1.2 to \$1.4 Billion/year - Inland flooding could destroy thousands of bridges by 2050

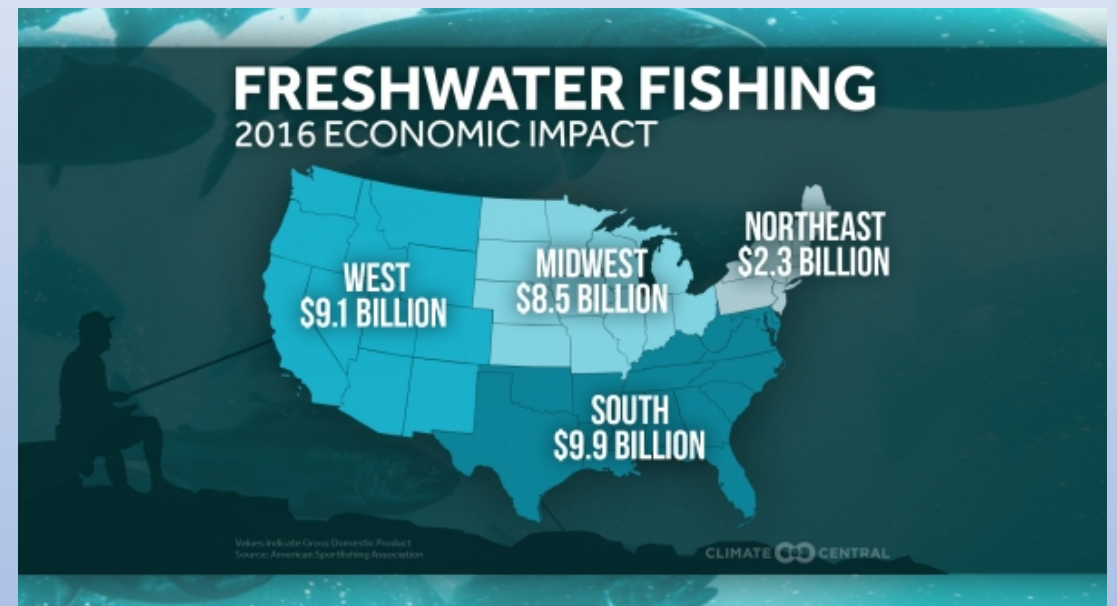


Army Corps of Engineers - bridges damaged by flood surge

# Re-framing the Problem- The Cost of Not Acting

## Shrinking Environmental capital:

- \$230 million/ year—loss on shellfish harvests.
- \$140 Billion/year recreation industry losses from disappearing coral reefs alone
- cold-water fishing and skiing would also be affected.



Trout streams warming

<https://www.climatecentral.org/gallery/download/economic-impacts-of-freshwater-fishing>

# Status Quo – Bought and paid for!

- Oil, gas and coal campaign contributions and lobbying spent \$354 million in 2015-2016 election cycle (all offices)
- Received \$29.4 billion in total subsidies
- That is an 8,200% RETURN on the Investment!



Dave Bernhardt, Former oil & gas lobbyist, confirmed to run Department of Interior. April 11, 2019

**95 Environmental regulations targeted for removal  
58 rescinded as of January 2020**

<https://www.nytimes.com/interactive/2019/climate/trump-environment-rollbacks.html>



# A Just Transformation



**“Economic transformation can not be left to the “invisible hand” of the market. ”**

International Trade Union Confederation  
Fourth International Congress in Copenhagen 2018

<https://www.labor4sustainability.org/post/green-jobs-in-a-global-green-new-deal/>



# A Call to Action: The laws of Nature are NOT negotiable-

- Climate change **will worsen** as a consequence of business as usual policies
- OUR Laws must change to **enable and promote “Green Jobs”** instead of protecting fossil industries



*“Unfortunately, the entire economy today thrives on the destruction of nature.”*

UNEP Executive Director Achim Steiner

<https://www.dw.com/en/undp-head-the-entire-economy-thrives-on-the-destruction-of-nature/a-47214485>

# A Call to Action- Keep the Momentum

- 22 states, 550 cities, and 900 companies with operations in the US have made **climate commitments**
- **All 50 states** have some type of policy that could bring about emissions reductions
- **When people demand action, we can make change happen**





# A Call to Action: People Power for Climate Change

1. Government-driven investments in the Green Economy
2. Innovation and skills development
3. Social protection- especially pensions and benefits
4. Consultation with social partners (unions and employers)
5. Healthy environment for healthy people and planet

**These are essential if we want to make change happen.**



Indigenous Peoples Congress-  
The Universal Rights of Mother Earth

# A Call To Action: Inspiration

"work together, despite our differences" to avert "the biggest crisis humanity has faced ... because, otherwise, it might be too late. Let's not wait any longer. Let's do it now."



Greta Thunberg- teen climate activist arriving in New York

*DECIDE to leave a Living  
Earth for your children!*

Thank you!

Patricia M. DeMarco, Ph.D.

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