The Skinny on the IPCC Report

The IPCC Special Report on the Impacts of Global Warming at 1.5°C…is in and the results are serious and sobering.

How did this report come to be?

Since the UN Climate talks in Copenhagen in 2009 consensus among scientists has been that we must limit global warming to less than 2°C above pre-industrial levels to avoid catastrophic impacts from climate change. However, the science, even at that time, said limiting warming to 2°C would mean island nations would still be inundated and destroyed. By the time the Paris climate talks rolled around in 2015 the cry from island nations was "1.5 to Stay Alive." The Paris Agreement then declared that warming shall not surpass 2°C above pre-industrial levels, yet all countries should pursue "efforts to limit the temperature increase to 1.5°C." The Alliance of Small Island State also requested the International Panel on Climate Change (IPCC) to prepare a special report on the specific impacts of global warming of 1.5°C and possible solutions for keeping the temperature from rising further. The findings of this report were release on October 8th.

Important Note – This report and the numbers/percentages that you are about to read are referring to what needs to happen on a global scale. The same numbers and percentages do not necessarily apply to the United States or public lands.

A Few Key Takeaways

- We have as little as 12 years to reduce global emissions by 45 % to keep global warming below 1.5°Celsius or 2.7 ° Fahrenheit, which is where science says we need to be to in order to avoid the worst impacts of warming.
- We still have hope to stay below 1.5°C, but we have to transform our energy economy in ways the world has never before seen; 2.0 degrees C is achievable but will also require dramatic shifts immediately.
- There are substantial differences between the global impacts of climate change if we stay below 1.5°C vs. the 2°C target set in the 2015 Paris agreement.
- If we go beyond 1.5°C for any length of time the climate-related risks may vary based on how long temperatures remain above 1.5°, how high the temperatures peak and how quickly it happens. If we get as high as 2°C for any length of time before returning to 1.5° levels, some impacts may be long-lasting or irreversible, such as the loss of some ecosystems.

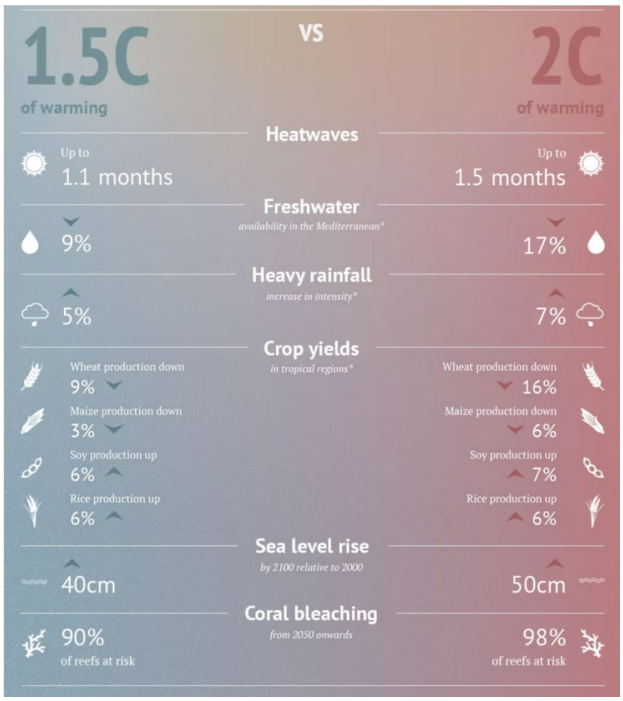
What the Report Says that May Have Implications for Our Work

Currently

- Warming in the Arctic is already 2-3 times higher than the global annual average in many land regions and seasons.
- Impacts on natural and human systems from global warming have already been observed. Many land and ocean ecosystems and some of the services they provide have already changed due to global warming.

Foreseeable Impacts

What's ahead for our lands and waters globally?



- We need to keep the global temperature below the 1.5°C mark in order to avoid irreversible impacts of climate change on the ecosystems we've worked so hard to protect.
- Drought and temperature extremes – the number of hot days is projected to increase in most land regions.
- At 1.5°C sea level will continue to rise well beyond 2100, and how much they rise depends on future emissions and our ability to reduce them. A slower rate of sea level rise enables greater opportunities for adaptations in the human and ecological systems of small islands, low-lying coastal areas and deltas.
- On land, impacts on biodiversity and ecosystems, including species loss and extinction, are projected to be lower at 1.5°C of global warming compared to 2°C. Limiting global warming to 1.5°C compared to 2°C is projected to lower the impacts on terrestrial, freshwater, and coastal ecosystems and to retain more of their services to humans.
- Even at 1.5°C, of the 105,000 species studied, they are projected to lose over half of their habitat – 6% of insects, 8% of plants and 4% of vertebrates. At 2°C it's far worse, 18% of insects, 16% of plants and 8% of vertebrates experience loss of half of their habitat.
- Impacts associated with other biodiversity-related risks such as forest fires, and the spread of invasive species, are lower at 1.5°C compared to 2°C of global warming.
- Approximately 4% of the global land area is projected to undergo a transformation of ecosystems from one type to another at 1ºC of global warming. To put that percentage in perspective, 4% of global land areas is approximately the same square mileage as the largest 14 states in the U.S. - AK, TX, CA, MT, NM, AZ, NV, CO, OR, WY, MI, MN, UT and ID combined. At 2°C it would be 13% of global land area. This indicates that the area at risk is projected to be approximately 50% lower at 1.5°C compared to 2°C.
- High-latitude tundra and boreal forests are particularly at risk of climate change-induced degradation and loss, with woody shrubs already encroaching into the tundra and will proceed with further warming. Limiting global warming to 1.5°C rather than 2°C is projected to prevent the thawing over centuries of a permafrost area in the range of 579 thousand mi^2 to 965 thousand mi^2 (1.5 to 2.5 million km^2) – an area roughly the size of AK an TX combined.

Frontline Community Impacts – "1.5 to stay Alive"

"We also need to resolve the fundamental injustice of climate change: The people who contributed the least to the problem and benefited the least from its sources stand to suffer the most." (Vox)

- Populations at disproportionately higher risk of adverse consequences of global warming of 1.5°C and beyond include disadvantaged and vulnerable populations, some indigenous peoples, and local communities dependent on agricultural or coastal livelihoods. Regions at disproportionately higher risk include Arctic ecosystems, dryland regions, small-island developing states, and least developed countries.
- The consideration of ethics and equity is essential to addressing the uneven distribution of adverse impacts associated with 1.5°C and higher levels of global warming, as well as those from mitigation and adaptation, particularly for poor and disadvantaged populations, in all societies.
- Communities dependent on fossil fuels for their local economy and employment will be put at risk – it will be essential to have policies in place for just transition that promote diversification of the economy and the energy sector.

What do we need to do?

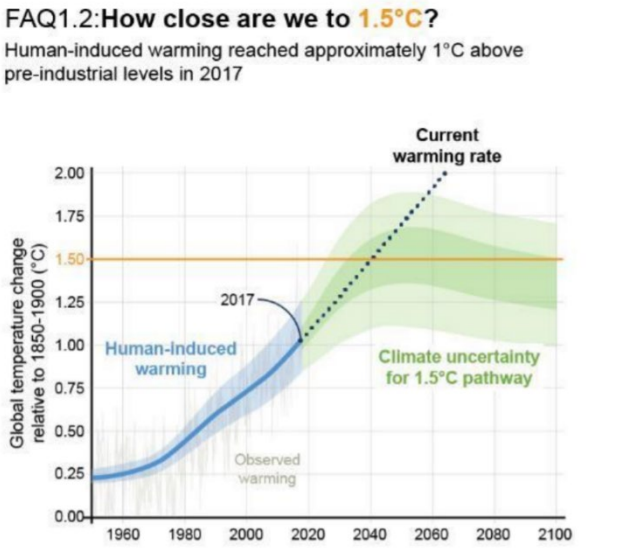
No matter what pathway we choose to fight climate change – it's going to be a lot cheaper to address the climate problem now, rather than later. Deploying technologies and critical policies to keep the world at or below 1.5°C is tremendously expensive. However, researchers estimate that the global economic damages from warming of 1.5°C by 2100 are $54 trillion, and at 2°C by 2100 it's $69 trillion (Vox). To put that in perspective – US GDP in 2016 was $18.57 trillion. Moreover, by taking steps to reduce emissions now we can extend the amount of time we have to address climate change.

Emission Reduction Strategies

- Pathways that limit global warming to 1.5°C with no or limited overshoot show clear emission reductions by 2030. Overshoot being - when we temporarily exceed a set temperature target for global warming. The lower the emissions in 2030, the lower the challenge in limiting global warming to 1.5°C after 2030 with no or limited overshoot. The challenges from delayed actions to reduce greenhouse gas emissions include the risk of cost escalation, lock-in in carbon-emitting infrastructure, stranded assets, and reduced flexibility in future response options in the medium to long-term. These may increase uneven distributional impacts between countries at different stages of development.
- Adaptation and mitigation are already occurring. Yet, we need upscale and accelerate technologies and global collaboration at a level and pace never seen in recorded history.
- Under most best-case scenarios it is impossible to meet these goals without the deployment of negative emission technologies and strategies - the models in the IPCC report show us it's impossible to meet climate goals without some impressive advances and scaling in technologies used to pull carbon out of the air. The report elaborates on two specific strategies.
    - Land use change – thinking about the way we use land, meaning potentially less food crops and converting to more forests and using land for more renewable energy development
    - Carbon Capture and Sequestration – capturing CO2 and considering natural storage options - storing it in ways that keeps it from entering the earth's atmosphere.
- In just over 10 years, the world's percentage of electricity from renewables such as solar and wind power would have to jump from the current 24 percent to something more like 50 or 60 percent. Coal and gas plants that remain in operation would need to be equipped with technologies, collectively called carbon capture and storage (CCS), that prevent them from

emitting carbon dioxide into the air and instead funnel it to be buried underground. By 2050, most coal plants would shut down (Washpo).

- Staying within the 1.5°C with no overshoot, renewables are projected to supply 70–85% of electricity in 2050 (globally).
- There is little, if any, additional room globally for additional fossil energy leasing and production at current rates and using current technologies. This holds true for energy development on public lands. Given the scale of federal energy development, steps to reduce or prohibit additional leasing and development would go a long way towards bringing U.S. GHG emissions in line with climate goals.
- In all scenarios presented in the report, we need to aggressively cut emissions of super pollutants like methane and black carbon in order to keep global warming to 1.5°C (35% or more of both by 2050 relative to 2010).
- We probably need to reduce emissions by 1 billion tons per year over the next decade to keep us at or below 1.5°C. To put that in perspective, if we take the total annual lifecycle emissions from oil, gas and coal development on federal public lands, we would need to reduce global emissions by that amount every year for the next decade to keep us at or below 1.5°C. Remember – if public lands were considered their own country the associated emissions from fossil fuel development would rank fifth in the world behind Russia.



FAQ1.2, Figure 1: Human-induced warming reached approximately 1°C above pre-industrial levels in 2017. At the present rate, global temperatures would reach 1.5°C around 2040.