

Local 20/20 Summary of IPCC 1.5°C Special Report and 4th National Climate Assessment

DECEMBER 6, 2018



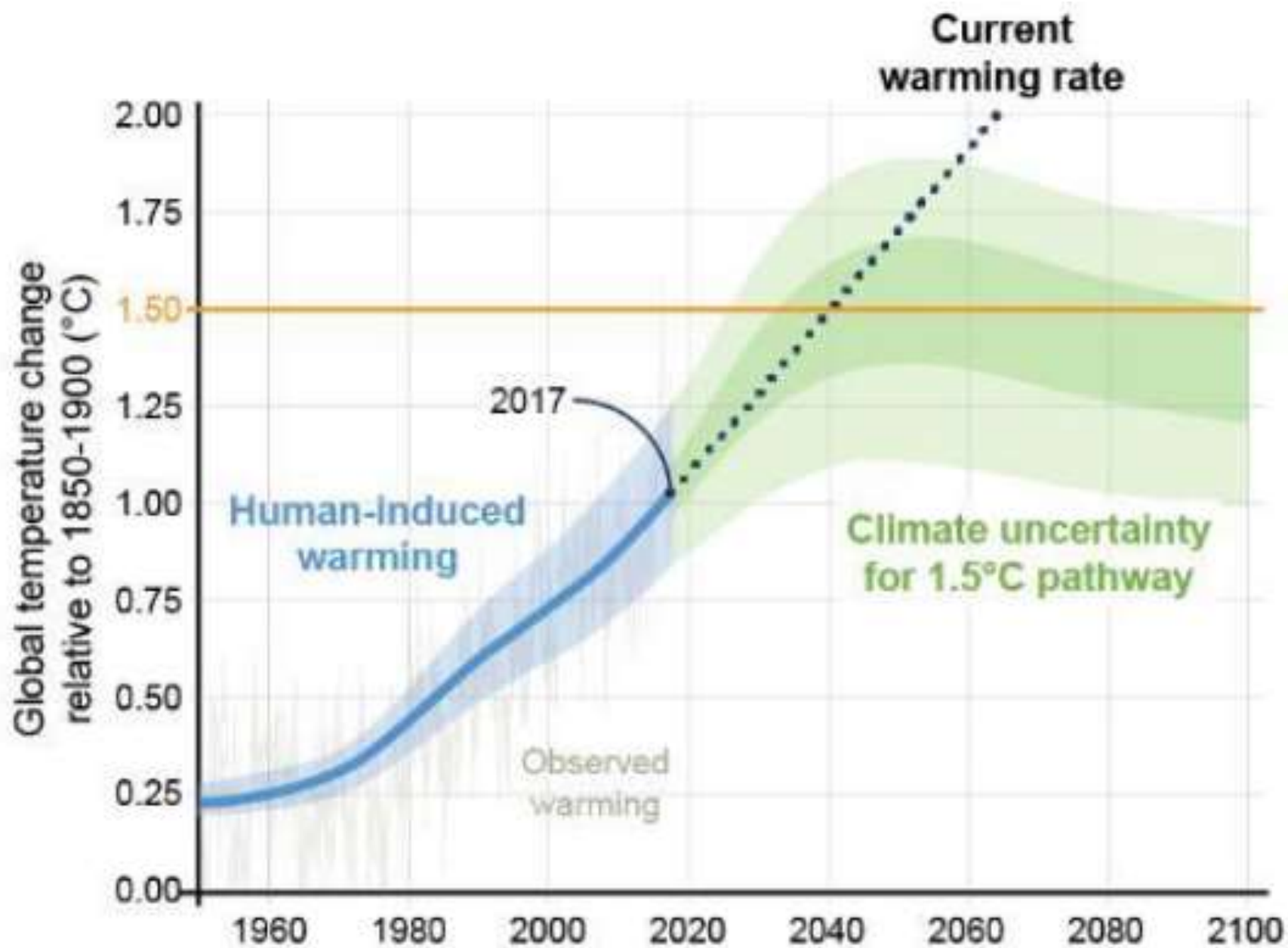
IPCC Key Messages – General



Global warming of 1.0°C reached in 2017

Global warming is likely to reach 1.5°C between 2030 and 2052 at the current rate.

“... models project **robust differences**, between present-day and warming of 1.5°C and 2°C.”



4th National Climate Assessment

“neither global efforts to mitigate ... climate change nor ... adapt to the impacts ... approach the scales needed to avoid substantial damages to the U.S. economy, environment, and human health...”

Key Messages - Mitigation



To limit warming to 1.5°C, global emissions must be reduced by **45% from 2010 levels by 2030**

Net-Zero Global Anthropogenic CO₂ Emissions

- Will halt anthropogenic global warming
- Max Temp determined by net anthropogenic CO₂ up to time of Net-Zero (multi-decadal)

Key Messages - Mitigation



Net Negative CO₂ emission may be needed to

- Prevent further warming
- Reverse ocean acidification
- Minimize SLR (longer time scale)

Key Messages - Mitigation



Carbon Dioxide Removal (CDR)

- CDR, at scale, is unproven
- Reliance on CDR is major risk to limit warming
- Primary CDR
 - Bioenergy with carbon capture
 - Afforestation

Key Messages -Mitigation



Setting a high price on emissions is necessary to limit warming to 1.5°C

The price on emissions to limit to 1.5°C needs to be 3 to 4 times the price needed to limit to 2.0°C

Key Messages - Impacts



HALF A DEGREE OF WARMING MAKES A BIG DIFFERENCE:

EXPLAINING IPCC'S 1.5°C SPECIAL REPORT

1.5°C

2°C

2°C IMPACTS

EXTREME HEAT

Global population exposed to severe heat at least once every five years



14%



37%

2.6x
WORSE

1.5°C

2°C

2°C IMPACTS

SEA-ICE-FREE ARCTIC

Number of ice-free summers

AT LEAST 1 EVERY
100 YEARS

AT LEAST 1 EVERY
10 YEARS

10x
WORSE

SEA LEVEL RISE

Amount of sea level rise by 2100

0.40

METERS

0.46

METERS

.06M
MORE



1.5°C

2°C

2°C IMPACTS

**SPECIES LOSS:
VERTEBRATES**

Vertebrates that lose at least half of their range



2x
WORSE

**SPECIES LOSS:
PLANTS**

Plants that lose at least half of their range



2x
WORSE

**SPECIES LOSS:
INSECTS**

Insects that lose at least half of their range



3x
WORSE

1.5°C

2°C

2°C IMPACTS

ECOSYSTEMS

Amount of Earth's land area where ecosystems will shift to a new biome



1.86x
WORSE

PERMAFROST

Amount of Arctic permafrost that will thaw



38%
WORSE

CROP YIELDS

Reduction in maize harvests in tropics



2.3x
WORSE



1.5°C

2°C

2°C IMPACTS

CORAL REEFS

Further decline in coral reefs



UP TO
29%
WORSE

FISHERIES

Decline in marine fisheries



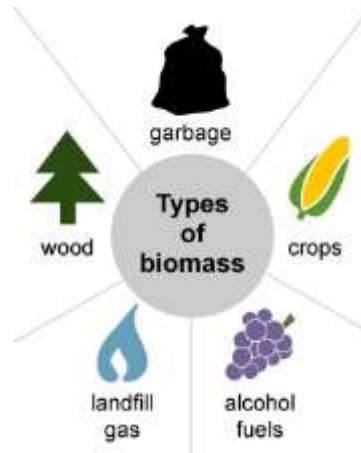
2x
WORSE



Key Messages – Electricity

Renewable energy (including **hydro, solar, wind, geothermal, and biomass**) needs to increase significantly **by 2050** to stay within 1.5°C.

Renewable energy from biomass is key for both electricity and transportation.



Key Messages – Electricity

Reduce building emissions by 80–90% by 2050 to hit 1.5°C

New construction to be fossil-free and near-zero energy by 2020



Key Messages – Electricity

Climate Solutions Study: 4 scenarios to get to 100% fossil fuel free in the Pacific NW by 2050

- The cheapest solution (0.6¢/kwh increase) substantially increases:
 - Energy efficiency
 - Wind
 - Solar
 - Energy storage
 - And switches gas power plants from fossil-based to renewable gas



Key Messages – Transportation

To limit warming to 1.5°C

- Almost 40% reduction in final energy use by the transport sector by 2050.
- Transition away from fossil-fueled passenger vehicles by 2035–2050

Biofuels are the most viable means of decarbonising intercontinental travel

Key Messages – Transportation



Transition in Jefferson County may include:

- Modal shifts from cars to public transit, biking, and walking
 - use incentives, disincentives, and infrastructure
- A transit system goal to reduce community emissions
- Urban design – increased housing near jobs and services
- Efficient vehicles – more electric vehicles and infrastructure
- Ridesharing and avoided journeys

Key Messages - Land Use, Agriculture & Food Systems

Trade-offs exist in land use for bioenergy and food

Land Use Planning is essential for mitigation/adaptation

At 1.5°C warming crop yields & nutrition values decline

Conservation Ag may help sequester carbon in soil

Livestock contribute up to 14.5% of anthropogenic GHG

Key Messages - Land Use, Agriculture & Food Systems

Managing food waste - up to 1/3 of all food goes uneaten

Decreasing food waste reduces GHG emissions

Returning food nutrients to the soil sequesters carbon

Biochar may help sequester carbon in soil

References

IPCC Report: <http://www.ipcc.ch/report/sr15/>

Fourth National Climate Assessment: <https://nca2018.globalchange.gov/>

World Resource Institute: 8 Things You Need to Know About the IPCC 1.5°C Report <https://www.wri.org/blog/2018/10/8-things-you-need-know-about-ipcc-15-c-report>

Other Resources:

Center for Climate and Energy Solutions: IPCC 1.5-Degree C Special Report <https://www.c2es.org/content/ipcc-1-5-degree-c-special-report/>

Union of Concerned Scientists: What do the findings of the recent IPCC report on climate change tell us? <https://www.ucsusa.org/our-work/ucs-publications/IPCC>