The Science

In 2021 we reached a new peak of 417 ppm (parts per million) of carbon dioxide in the Earth's atmosphere. This is way beyond the benchmark of 350 ppm recommended to maintain a temperature increase below 1.5°C and to avoid destabilization of Earth's climate, with consequent damage to all aspects of life on the planet. That year we witnessed catastrophic flooding and fires in our state with more to come. The year also featured long-term droughts around the globe; unheard-of heat in Siberia and the rest of the Arctic in the summer, triggering permafrost melt and release of methane (a greenhouse gas significantly more powerful than carbon dioxide); rapidly melting glaciers in Greenland; and failing ice shelves in Antarctica. A foot of sea rise is projected by 2050, threatening our ports and waterfronts and potentially extinguishing island nations and coastal communities. These are impacts in a world that is continuing to warm from a level of greenhouse gases in the atmosphere that has been rising since the beginning of the industrial revolution.

And the pace of this change is accelerating. The pace of change is so rapid that most plant and animal species do not have time to adapt in behavior or move to a more optimal location. Hence, we are seeing a crash in Earth's biodiversity, undermining the stability of all ecosystems. The change we are triggering is not temporary. Even if we cut emissions significantly, the climate will take a century or more to correct, but will Earth's regenerative systems still function?

The UN-sponsored Intergovernmental Panel on Climate Change (IPCC) released a report in August 2021 (*Climate Change 2021: The Physical Science Basis*) that states in the clearest terms possible that the science of climate change is settled (emphasis added):

> **"It is unequivocal that** human influence has warmed the atmosphere, ocean, and land. **Widespread and rapid changes in the atmosphere, ocean, cryosphere, and biosphere have occurred. . . .** The scale of recent changes across the climate system as a whole—and the present state of many aspects of the climate system—are **unprecedented over many centuries to many thousands of years."**

UN Secretary General António Guterres in his opening address to COP-26, the Conference of Parties, which met in Glasgow in October/November 2022, did not mince words:

> "Recent climate action announcements might give the impression that we are on track to turn things around.
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> This is an illusion.
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> The last published report on Nationally Determined Contributions showed that they would still condemn the world to a calamitous 2.7 degree [Celsius] increase.
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> And even if the recent pledges were clear and credible—and there are serious questions about some of them—we are still careening towards climate catastrophe."

Our global youth (Greta Thunberg and other youth activists) state the realities of the situation in unflinchingly clear terms. They have a keen perspective on the central justice issues at stake: how industrialized countries, primarily in the

northern hemisphere, have plundered Earth's resources and people to achieve standards of living that are unsustainable and, in the process, have put those who are least industrialized and responsible for the climate problem at the highest risk of climate impacts. This is also true within the United States, where poor and minority communities are subject to far greater harm from both fossil fuel industrial pollution and the impacts of climate change. The youth call for action to address climate justice now.

On February 28, 2022, the IPCC released the Working Group II *Report Climate Change 2022: Impacts, Adaptation and Vulnerability,* which focused on how climate change affects people and the planet. United Nations Secretary-General António Guterres stated, "Today's IPCC report is an atlas of human suffering and a damning indictment of failed climate leadership." He added, "Delay means death."

The following was included in the report:

- Climate-related impacts are already widespread and some impacts are irreversible, even if we cut emissions and lower the temperature increase below the 1.5°C limit.
- Effective adaptation is critical. Poorer countries (mostly in the global south) and marginalized populations least responsible for climate change lack the resources to adapt effectively. Governments of the world's richest and most polluting countries need to commit resources to support the rapid scaling-up of adaptation in the countries that are feeling the brunt of climate change's effects.
- Where adaptation is no longer an option, the world is facing "Loss and Damage": loss of culture, loss of home and place, damage to habitable land. Addressing these losses must also be a priority for wealthier nations.

On April 4, 2022, yet another report issued by the IPCC stated urgently that "projected global emissions from (national pledges) mean that limiting global warming to 1.5°C is beyond reach and will make it harder after 2030 to limit warming to 2°C. Once again, Secretary General Guterres did not mince words:

"Investing in new fossil fuels infrastructure is moral and economic madness."