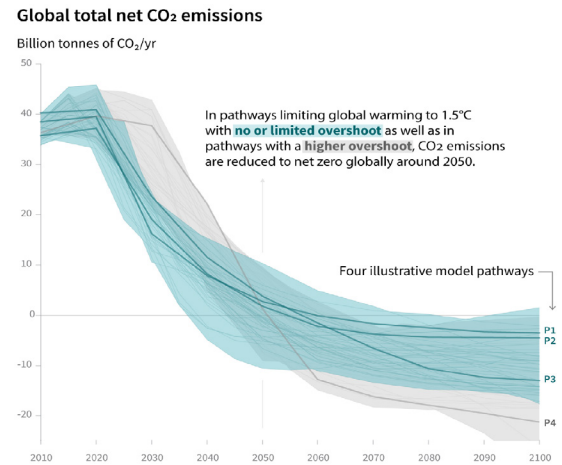


# Climate Change: Policy and Mitigation

## The Challenge

Climate change is a global problem that requires global cooperation to address. The objective of the United Nations Framework Convention on Climate Change (UNFCCC), which virtually all nations, including the U.S., have ratified, is to stabilize greenhouse gas (GHG) concentrations at a level that will not cause “dangerous anthropogenic (human-induced) interference with the climate system.”<sup>1</sup> Due to the persistence of some GHGs in the atmosphere, significant emissions reductions must be achieved in coming decades to meet the UNFCCC objective. In 2023, the Intergovernmental Panel on Climate Change (IPCC) published its Sixth Assessment Report. The report details the impacts of climate change and mitigation and adaptation strategies. To limit warming to 1.5°C based on 2019 emission levels, global carbon dioxide (CO<sub>2</sub>) emissions need to be reduced by 48% by 2030 and reach net zero in the early 2050s, followed by net negative CO<sub>2</sub> emissions. This requires deep and rapid emission reductions in all sectors.<sup>2</sup> Current national targets under the Paris Agreement would lead to 52–58 billion metric tons or gigatons (Gt) CO<sub>2</sub>-equivalents (CO<sub>2</sub>e) per year by 2030—not enough to meet the 1.5°C target. 2018 GHG emissions were approximately 42 GtCO<sub>2</sub> and would need to drop to between 25-30 GtCO<sub>2</sub> per year by 2030 to remain on target.<sup>3</sup> In 2021, U.S. GHG emissions were 6.3 GtCO<sub>2</sub>e.<sup>4</sup>

Carbon Emission Pathways to Achieve 1.5°C Target<sup>3</sup>



## General Policies

### Market-Based Instruments

- Market-based approaches include carbon taxes, subsidies, and cap-and-trade programs.<sup>5</sup>
- In a tradable carbon permit system, permits equal to an allowed level of emissions are distributed or auctioned. Parties with emissions below their allowance are able to sell their excess permits to other parties that have exceeded their emissions allowance.<sup>5</sup>
- Market-based instruments are recognized for their potential to reduce emissions by allowing for flexibility and ingenuity in the private sector.<sup>5</sup>

### Regulatory Instruments

- Regulatory approaches include non-tradable permits, technology and emissions standards, product bans, and government investment.
- In 2007, the U.S. Supreme Court ruled that CO<sub>2</sub> and other GHG emissions meet the Clean Air Act’s definition of air pollutants, which are regulated by the U.S. Environmental Protection Agency (EPA).<sup>6</sup> After several appeals, the U.S. Court of Appeals upheld the ruling in 2012.<sup>7</sup>
- In the U.S., the Safer Affordable Fuel-Efficient (SAFE) vehicles rule, administered by NHTSA, was implemented in 2020.<sup>8</sup> NHTSA revised the SAFE standards in 2022, setting the Corporate Average Fuel Economy (CAFE) standard to approximately 49 mpg for passenger cars and light trucks by MY2026.<sup>9</sup> The new CAFE standards are projected to reduce fuel use by more than 200 billion gallons through 2050, saving Americans money and cutting CO<sub>2</sub> emissions by 2.5 Gt.<sup>10</sup>

### Voluntary Agreements

- Voluntary agreements are generally made between a government agency and one or more private parties to “achieve environmental objectives or to improve environmental performance beyond compliance.”<sup>11</sup> EPA partners with the public and private sectors to oversee a variety of voluntary programs aimed at reducing GHG emissions, increasing clean energy adoption, and adapting to climate change.<sup>12</sup>

## The Kyoto Protocol

- The Kyoto Protocol came into force on February 16, 2005, and established mandatory, enforceable targets for GHG emissions. Initial emissions reductions for participating countries ranged from –8% to +10% of 1990 levels, while the overall reduction goal was 5% below the 1990 level by 2012. When the first commitment period ended in 2012, the Protocol was amended for a second commitment period; the new overall reduction goal is 18% below 1990 levels by 2020.<sup>13</sup>

## The Paris Agreement

- In December of 2015, all Parties of the UNFCCC reached a climate change mitigation and adaptation agreement, called The Paris Agreement, in order to keep the global temperature increase (from pre-industrial levels) below 2°C.<sup>14</sup>
- The Paris Agreement entered into force on November 4, 2016. As of May 2023, The Paris Agreement had 198 signatories, 195 of which have ratified the agreement.<sup>15</sup>

## Government Action in the U.S.

### Federal Policy

- According to the U.S. Senate, “...Congress should enact a comprehensive and effective national program of mandatory, market-based limits and incentives on emissions of greenhouse gases that slow, stop, and reverse the growth of such emissions at a rate and in a manner that will

