

A Constant Emission Impulse Over Time

Creation of an Emission Impulse

In 2024, a value of 419 ppm for CO₂, 333 ppb for N₂O and around 1,900 ppb for CH₄ was measured at the NOAA observatory on Mauna Loa. Around 1750, these values were 280 ppm for CO₂, 270 ppb for N₂O and 700 ppb for CH₄ (Asadoorian et al. 2006). In 275 years, the concentrations increased by 139 ppm for CO₂, by 63 ppb for N₂O and by 1200 ppb for CH₄. Taking the unit into account, the quantity distribution of the increase has the following composition:

CO ₂ :	99,100 %
N ₂ O:	0,045 %
CH ₄ :	0,856 %

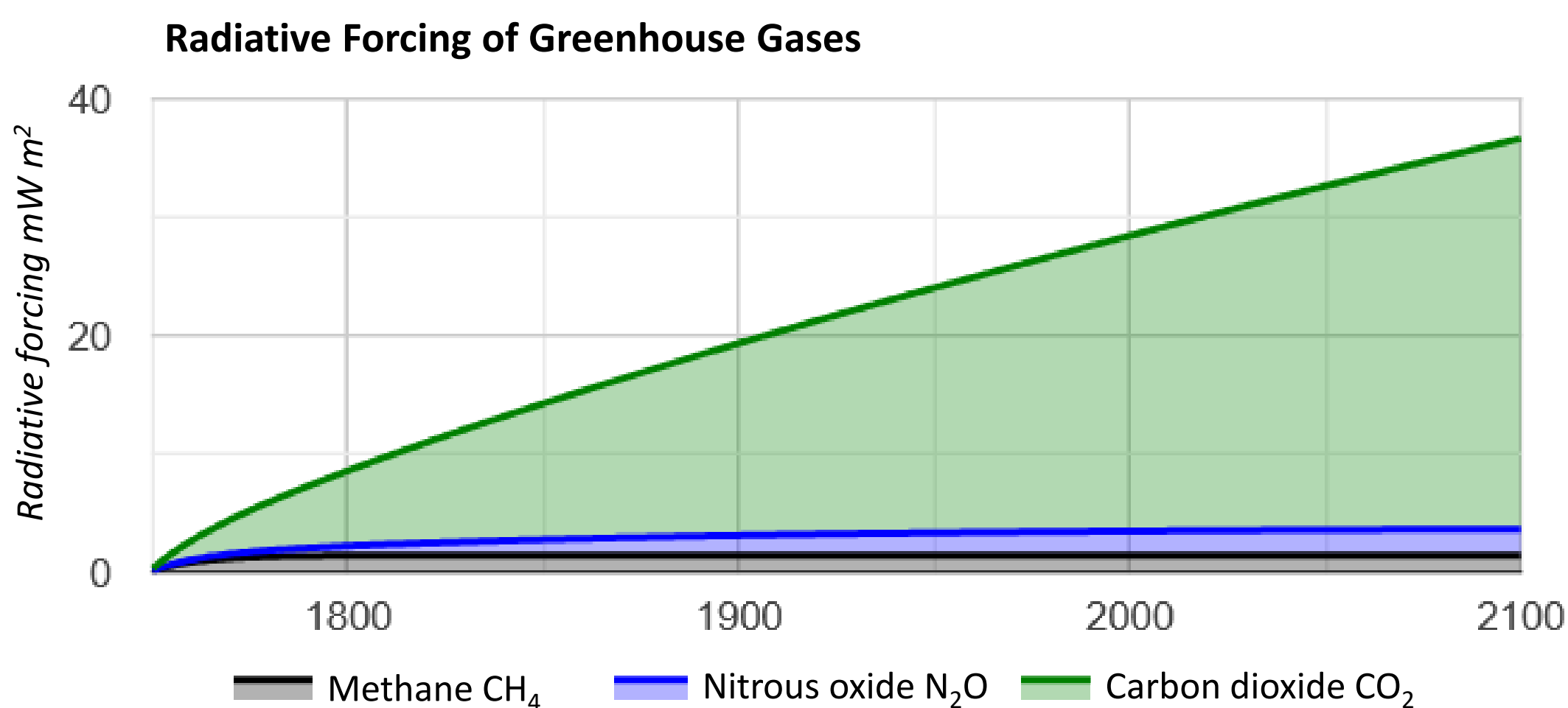
Metriken der GHG-Inventur

Houghton et al. (1993) writes about the introduction of today's dominant metric: An index is developed which allows the climate effects of the emissions of greenhouse gases to be compared. This is termed the Global Warming Potential (GWP). The comparison, a standardization of the 100-year effect based on the effect of CO₂, has resulted in conversion factors that are used in the greenhouse gas inventory. These factors are currently applied in the national GHG inventory (UBA, 2024)

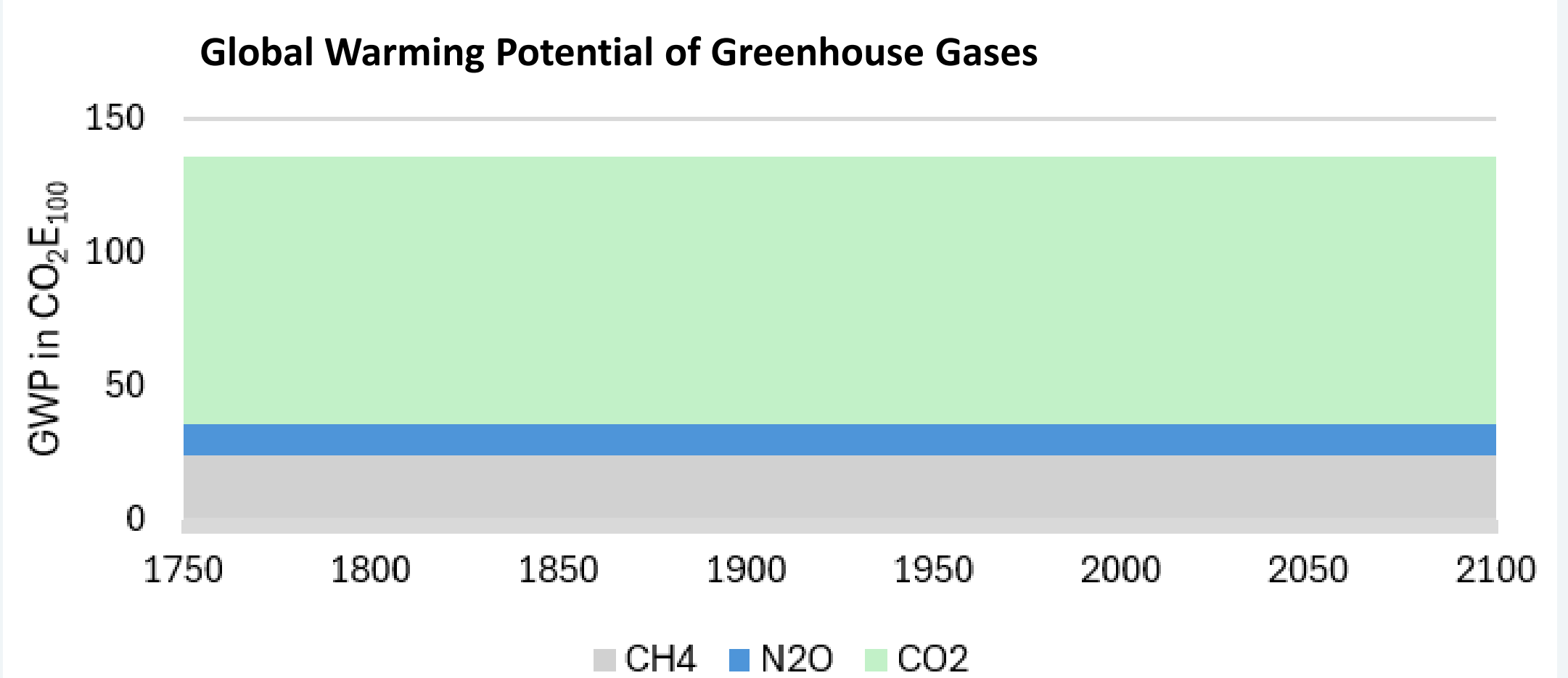
CO ₂ :	1
N ₂ O:	265
CH ₄ :	28

Results of a Pulse per Year from 1750 to 2100

Radiative Forcing (mW m²)



Inventory Value (GWP CO₂e)



The basis of the IPCC's greenhouse gas inventory (IPCC 2006, IPCC 2019) is extremely important for estimating national emission levels. Applying the GWP factors to emission quantities leads to confusing results, as shown by the comparison of the figures. Neither the increase in impact nor the impact ratios are consistent. In any case, a long data series using the GWP method cannot be used to establish a link to demonstrable global warming.

The dilemma: The GWP assessment is positioned in all climate protection legislation as the standard by which reduction targets are required and set. The simple principle of factors from Houghton et al. 1993, although highly distorted, was so easy to understand that it became established. Changing it would be a major challenge.

The core problem: The core problem with the current metric is not the fact that methane, in particular, is overestimated many times over, but that neither politicians nor scientists have properly understood the aggregation effect of carbon dioxide from fossil sources. Occasionally, various countries celebrate small reductions in CO₂ emissions as climate protection, overlooking the fact that they are not protecting the climate, but have only slowed down the rate of temperature increase.

ASADOORIAN, M., M. SAROFIM, J. REILLY, S. PALTSEV and C. FOREST, 2006: Historical anthropogenic emissions inventories for greenhouse gases and major criteria pollutants.

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IPCC, 2006: IPCC Guidelines for National Greenhouse Gas Inventories, Institute for Global Environmental Strategies (IGES), Hayama, Japan

IPCC, 2019: 2019 Refinement to the 2006 IPCC Guidelines