

Global Warming Potential of Methane (GWPM) Relative to Carbon Dioxide (GWPC)

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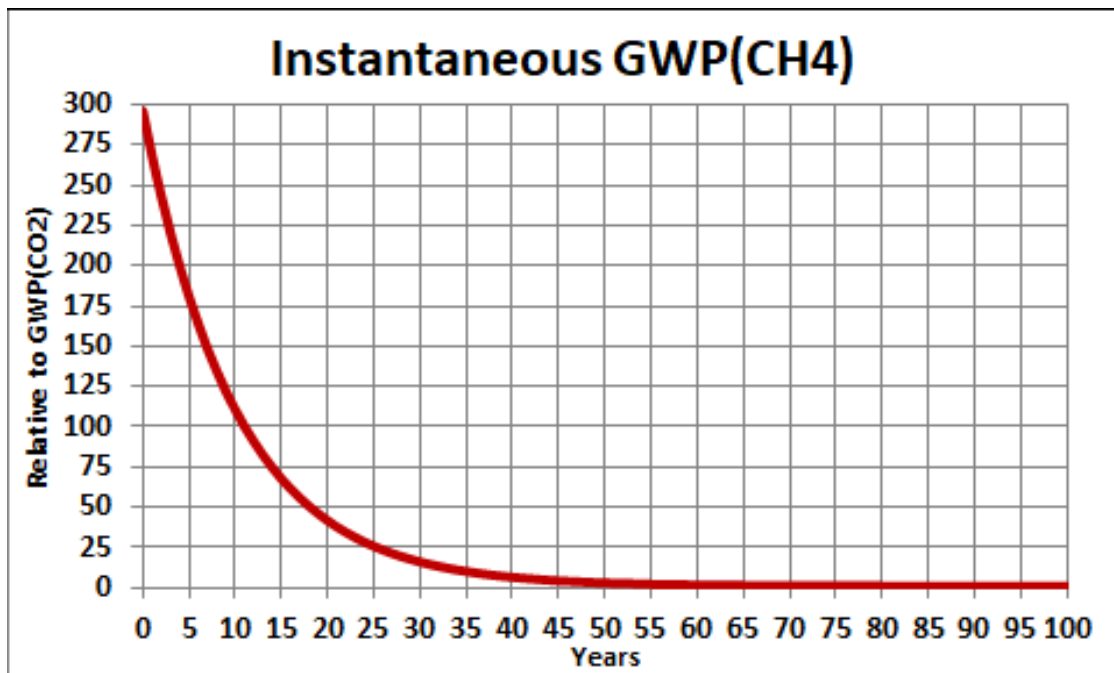
Methane (CH₄) is a very potent global-warming gas. An EPA document states that It has a global-warming potential (GWPM) 28-36, average over 100 years, times the carbon-dioxide (CO₂) global-warming potential, GWPC = 1. Other documents give slightly different numbers; e.g. <https://www.epa.gov/climateleadership/atmospheric-lifetime-and-global-warming-potential-defined> and phys.org.

The value GWPM 32 is used here.

This document uses a time-dependent equation for GWPM involving the [half-life equation](#) and the [half-life of 7 years](#) for the reaction $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$. The equation uses GWPC = 1.

The equation is $GWPM(t) = GWPC \left[1 - \left(\frac{1}{2} \right)^{t/t_h} \right] + GWPM_0 \left(\frac{1}{2} \right)^{t/t_h}$ where $t_h = 7$ years.

The value of $GWPM_0 = 296.2$ yields the following curves



The asymptote is GWPC = 1.

Averaged GWP(CH4)

