

Methane emission reductions in the landfill by composting activity

■ Methan generation potential from food waste in Surabaya [tCH₄/t-Waste]

$$\begin{aligned}
 L_0 &= \text{MCF} && \text{Methane correction factor} \\
 &\times \text{DOC} && \text{Fraction of degradable organic carbon (by weight) in the waste type} \\
 &\times 0.50 \text{ DOC}_F && \text{Fraction of degradable organic carbon dissimilated} \\
 &\times 0.50 F && \text{Fraction of methane in the landfill gas} \\
 &\times 16/12 \\
 &= \underline{0.000 \text{ [tCH}_4\text{/t-Waste]}}
 \end{aligned}$$

■ The amount of food waste applied for the composting activity

$$\begin{aligned}
 \text{MAW} &= \text{Number of family units which compstig activity will be carried out [Units]} \\
 &\times \text{Number of family units which compstig activity will be carried out [kg/family unit/day]} \\
 &\times 365 \\
 &\times 1/1000 \\
 &= \underline{0 \text{ [tCH}_4\text{/t-Waste]}}
 \end{aligned}$$

■ Decay rate for the waste [1/yr]

$$k \quad \text{Decay rate for the waste [1/yr]}$$

■ The amount of Methane avoidance from landfill by composting activity in Surabaya

$$\begin{aligned}
 \text{ER}_y &= 0 \text{ MSW} \\
 &\times 0.000 L_0 && \text{Methan generation potential} \\
 &\times 0.65 \sum (k \times e^{k(T-x)}) && \text{Average value of decomposed ratio during the period} \\
 &\times \phi && \text{Model correction factor to account for model uncertainties} \\
 &= 0 \text{ tCH}_4\text{/yr} \\
 &= 0 \text{ tCO}_2\text{e/yr}
 \end{aligned}$$