$$CO_2 = 10\text{-}3 * Q_{WW} * OD * Eff_{OD} * CF_{CO2} * [(1-MCF_W$$

CO_2 = CO2 emission rate, kg CO2/m3

Q_{WW} = Wastewater influent flow rate, m3/FU

OD = Oxygen demand of wastewater entering the biological treatment unit, determined as COI sample collected after mechanical treatment, g/m³

Eff_{OD} = Biological COD removal efficiency calculated between the post-mechanical-treatmen and the secondary-treatment effluent.

CF_{CO2} = Conversion factor for maximum CO2 generation per unit of oxygen demand 44/32 =

MCF_{WW} = methane correction factor for wastewater treatment unit, indicating the fraction of t

BG_{CH4} = Fraction of carbon as CH4 in generated biogas (default is 0.65)

λ = Biomass yield (g C converted to biomass/g C consumed in the wastewater treatment process

$10\text{-}3$ = Units conversion factor (kg/g)

$$CH_4 = 10\text{-}3 * Q_{WW} * OD * Eff_{OD} * CF_{CH4} * [(MCF_{WW}$$

CH_4 = CH4 emission rate, kg CH4/m3

Q_{WW} = Wastewater influent flow rate, m3/FU

OD = Oxygen demand of influent wastewater to the biological treatment unit determined as eith

Eff_{OD} = Oxygen demand removal efficiency of the biological treatment unit

CFCH4 = 0.50 g CH4/g COD in the adopted RTI oxygen-demand model; RTI (2010), Eq. 3-2 ar

MCF_{WW} = methane correction factor for wastewater treatment unit, indicating the fraction of t demand that is converted anaerobically in the wastewater treatment unit, overloaded

BG_{CH4} = Fraction of carbon as CH4 in generated biogas (default is 0.65)

λ = Biomass yield (g C converted to biomass/g C consumed in the wastewater treatment process

$10\text{-}3$ = Units conversion factor (kg/g)

$$N_2O_{WWTP} = Q_i \times TKN_i \times EF_{N2O} \times 44/28 \times 10-3$$

N_2O_{WWTP} = N2O emissions generated from WWTP process, kg N2O/FU

Q_i = Wastewater influent flow rate, m3/FU

TKNi = influent TKN concentration, g N/m3

EFN2O = N2O emission factor (g N emitted as N2O per g TKN in influent), 0.0050 g N emitted (Chandran, 2010)

44/28 = Molecular weight conversion, g N2O per g N emitted as N2O

10-3 = Units conversion factor (kg/g)

W ×BG CH4)(1−λ)]

0,1856104

	1
) in the composite	679,8
t composite sample	0,44853
= 1.375 g CO2/g	1,375
he influent oxygen	0,3
	0,65
;)	0,45
	0,001

×BG CH4)(1−λ)]

0,0163496

	1
ıer COD, g/m3	679,8
	0,4485
ıd Table 3-2.	0,5
he influent oxygen	0,3
	0,65
;)	0,45
	0,001

0,000876

	1
	111,5
. as N2O/g TKN	0,005
	1,5714
	0,001

CH4,storage =Wsludge,FU ×

Wsludge,FU = mass of waste deposited, kg w
DOC = degradable organic carbon in the ye
DOCf = fraction of DOC that can decompo
MCF = CH 4 correction factor for aerobic d
F = fraction of CH 4 in generated landfil
16/12 = molecular weight ratio CH 4 /C (
4-year storage assumption; k = 0.185 yr^-1 (

DOC × DOCf × MCF × F × 16/12 × (1−e−k(t−td))

	0,0156
et sludge/m³ WW	4,9078
ar of deposition, fraction, kg C/kg waste, untreated Sewage sludge	0,05
se (fraction)	0,5
ecomposition in the year of deposition (fraction)	0,4
l gas (volume fraction)	0,5
ratio)	1,333333333
wet-condition proxy, RTI 2010), delay = 0.5 yr.	0,476647476