

### 2021 GHG Scope 3 Calculation

The performance data reported as of 31st December 2021







Scope 3: Category	GHG Emissions (Unit: tCO2e)		
Downstream Transportation and Distribution	51,804.86		
Purchased Goods and Services	23.59		
Business Travel: - Vehicle - Airplane	<b>903.90</b> - 866.79 - 37.11		
Total GHG (Scope 3) Emission	52,732.35		

### GHG Emission Scope 3: Downstream Transportation and Distribution



From the 2021 performance, only Nam Theun 2 Power Co., Ltd. (NTPC) located in Lao PDR has electric power transmissions to Thailand, the distance from the power plant to the power station is approximately 160 km.

During the transmission, the distribution losses are as below.

- Total electric power transmissions and distribution losses
  - = 4,976,427.747 MWh x 6.07%
  - = 302,069.16 MWh
- Total GHG Emission from electric transmissions and distribution losses
  - $= 302,069 \text{ MWh x } 0.49 \text{ tCO}_2\text{e}/\text{ MWh}$
  - $= 148,013.89 \text{ tCO}_2\text{e}$



Reference: http://www.ppa.egat.co.th/fppdx/index.php/2014-03-10-12-11-43/nam-theun-2

EGCO stakes 35% of the NTPC power plant,
 Therefore, the electric transmissions and distribution losses of EGCO are equal to 51,804.86 tCO<sub>2</sub>e

### Assumption:

- Thailand's average transmission losses rate = 6.07%
   (Reference: https://data.worldbank.org/indicator/EG.ELC.LOSS.ZS)
- EGCO's GHG emission intensity in 2020 is 0.49 tCO<sub>2</sub>e/ MWh

### **GHG Emission Scope 3:**Purchased Goods and Services



Collected information: Amount of paper used in the office during the year 2021

The data collected by

- 1. Used paper: waste treated office paper
- 2. Ordered paper: the number of papers ordered

Total paper = 15,513.90 kg

GHG Emission = 15.52 tons x 1.52 tCO2e/ ton material = 23.59 tCO2e

### Note

- Scope of GHG (Scope 3) report: Subsidiaries and Joint Ventures by EGCO Equity (totally 25 power plants)
- Reference of emission factors: GHG emission factor (office paper) = 0.02 tCO<sub>2</sub>e/t of paper used
   Reference: EPA Emission Factors

# **GHG Emission Scope 3:** Business Travel (Vehicle)

SEGCO GROUP

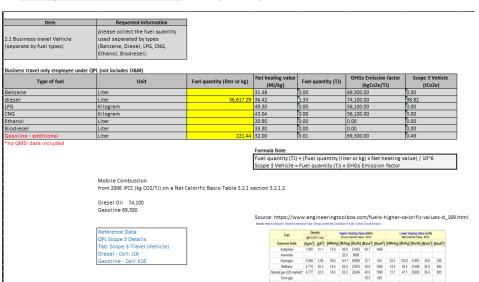
### The data collected by

1. Vehicle: fuel quantity used by separate fuel types

### **Formula Note:**

Fuel quantity (TJ) = (Fuel quantity (liter or kg) x Net heating value) / 10^6 Scope 3 Vehicle = Fuel quantity (TJ) x GHGs Emission factor

Example of data calculation: QPL power plant



### Note:

Scope of GHG (Scope 3) report: Subsidiaries and Joint Ventures by EGCO Equity (totally 25 power plants)

Reference of emission factors: 2006 IPCC

Type of fuel	Net heating value (MJ/kg)	GHGs Emission factor (kgCo2e/TJ)			
Benzene	31.48	69,300.00			
diesel	36.42	74,100.00			
LPG	49.30	56,100.00			
CNG	43.04	56,100.00			
Ethanol	20.90	0.00			
Biodiesel	33.30	0.00			
Gasoline - additional	32.00	69,300.00			

# **GHG Emission Scope 3:** Business Travel (Airplane)



The data collected by

2. Airplane: Travel history

Example of data calculation: QPL power plant

ltem	Requested Information	Fill in the details of traveling in the website below. The emissions will be auto-calculated. (ICAO Carbon Emission Calculator)	Scope of GHG (Scope 3) report: Subsidiaries and Joint Ventures by EGCO Equation (totally 25 power plants)  Reference of emission factors: 2006 IPCC				
2 Business travel (Airplane)	Collect all the travel receipts includes  •One way/ Round trip  •Cabin class (Economy/ Premium)  •Number of passengers  •Route (Departure /Arrival location or airport)	https://www.icao.int/environmental- protection/Carbonoffset/Pages/defa ult.aspx					
kample							
			No. of			Total passengers'	
Trip No.	Туре	Cabin Class	passenger	From City/Airpot	To City/Airport	CO2/journey (KG)	
	1 Round Trip	Economy	1	BKK	NRT	5224.8	
Business travel only employee under QPL ( Trip No.	not includes O&M)		No. of passenger	From City/Airpot	To City/Airport	Total passengers' CO2/journey (KG)	
	1 One Way	Economy		ВКК	MNL	437.70	
	2 Round Trip	Economy		2 BKK	MNL	583.60	
	3 One Way	Business		Johannesburg	MNL	1,709.28	
	4 One Way	Business		1 Capetown	MNL	1,641.94	
	5 One Way	Business		MNL	Capetown	3,283.87	
	6 One Way	Business		MNL	Johannesbur	3,418.56	
	7 Round Trip	Business		MNL	Capetown	6,567.74	
	8 Round Trip	Business		2 Johannesburg	MNL	6,837.12	
	9 Round Trip	Business	T .	MNL	Memphis	4.044.25	
	9 Kouna Irip	business		ZIMINL	Memphis	4,941.36	
	10* One Way	Business		I BKK	MNL	145.90	

