Monitoring Report Sheet (Input Sheet) [For Verification]

Table 1: Parameters monitored *ex post*

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Monitoring period	**Monitoring point No.**	**Parameters**	**Description of data**	**Monitored Values**	**Units**	**Monitoring option**	**Source of data**	**Measurement methods and procedures**	**Monitoring frequency**	**Other comments**
01/04/2018 - 31/12/2018	(1)	$N_{i,k,p}$	Production output of lead acid battery type *i* in the project factory *k* during the period *p*	-	units/p	Option C	Monitored data	A production output data is stored in the production management system.	Continuously	Input on "MRS (input_separate)"
01/04/2018 - 31/12/2018	(2)	AH_i	Capacity of lead acid battery type *i*	-	Ah/unit	-	Product catalogues or specifications	Values specified in product catalogues or specifications	Each battery produced	Input on "MRS (input_separate)"
01/04/2018 - 31/12/2018	(3)	$EC_{PJ,k,p}$	Electricity consumption by the container formation facilities including chillier and cooling tower in the project factory *k* during the period *p*	-	MWh/p	Option C	Monitored data	Data is measured by measuring equipment. The measuring equipment is replaced or calibrated at an interval following the regulations in the country in which the measuring equipment is commonly used or according to the manufacturer's recommendation, unless a type approval, manufacturer's specification, or certification issued by an entity accredited under international/national standards for the measuring equipment has been prepared by the time of installation. According to the catalogue by the manufacturer, the accuracy of power meter stays within ±1.0%. Replacement or calibration of the electricity meters is not required for the project period, in accordance with the manufacturer's specification.	Continuously	Input on "MRS (input_separate)"
01/04/2018 - 31/12/2018	(4)	$FC_{PJ,CG,k,p}$	The amount of fuel input for power generation in the project factory *k* during monitoring period *p*	-	mass or volume/p	Option B	Invoice from fuel supply company	Data is collected and recorded from the invoices by the fuel supply company.	Continuously	for Option b) of EFelec,k Input on "MRS (input_separate)"
01/04/2018 - 31/12/2018	(5)	$EG_{PJ,CG,k,p}$	The amount of electricity generated in the project factory *k* during the monitoring period *p*	-	MWh/p	Option C	Monitored data	Data is measured by measuring equipment. The measuring equipment is replaced or calibrated at an interval following the regulations in the country in which the measuring equipment is commonly used or according to the manufacturer's recommendation, unless a type approval, manufacturer's specification, or certification issued by an entity accredited under international/national standards for the measuring equipment has been prepared by the time of installation.	Continuously	for Option b) of EFelec,k Input on "MRS (input_separate)"

Table 2: Project-specific parameters fixed *ex ante*

(a)	(b)	(c)	(d)	(e)	(f)
Parameters	**Description of data**	**Estimated Values**	**Units**	**Source of data**	**Other comments**
$EF_{elec,k}$	[For grid electricity] CO_2 emission factor for electricity consumed in the project factory *k*	-	tCO_2/MWh	[Grid electricity] Ministry of Natural Resources and Environment (MONRE), Vietnamese DNA for CDM unless otherwise instructed by the Joint Committee.	Input on "MPS (input_separate)"
$EF_{elec,k}$	[For captive electricity] CO_2 emission factor for consumed electricity **Option a**	-	tCO_2/MWh	Specification of the captive power generation system provided by the manufacturer. CO2 emission factor of the fossil fuel type used in the captive power generation system.	Calculated on "MPS (input_separate)"
$EF_{elec,k}$	[For captive electricity] CO_2 emission factor for consumed electricity **Option b**	-	tCO_2/MWh	Generated and supplied electricity by the captive power generation system. Fuel amount consumed by the captive power generation system. Net calorific value and CO2 emission factor of the fuel in order of preference: 1) values provided by the fuel supplier; 2) measurement by the project participants; 3) regional or national default values; 4) IPCC default values provided in tables 1.2 and 1.4 of Ch.1 Vol.2 of 2006 IPCC Guidelines on National GHG Inventories. Lower value is applied.	Calculated on "MPS (input_separate)"
$EF_{elec,k}$	[For captive electricity] CO_2 emission factor for consumed electricity **In case the captive electricity generation system meets all of the following conditions;** **- The system is non-renewable generation system** **- Electricity generation capacity of the system is less than or equal to 15 MW**	-	tCO_2/MWh	[Captive electricity with diesel fuel] CDM approved small scale methodology: AMS-I.A. [Captive electricity with natural gas] 2006 IPCC Guidelines on National GHG Inventories for the source of EF of natural gas. CDM Methodological tool "Determining the baseline efficiency of thermal or electric energy generation systems version02.0" for the default efficiency for off-grid power plants.	Calculated on "MPS (input_separate)"
$EF_{fuel,k}$	CO_2 emission factor for fuel applicable to the project factory *k*	-	tCO_2/GJ	Country specific data or IPCC default value from “2006 IPCC Guidelines for National Greenhouse Gas Inventory”. Lower limit value of the default net calorific value is applied.	
$\eta_{elec,CG,k}$	Power generation efficiency of the captive power generation system in the project factory *k*	-	%	Specification of the captive power generation system provided by the manufacturer	Input on "MPS (input_separate)"
$NCV_{fuel,CG,k}$	Net calorific value of fuel consumed by the captive power generation system in the project factory *k*	-	GJ/mass or volume	In order of preference: 1) values provided by the fuel supplier; 2) measurement by the project participants; 3) regional or national default values; 4) IPCC default values provided in table 1.2 of Ch.1 Vol.2 of 2006 IPCC Guidelines on National GHG Inventories. Lower value is applied.	Input on "MPS (input_separate)"
$EF_{fuel,CG,k}$	CO_2 emission factor for fuel consumed by the captive power generation system in the project factory *k*	-	tCO_2/GJ	In order of preference: 1) values provided by the fuel supplier; 2) measurement by the project participants; 3) regional or national default values; 4) IPCC default values provided in table 1.4 of Ch.1 Vol.2 of 2006 IPCC Guidelines on National GHG Inventories. Lower value is applied.	Input on "MPS (input_separate)"

Table3: *Ex-post* calculation of CO_2 emission reductions

Monitoring Period	CO_2 emission reductions	Units
01/04/2018-31/12/2018	1,900	tCO_2/p

[Monitoring option]

Option A	Based on public data which is measured by entities other than the project participants (Data used: publicly recognized data such as statistical data and specifications)
Option B	Based on the amount of transaction which is measured directly using measuring equipments (Data used: commercial evidence such as invoices)
Option C	Based on the actual measurement using measuring equipments (Data used: measured values)

Calculation of reference emissions

	Identification numbers		**Parameters monitored *ex post***				**Project-specific parameters fixed *ex ante***										***Ex-post* calculation of emissions**
Parameters	*k*	*i*	$N_{i,k,p}$	AH_i	$FC_{PJ,CG,k,p}$	$EG_{PJ,CG,k,p}$	$SEC_{RE,i,k}$	$SNHQ_{RE,i,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{fuel,k}$	$\eta_{elec,CG,k}$	$NCV_{fuel,CG,k}$	$EF_{fuel,CG,k}$	$RE_{i,k,p}$
Description of data	Identification number of the factory	Identification number of the project lead acid battery type	Production output of lead acid battery type *i* in the project factory *k* during the period *p*	Capacity of lead acid battery type *i*	The amount of fuel input for power generation in the project factory *k* during monitoring period *p*	The amount of electricity generated in the project factory *k* during the monitoring period *p*	Specific electricity consumption per lead acid battery type *i* by the reference facilities in the project factory *k*	Specific net heat quantity required for fuel consumption per lead acid battery type *i* by the reference facilities in the project factory *k*	[For grid electricity] CO_2 emission factor for electricity consumed in the project factory *k*	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* **Option a**	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* **Option b**	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* ***In case the captive electricity generation system meets all of the following conditions;*** ***- The system is non-renewable generation system*** ***- Electricity generation capacity of the system is less than or equal to 15 MW***	CO_2 emission factor for fuel applicable to the project factory *k*	Power generation efficiency of the captive power generation system in the project factory *k*	Net calorific value of fuel consumed by the captive power generation system in the project factory *k*	CO_2 emission factor for fuel consumed by the captive power generation system in the project factory *k*	Reference emissions to produce lead acid battery type *i* in the project factory *k* during the period *p*
Units	-	-	units/p	Ah/unit	mass or volume/p	MWh/p	kWh/unit	MJ/unit	tCO_2/MWh	tCO_2/MWh	tCO_2/MWh	tCO_2/MWh	tCO_2/GJ	%	GJ/mass or volume	tCO_2/GJ	tCO_2/p
Monitored values	HCEN-VN	HR1221	329,621	5.3	0.00	0.00	0.86	2.66	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	284.0
	HCEN-VN	XTV1255	304	5.5	0.00	0.00	0.89	2.74	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.3
	HCEN-VN	HRL1225	80	6.3	0.00	0.00	0.99	2.99	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.1
	HCEN-VN	HR1227	128,880	6.8	0.00	0.00	1.06	3.15	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	136.0
	HCEN-VN	GP1272	905,597	7.2	0.00	0.00	1.12	3.30	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	1,008.6
	HCEN-VN	HR1232		8.0	0.00	0.00	1.22	3.56	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
	HCEN-VN	XTV1285	1,184	8.5	0.00	0.00	1.29	3.73	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	1.5
	HCEN-VN	HR1234	2,961,289	8.5	0.00	0.00	1.29	3.73	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	3,795.8
	HCEN-VN	UPS12460	327,337	9.0	0.00	0.00	1.36	3.89	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	440.7
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
	Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,667.0

Calculation of project emissions

	Identification numbers	**Parameters monitored *ex post***			**Project-specific parameters fixed *ex ante***							***Ex-post* calculation of emissions**
Parameters	*k*	$EC_{PJ,k,p}$	$FC_{PJ,CG,k,p}$	$EG_{PJ,CG,k,p}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$\eta_{elec,CG,k}$	$NCV_{fuel,CG,k}$	$EF_{fuel,CG,k}$	$PE_{i,p}$
Description of data	Identification number of the factory	Electricity consumption by the container formation facilities including chillier and cooling tower in the project factory *k* during the period *p*	The amount of fuel input for power generation in the project factory *k* during monitoring period *p*	The amount of electricity generated in the project factory *k* during the monitoring period *p*	[For grid electricity] CO_2 emission factor for electricity consumed in the project factory *k*	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* **Option a**	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* **Option b**	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* ***In case the captive electricity generation system meets all of the following conditions;*** ***- The system is non-renewable generation system*** ***- Electricity generation capacity of the system is less than or equal to 15 MW***	Power generation efficiency of the captive power generation system in the project factory *k*	Net calorific value of fuel consumed by the captive power generation system in the project factory *k*	CO_2 emission factor for fuel consumed by the captive power generation system in the project factory *k*	Project emissions in the project factory *k* during the period *p*
Units	-	MWh/p	mass or volume/p	MWh/p	tCO_2/MWh	tCO_2/MWh	tCO_2/MWh	tCO_2/MWh	%	GJ/mass or volume	tCO_2/GJ	tCO_2/p
Monitored values	HCEN-VN	4,619.46			0.815	0.000	0.000	0.000	0.00	0.000	0.000	3,766.7
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
	Total	-	-	-	-	-	-	-	-	-	-	3,766.7

Monitoring Spreadsheet: JCM_VN_AM009_ver01.1

Reference Number: VN010

Monitoring Report Sheet (Calculation Process Sheet) [For Verification]

1. Calculations for emission reductions	Fuel type	Value	Units	Parameter
Emission reductions during the period *p*		1,900.2	tCO_2/p	ER_p
2. Selected default values, etc.				
N/A				
3. Calculations for reference emissions				
Reference emissions during the period *p*		5,667.0	tCO_2/p	RE_p
Reference emissions during the period *p*	N/A	5,667.0	tCO_2/p	RE_p
4. Calculations of the project emissions				
Project emissions during the period *p*		3,766.7	tCO_2/p	PE_p
Project emissions during the period *p*	N/A	3,766.7	tCO_2/p	PE_p

[List of Default Values]

CO_2 emission factor for consumed electricity [Captive electricity with diesel fuel]	0.8	tCO_2/MWh
CO_2 emission factor for consumed electricity [Captive electricity with natural gas]	0.46	tCO_2/MWh

Monitoring Report Sheet (Input Sheet) [For Verification]

Table 1: Parameters monitored *ex post*

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Monitoring period	**Monitoring point No.**	**Parameters**	**Description of data**	**Monitored Values**	**Units**	**Monitoring option**	**Source of data**	**Measurement methods and procedures**	**Monitoring frequency**	**Other comments**
01/01/2019 -30/6/2019	(1)	$N_{i,k,p}$	Production output of lead acid battery type *i* in the project factory *k* during the period *p*	-	units/p	Option C	Monitored data	A production output data is stored in the production management system.	Continuously	Input on "MRS (input_separate)"
01/01/2019 -30/6/2019	(2)	AH_i	Capacity of lead acid battery type *i*	-	Ah/unit	-	Product catalogues or specifications	Values specified in product catalogues or specifications	Each battery produced	Input on "MRS (input_separate)"
01/01/2019 -30/6/2019	(3)	$EC_{PJ,k,p}$	Electricity consumption by the container formation facilities including chillier and cooling tower in the project factory *k* during the period *p*	-	MWh/p	Option C	Monitored data	Data is measured by measuring equipment. The measuring equipment is replaced or calibrated at an interval following the regulations in the country in which the measuring equipment is commonly used or according to the manufacturer's recommendation, unless a type approval, manufacturer's specification, or certification issued by an entity accredited under international/national standards for the measuring equipment has been prepared by the time of installation. According to the catalogue by the manufacturer, the accuracy of power meter stays within ±1.0%. Replacement or calibration of the electricity meters is not required for the project period, in accordance with the manufacturer's specification.	Continuously	Input on "MRS (input_separate)"
01/01/2019 -30/6/2019	(4)	$FC_{PJ,CG,k,p}$	The amount of fuel input for power generation in the project factory *k* during monitoring period *p*	-	mass or volume/p	Option B	Invoice from fuel supply company	Data is collected and recorded from the invoices by the fuel supply company.	Continuously	for Option b) of EFelec,k Input on "MRS (input_separate)"
01/01/2019 -30/6/2019	(5)	$EG_{PJ,CG,k,p}$	The amount of electricity generated in the project factory *k* during the monitoring period *p*	-	MWh/p	Option C	Monitored data	Data is measured by measuring equipment. The measuring equipment is replaced or calibrated at an interval following the regulations in the country in which the measuring equipment is commonly used or according to the manufacturer's recommendation, unless a type approval, manufacturer's specification, or certification issued by an entity accredited under international/national standards for the measuring equipment has been prepared by the time of installation.	Continuously	for Option b) of EFelec,k Input on "MRS (input_separate)"

Table 2: Project-specific parameters fixed *ex ante*

(a)	(b)	(c)	(d)	(e)	(f)
Parameters	**Description of data**	**Estimated Values**	**Units**	**Source of data**	**Other comments**
$EF_{elec,k}$	[For grid electricity] CO_2 emission factor for electricity consumed in the project factory *k*	-	tCO_2/MWh	[Grid electricity] Ministry of Natural Resources and Environment (MONRE), Vietnamese DNA for CDM unless otherwise instructed by the Joint Committee.	Input on "MPS (input_separate)"
$EF_{elec,k}$	[For captive electricity] CO_2 emission factor for consumed electricity **Option a**	-	tCO_2/MWh	Specification of the captive power generation system provided by the manufacturer. CO2 emission factor of the fossil fuel type used in the captive power generation system.	Calculated on "MPS (input_separate)"
$EF_{elec,k}$	[For captive electricity] CO_2 emission factor for consumed electricity **Option b**	-	tCO_2/MWh	Generated and supplied electricity by the captive power generation system. Fuel amount consumed by the captive power generation system. Net calorific value and CO2 emission factor of the fuel in order of preference: 1) values provided by the fuel supplier; 2) measurement by the project participants; 3) regional or national default values; 4) IPCC default values provided in tables 1.2 and 1.4 of Ch.1 Vol.2 of 2006 IPCC Guidelines on National GHG Inventories. Lower value is applied.	Calculated on "MPS (input_separate)"
$EF_{elec,k}$	[For captive electricity] CO_2 emission factor for consumed electricity **In case the captive electricity generation system meets all of the following conditions;** **- The system is non-renewable generation system** **- Electricity generation capacity of the system is less than or equal to 15 MW**	-	tCO_2/MWh	[Captive electricity with diesel fuel] CDM approved small scale methodology: AMS-I.A. [Captive electricity with natural gas] 2006 IPCC Guidelines on National GHG Inventories for the source of EF of natural gas. CDM Methodological tool "Determining the baseline efficiency of thermal or electric energy generation systems version02.0" for the default efficiency for off-grid power plants.	Calculated on "MPS (input_separate)"
$EF_{fuel,k}$	CO_2 emission factor for fuel applicable to the project factory *k*	-	tCO_2/GJ	Country specific data or IPCC default value from “2006 IPCC Guidelines for National Greenhouse Gas Inventory”. Lower limit value of the default net calorific value is applied.	
$\eta_{elec,CG,k}$	Power generation efficiency of the captive power generation system in the project factory *k*	-	%	Specification of the captive power generation system provided by the manufacturer	Input on "MPS (input_separate)"
$NCV_{fuel,CG,k}$	Net calorific value of fuel consumed by the captive power generation system in the project factory *k*	-	GJ/mass or volume	In order of preference: 1) values provided by the fuel supplier; 2) measurement by the project participants; 3) regional or national default values; 4) IPCC default values provided in table 1.2 of Ch.1 Vol.2 of 2006 IPCC Guidelines on National GHG Inventories. Lower value is applied.	Input on "MPS (input_separate)"
$EF_{fuel,CG,k}$	CO_2 emission factor for fuel consumed by the captive power generation system in the project factory *k*	-	tCO_2/GJ	In order of preference: 1) values provided by the fuel supplier; 2) measurement by the project participants; 3) regional or national default values; 4) IPCC default values provided in table 1.4 of Ch.1 Vol.2 of 2006 IPCC Guidelines on National GHG Inventories. Lower value is applied.	Input on "MPS (input_separate)"

Table3: *Ex-post* calculation of CO_2 emission reductions

Monitoring Period	CO_2 emission reductions	Units
01/01/2019-30/6/2019	1,388	tCO_2/p

[Monitoring option]

Option A	Based on public data which is measured by entities other than the project participants (Data used: publicly recognized data such as statistical data and specifications)
Option B	Based on the amount of transaction which is measured directly using measuring equipments (Data used: commercial evidence such as invoices)
Option C	Based on the actual measurement using measuring equipments (Data used: measured values)

Calculation of reference emissions

	Identification numbers		Parameters monitored *ex post*				Project-specific parameters fixed *ex ante*										***Ex-post*** **calculation of emissions**
Parameters	*k*	*i*	$N_{i,k,p}$	AH_i	$FC_{PJ,CG,k,p}$	$EG_{PJ,CG,k,p}$	$SEC_{RE,i,k}$	$SNHQ_{RE,i,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{fuel,k}$	$\eta_{elec,CG,k}$	$NCV_{fuel,CG,k}$	$EF_{fuel,CG,k}$	$RE_{i,k,p}$
Description of data	Identification number of the factory	Identification number of the project lead acid battery type	Production output of lead acid battery type *i* in the project factory *k* during the period *p*	Capacity of lead acid battery type *i*	The amount of fuel input for power generation in the project factory *k* during monitoring period *p*	The amount of electricity generated in the project factory *k* during the monitoring period *p*	Specific electricity consumption per lead acid battery type *i* by the reference facilities in the project factory *k*	Specific net heat quantity required for fuel consumption per lead acid battery type *i* by the reference facilities in the project factory *k*	[For grid electricity] CO_2 emission factor for electricity consumed in the project factory *k*	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* **Option a**	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* **Option b**	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* ***In case the captive electricity generation system meets all of the following conditions;*** ***- The system is non-renewable generation system*** ***- Electricity generation capacity of the system is less than or equal to 15 MW***	CO_2 emission factor for fuel applicable to the project factory *k*	Power generation efficiency of the captive power generation system in the project factory *k*	Net calorific value of fuel consumed by the captive power generation system in the project factory *k*	CO_2 emission factor for fuel consumed by the captive power generation system in the project factory *k*	Reference emissions to produce lead acid battery type *i* in the project factory *k* during the period *p*
Units	-	-	units/p	Ah/unit	mass or volume/p	MWh/p	kWh/unit	MJ/unit	tCO_2/MWh	tCO_2/MWh	tCO_2/MWh	tCO_2/MWh	tCO_2/GJ	%	GJ/mass or volume	tCO_2/GJ	tCO_2/p
Monitored values	HCEN-VN	HR1221	411,744	5.3	0.00	0.00	0.86	2.66	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	354.7
	HCEN-VN	XTV1255	272	5.5	0.00	0.00	0.89	2.74	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.2
	HCEN-VN	HRL1225		6.3	0.00	0.00	0.99	2.99	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
	HCEN-VN	HR1227	132,592	6.8	0.00	0.00	1.06	3.15	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	140.0
	HCEN-VN	GP1272	516,144	7.2	0.00	0.00	1.12	3.30	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	574.8
	HCEN-VN	HR1232	528	8.0	0.00	0.00	1.22	3.56	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.6
	HCEN-VN	XTV1285	3,808	8.5	0.00	0.00	1.29	3.73	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	4.9
	HCEN-VN	HR1234	1,981,136	8.5	0.00	0.00	1.29	3.73	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	2,539.4
	HCEN-VN	UPS12460	456,288	9.0	0.00	0.00	1.36	3.89	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	614.4
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
			0	0.0	0.00	0.00	0	0	0.815	0.000	0.000	0.000	0.062	0.00	0.000	0.000	0.0
	Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,229.1

Calculation of project emissions

	Identification numbers	**Parameters monitored *ex post***			**Project-specific parameters fixed *ex ante***							***Ex-post* calculation of emissions**
Parameters	*k*	$EC_{PJ,k,p}$	$FC_{PJ,CG,k,p}$	$EG_{PJ,CG,k,p}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$EF_{elec,k}$	$\eta_{elec,CG,k}$	$NCV_{fuel,CG,k}$	$EF_{fuel,CG,k}$	$PE_{i,p}$
Description of data	Identification number of the factory	Electricity consumption by the container formation facilities including chillier and cooling tower in the project factory *k* during the period *p*	The amount of fuel input for power generation in the project factory *k* during monitoring period *p*	The amount of electricity generated in the project factory *k* during the monitoring period *p*	[For grid electricity] CO_2 emission factor for electricity consumed in the project factory *k*	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* **Option a**	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* **Option b**	[For captive electricity] CO_2 emission factor for consumed electricity in the project factory *k* ***In case the captive electricity generation system meets all of the following conditions;*** ***- The system is non-renewable generation system*** ***- Electricity generation capacity of the system is less than or equal to 15 MW***	Power generation efficiency of the captive power generation system in the project factory *k*	Net calorific value of fuel consumed by the captive power generation system in the project factory *k*	CO_2 emission factor for fuel consumed by the captive power generation system in the project factory *k*	Project emissions in the project factory *k* during the period *p*
Units	-	MWh/p	mass or volume/p	MWh/p	tCO_2/MWh	tCO_2/MWh	tCO_2/MWh	tCO_2/MWh	%	GJ/mass or volume	tCO_2/GJ	tCO_2/p
Monitored values	HCEN-VN	3,483.30			0.815	0.000	0.000	0.000	0.00	0.000	0.000	2,840.3
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
					0.000	0.000	0.000	0.000	0.00	0.000	0.000	0.0
	Total	-	-	-	-	-	-	-	-	-	-	2,840.3

Monitoring Spreadsheet: JCM_VN_AM009_ver01.1

Reference Number: VN010

Monitoring Report Sheet (Calculation Process Sheet) [For Verification]

1. Calculations for emission reductions	Fuel type	Value	Units	Parameter
Emission reductions during the period *p*		1,388.8	tCO_2/p	ER_p
2. Selected default values, etc.				
N/A				
3. Calculations for reference emissions				
Reference emissions during the period *p*		4,229.1	tCO_2/p	RE_p
Reference emissions during the period *p*	N/A	4,229.1	tCO_2/p	RE_p
4. Calculations of the project emissions				
Project emissions during the period *p*		2,840.3	tCO_2/p	PE_p
Project emissions during the period *p*	N/A	2,840.3	tCO_2/p	PE_p

[List of Default Values]

CO_2 emission factor for consumed electricity [Captive electricity with diesel fuel]	0.8	tCO_2/MWh
CO_2 emission factor for consumed electricity [Captive electricity with natural gas]	0.46	tCO_2/MWh