

# **IGES Experience of developing Excel-based worksheets**

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# IGES CDM ERs Calculation Sheet Series

- ACM0010 Version 5 (Consolidated methodology for GHG emission reductions from manure management systems)
- ACM0012 Version 3.2(Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects)
- ACM0014 Version 4(Mitigation of greenhouse gas emissions from treatment of industrial wastewater)
- AMS-III.H. Version 15(Methane recovery in wastewater treatment)
- AMS-III.D. Version 16(Methane recovery in animal manure management systems)

[http://www.iges.or.jp/en/cdm/report\\_ers.html](http://www.iges.or.jp/en/cdm/report_ers.html)

# IGES CDM ERs Calculation Sheet Series

- Providing a simplified spreadsheet for demonstrating emission reductions based on the approved methodologies
- Providing estimated emission reductions by entering only several key parameters
- Providing detailed calculating formulas in the spread sheet so that you will be able to modify any conditions or assumptions based on your own interests
- Using for training materials of IGES CDM Capacity Building Activities in the Asia region

# How to use ERs calculation sheet (1)

## AMS-III.D./Version 16: Methane recovery in animal manure management systems

1 Input selected values on the **“Data”** sheet of an excel file

Data	Parameter	Unit	Data Input
Region	-	-	Asia
Annual average number of breeding swine	$N_{LT\_breed}$	n	2,000
Average weight of breeding swine	$W_{site\_breed}$	kg	150
Annual average number of market swine	$N_{LT\_market}$	n	15,000
Average animal weight of market swine	$W_{site\_market}$	kg	70

ER Result	tCO <sub>2e</sub> /yr	9,104
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**9,104 t-CO<sub>2e</sub>**  
Estimated emission reductions  
based on the assumption

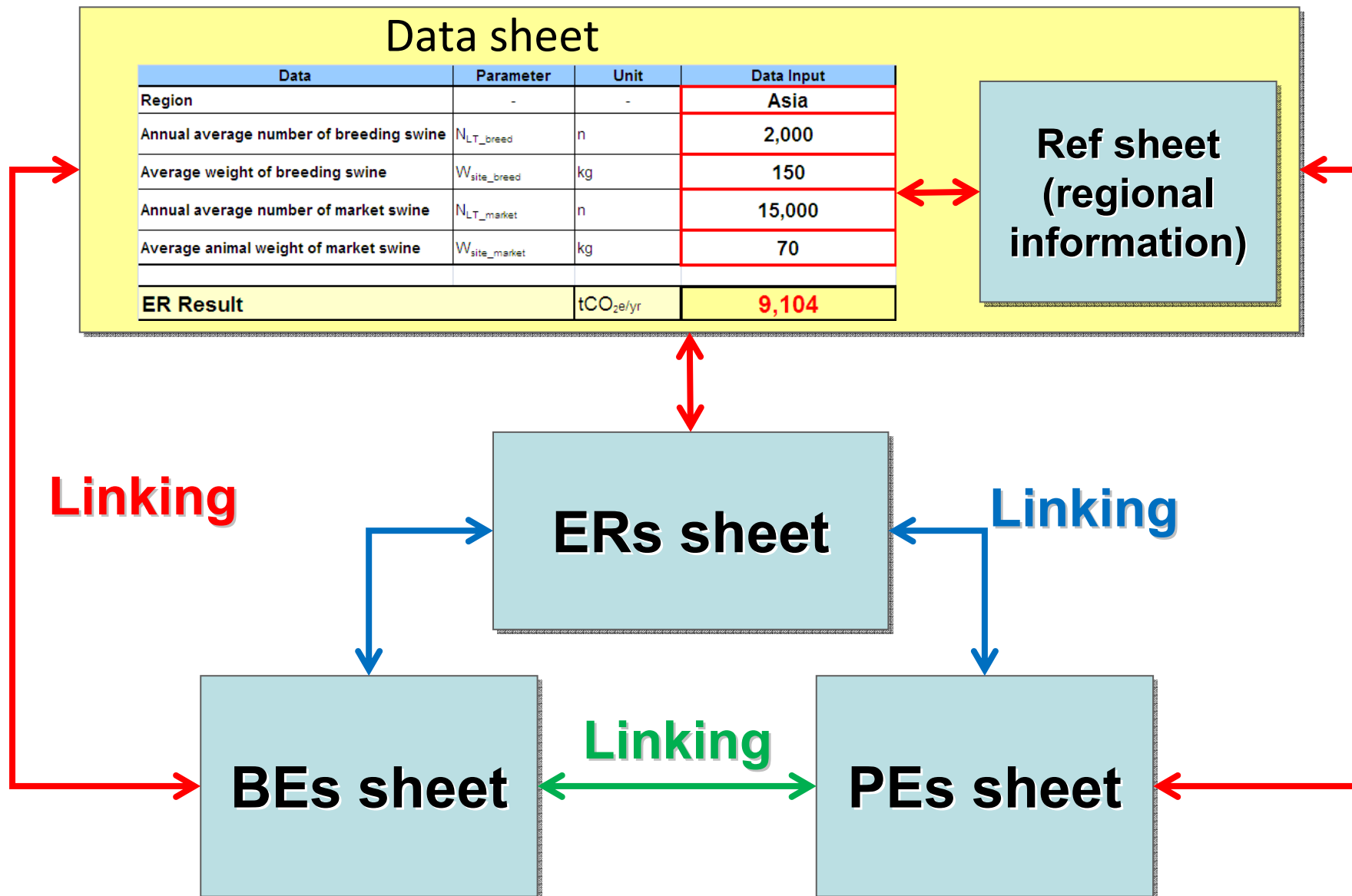
# How to use ERs calculation sheet (2)

## AMS-III.D./Version 16: Methane recovery in animal manure management systems

2 Change the value of data input in the “Data” sheet if the assumption and condition are different from a proposed project

Data	Parameter	Unit	Data Input	Assumption
Annual methane conversion factor (MCF) for current manure management system	$MCF_j$	-	0.78	Current manure management system is uncovered anaerobic lagoon with annual average temperature 20 degrees celcius
Number of days in year y where the treatment was operational	$n_{dy}$	days	365	The treatment plant would be operated throughout the year
Fraction of manure handled in the system	MS%	%	100%	Assume that all manure is collected and treated to the system
Electricity and thermal energy consumption in the absence of the project and in the proeject	$PE_{elect,y}, PE_{heat,j,y}$	MWh or MJ	0	No energy consumption at current management and in the project
Flare efficiency	$\eta_{flare,h}$	%	0.9	Flaring system is enclosed
Volumetric flow rate of the residual gas in dry basis at normal conditions	$FV_{RG,h}$	$m^3/h$	100	Assumption
Concentration of methane in the biogas	$f_{CH_4,RG,h}$	$kg\ CH_4/m^3$	0.43008	Applied an expected fraction of methane in biogas of $0.60\ m^3CH_4/m^3$ multiplied by the density of methane at normal conditions of 0.7168
Dry matter content of the manure when removed from the animal barns	-	%	10%	Assumption
Annual average interval between manure collection and delivery for treatment	$AI_j$	days	20	Assumption
Annual methane conversion factor (MCF) for storage of manure	$MCF_1$	-	0.42	Type of storage of manure before being fed into anaerobic digester is liquid/slurry without natural crust cover

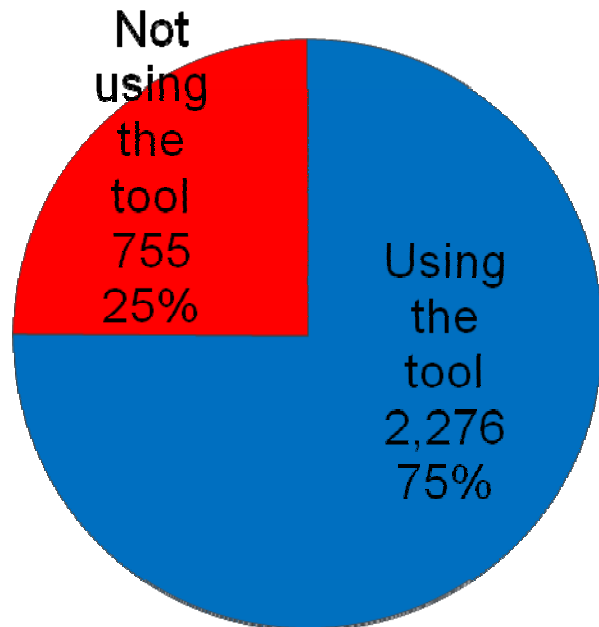
# Structure of ERs calculation sheet



# Grid Emission Factor Calculation Sheet

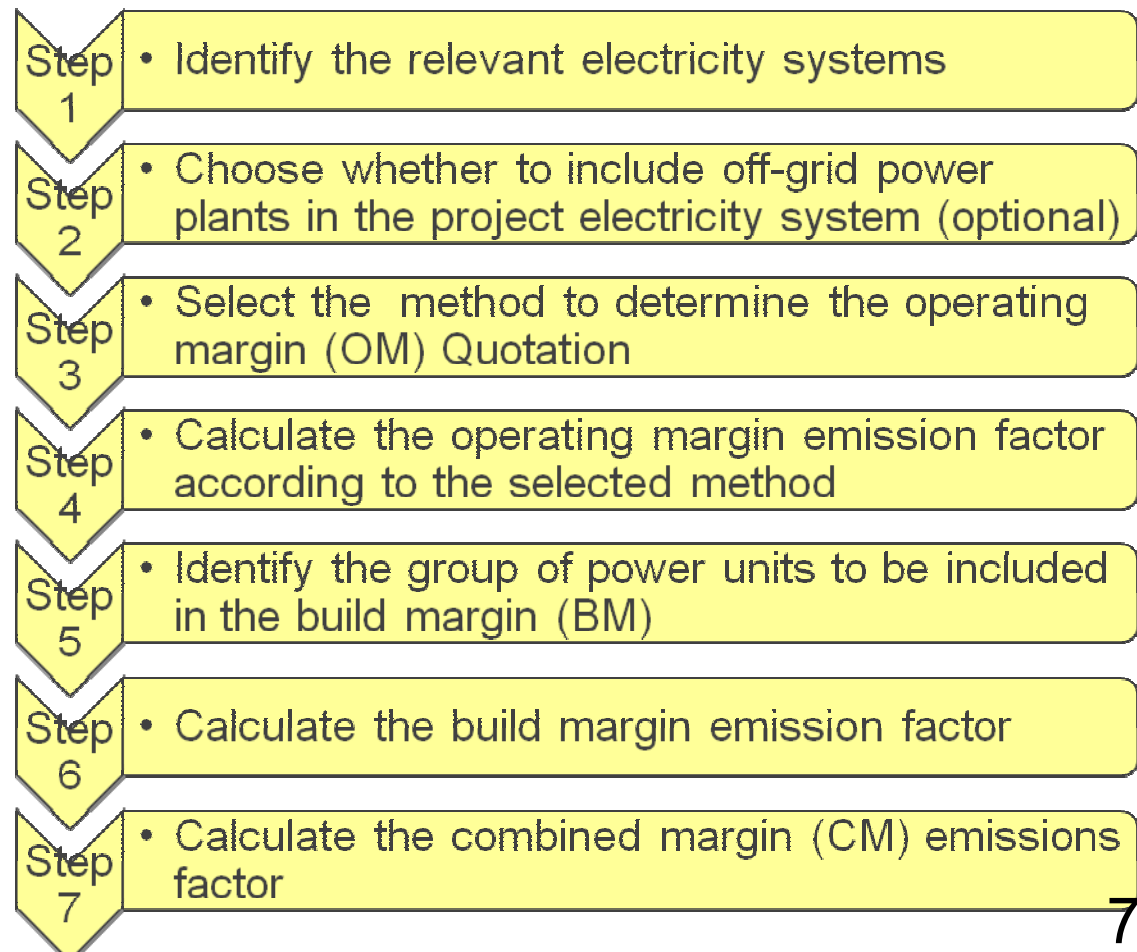
Providing a simplified spreadsheet for calculating grid emission factor from the power system based on the approved methodological tool.

## The share of using the tool in registered projects

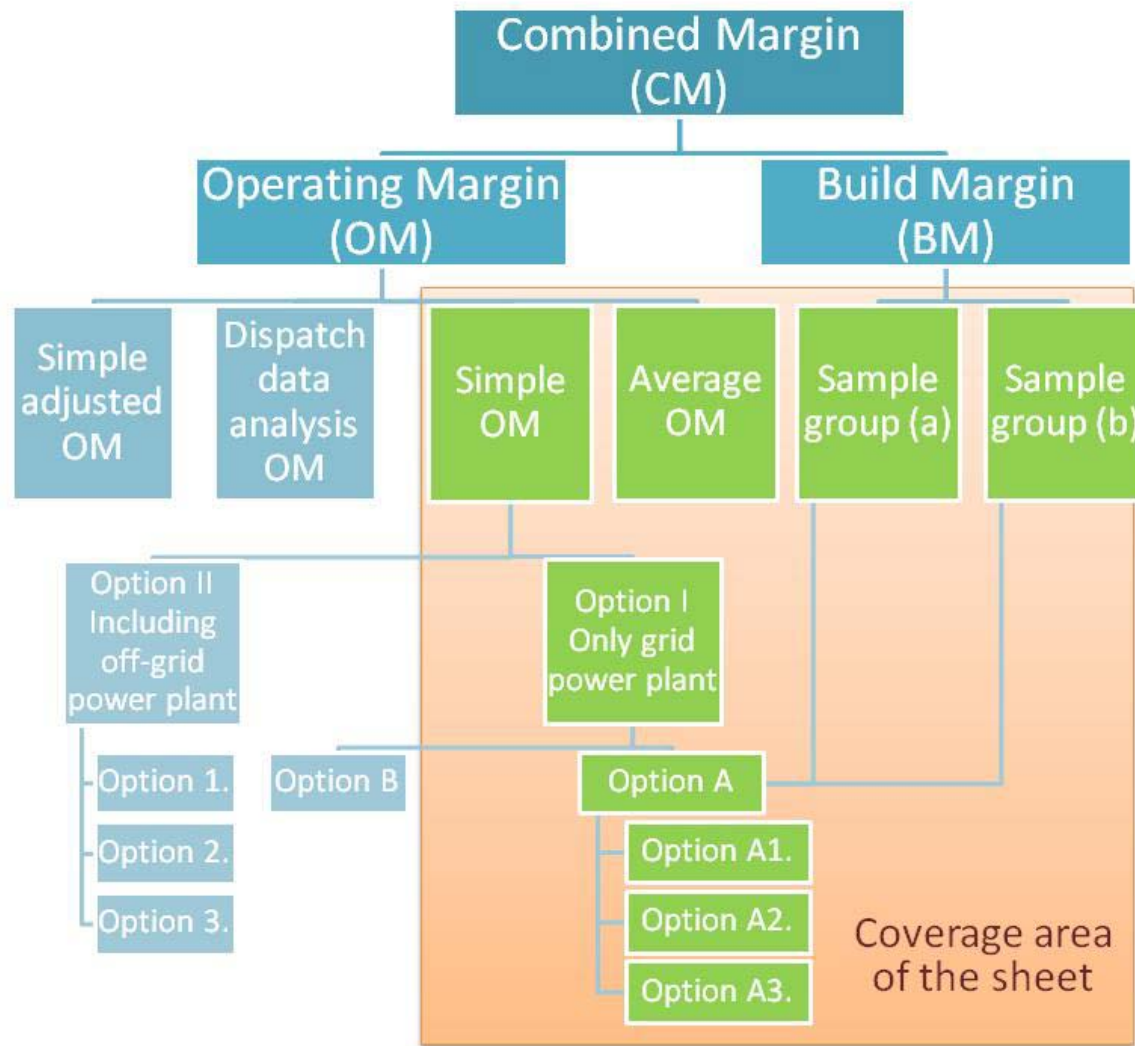


Source: IGES CDM project database, May 2011

## The calculation procedure in the tool



# Structure of GEFs Calculation Sheet



## Automation

- Identification of low cost /must run resources
- Calculation with IPCC's default values
- BM sample group selection

## Required data

### for use of the sheet

Data from each of power plants connected the grid

- Net Electricity Generation
- Type of Fuel
- Commission year
- Fuel consumption (if available)

Data vintage:

Ex-ante (3years)