



Part 3A – Indirect GHG from Cement Manufacturing

Calculation of Greenhouse Gas (GHG) Inventory for Indonesia Cement Industries



Indirect Emission

- Indirect GHG emissions are emissions that are a consequence of the operations of the reporting entity, but occur at sources owned or controlled by another entity. Cement production is associated with indirect greenhouse gas emissions from various sources. Key examples include the CO₂ emissions from:
 - External production of electricity consumed by cement producers;
 - Production of clinker bought from other producers and interground with own production;
 - Production and processing of conventional and alternative fuels by third parties;
 - Transport of inputs (raw materials, fuels) and outputs (cement, clinker) by third parties.

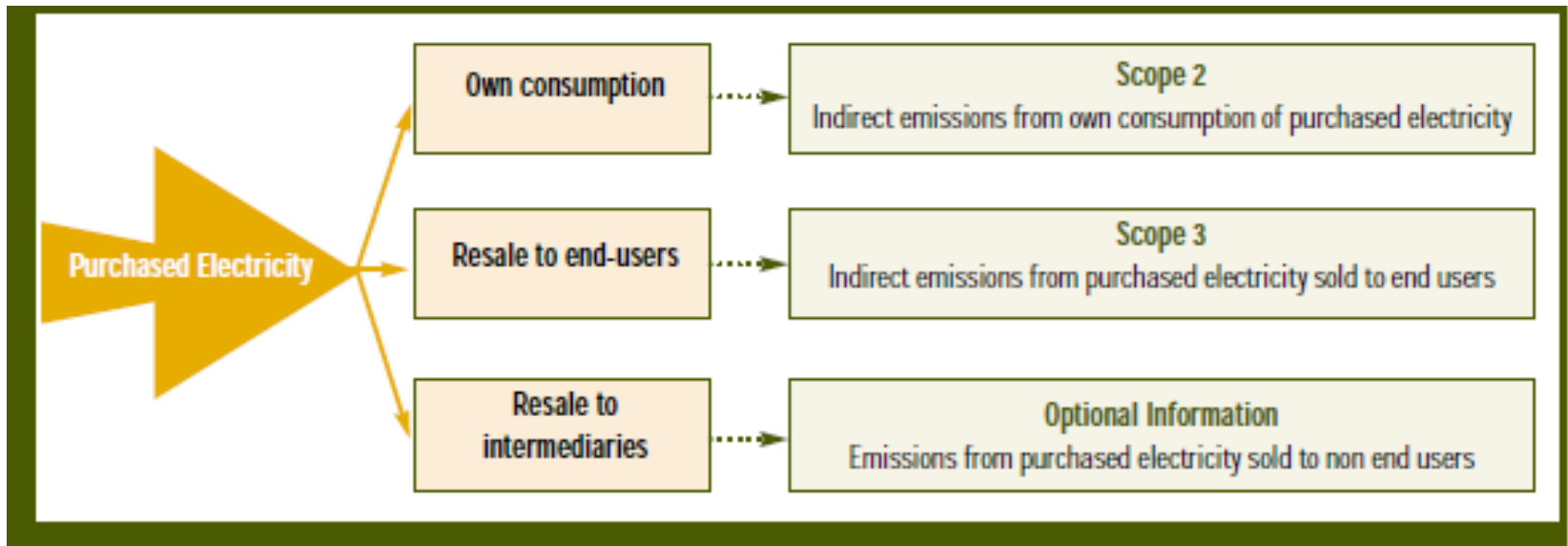


Data on indirect emissions as follows :

- **CO2 from external electricity production** shall be calculated based on the measured delivery of grid electricity and, preferentially, emission factors obtained from the electricity supplier (default = 891 kg CO2/MWh).
- Alternatively it is recommended to use governmental data for the national power grid (default = 770 kg CO2/MWh)
- Such factors are based on IEA data which are updated annually, (see www.ghgprotocol.org/standard/tools.htm for the latest update). In accordance with requirements of the revised



Accounting for the Indirect GHG Emission with Purchased Electricity



Accounting for the indirect GHG emissions associated with purchased electricity



CO₂ from production of bought clinker

- Shall be calculated based on the net clinker transfer (bought clinker minus sold clinker plus internal clinker transfer) of the reporting entity, and the emission factor of the clinker.
- With respect to clinker transfers within the company, the real emission factor of the sending plant should be used. If clinker is bought externally, this value is usually not available (865 kg CO₂/t Cl_i)
- In this case a default value from the GNR website shall be used (see www.wbcSDcement.org, look for Getting the Numbers Right, GNR). These values are updated regularly by the CSI.



- Please note that the default emission factor of 865 kg CO₂/t Cli should only be used for calculating the indirect emissions impact associated with net clinker purchases.
- The same default emission factor should not be used for calculating the gross and net **direct emissions** of the reporting company.



- The approaches for calculating these two types of indirect emissions are summarized in Table 2. Quantification of other indirect emissions is not required by this protocol.
- This applies, in particular, for indirect emissions related to transports.



Table 2: Parameters and data sources for calculation of indirect CO₂ emissions as required by this protocol

Emission	Parameters	Units	Source of parameters
CO ₂ from external power prod. (indirect emission)	Power bought from external grid Emission factor excl. T&D losses	GWh t CO ₂ /GWh	Measured at plant level Supplier-specific value or country grid factor
CO ₂ from clinker bought (indirect emission)	Net clinker purchases Emission factor	t cli t CO ₂ /t cli	Measured at plant level (bought minus sold clinker + internal clinker transfer) Default factor (from GNR data base)