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Challenges for the database development in BRIC countries – What is the need for guidance?

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Expectations for the guidance

From the standpoint of a database developer whose database is still under development,

- The guidance should be a practical SOLUTION.
  - Software-oriented where possible, instead of books
- The guidance should has a core and options. Existing databases are too complicated to be the model for a database under development, e.g.
  - Instead of covering dozens of impact categories and thousands of substances, providing an impact-specific guidance.
  - Instead of too much information in documentation, identifying key information.
- The guidance should merge the diverging nomenclature and documentation formats.

A suggestion for the guidance

Behind each number in input/output sheet, there are…

- hundreds raw data from various literatures
- calculation steps

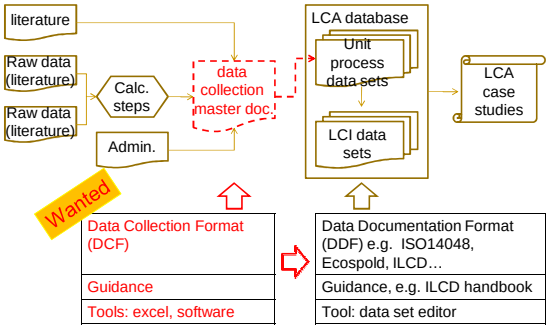
Example: Chinese average SO_2 emission from 1 kWH coal-fired power generation

$$5.68g/kWH = \frac{Total\ coal\ use \times \sum (share\ of\ capacity)_i \times (share\ of\ treatment)_j \times factors_{ij}}{Total\ yield}$$

Capacity (10^4 KW)	Share of capacity	boiler type	end-of-pipe treatment	Share of treatment	SO2 Emission Factors (t/t coal)
> 75	……				
45~74.9	31%	coal powder	direct discharge	27%	17.04Sar
			Limestone-gypsum Wet Gas Desulfurization	68%	_0.224Sar^2+1.771Sar
			sea-water desulfurization	3%	1.704Sar
25~44.9	……				(Aar = 25, Sar = 1.23)

Many initial data and information during data collection to be recorded, no matter which database or data documentation format is.

Information Flows in LCA Practice



From standpoint of database developers, they are most wanted, unavailable yet and doable now.

Data collection master doc (excel)

Data model: Parameter and original data					
parameter	quantity	unit	data source	formula/reference	Assumption and approximation
SO2	5.68E+00	g/kWh	local calc.	Coal * AAvgSO2EF	
Coal	5.07E-01	kg/kWh	local ref.		
AAvgSO2EF	1.12E+01	g/kg coal	local calc.	Sum (CapacityS *BoilerS*TreatmentS*CSO2EF)	
CapacityS	see below		local ref.	see "Public" sheet	
BoilerS	see below		local ref.	see "Public" sheet	
TreatmentS	see below		local ref.	see "Public" sheet	
CSO2EF	see below		official stat.	art.5	
GSar	1.23E+00	%	official stat.	art.9	uniform factor for all

Future development for data collection

- Data Collection Format (DCF): identify and suggest core (minimal) information needed in data collection
- Guidance: instructions on each field in DCF
- Tools: facilitate data collection by well-organized information, installed nomenclature, pre-defined options, etc.

Benefits:

- ✓ Traceable and reproducible data collection
- ✓ Efficient and consistent for not only data collection but also review/verifying and updating
- ✓ For both providers and users, better confidence on LCA database
- ✓ Better understanding between databases
- ✓ Ultimately transparent (if providers and users want)

Thanks for Your Attention

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