Lessons Learned in GHG Reporting

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“Everything should be made as simple as possible, but no simpler.”

- One of Einstein’s most famous quotes, used literally by millions (including myself) to describe the balance between accuracy and simplicity.
- The irony is Einstein never actually said that, at least that way!
- Here is what he is documented as actually saying:

“It can scarcely be denied that the supreme goal of all theory is to make the irreducible basic elements as simple and as few as possible without having to surrender the adequate representation of a single datum of experience.”

It took a famous composer (Roger Sessions) to restate Einstein’s famous quote about keeping it simple, in a simple way!!!

How do I get Started?

Fossil energy consumption (MJ/MJ)				GHG emissions ($gCO_{2,e}$/MJ, N_2O:
Coal	NG	Oil	Total	CO_2	CH_4	N_2O
1.036	0.001	0.002	1.039	82.54	0.43	1.07
0.034	1.037	0.036	1.107	62.96	0.10	1.36
0.034	0.037	1.036	1.107	79.29	0.04	0.36
1.040	0.001	0.008	1.049	85.52	0.43	1.18
0.044	1.037	0.041	1.122	64.25	0.11	1.38
0.090	0.044	1.111	1.245	90.42	0.08	28.56
0.094	0.044	1.117	1.256	86.54	0.16	2.57
0.074	0.042	1.089	1.205	90.61	0.07	0.52
2.379	0.052	0.047	2.478	200.42	1.97	3.11

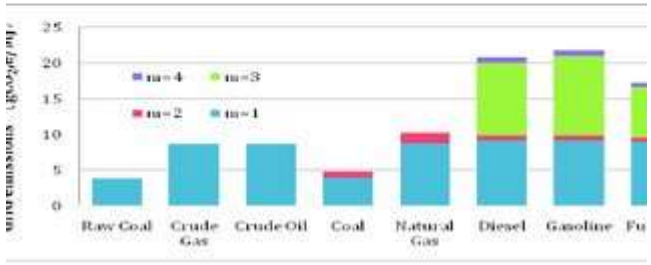
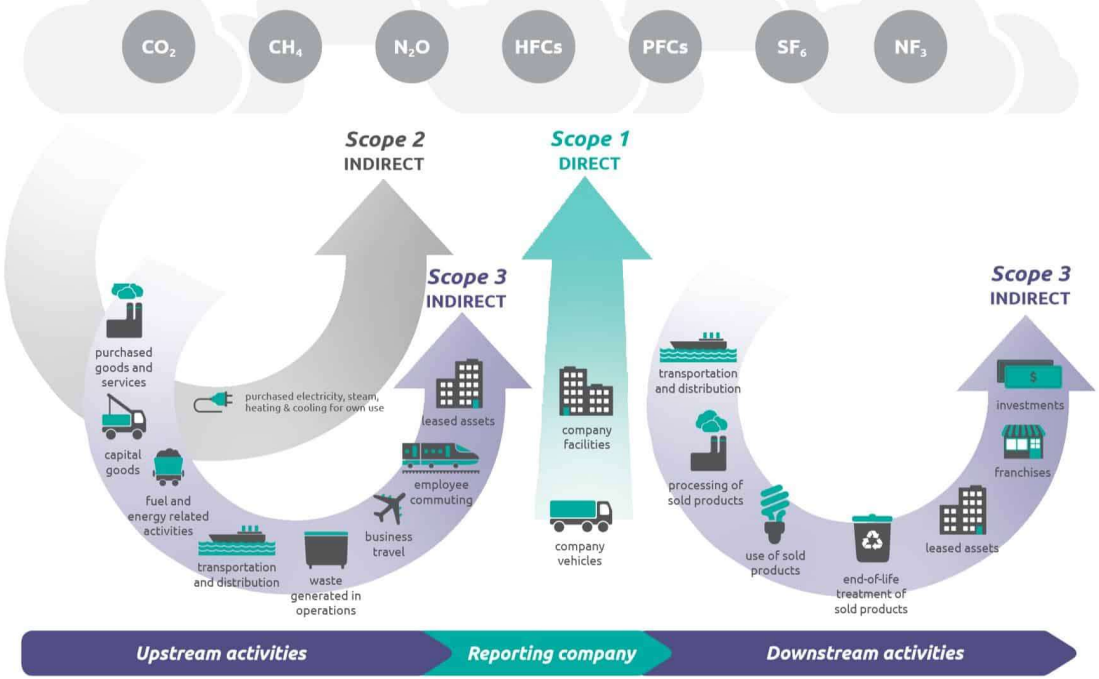


Figure 2. GHG emission in each section

Getting Started

- Obtain and read the World Resources Institute's Greenhouse Gas Protocol
  - This is THE corporate accounting and reporting standard.
- Scope1 internal data (ALL Direct Emissions)
  - Account for all fuels (not raw materials), either purchased or internal (i.e., off-gas), all fleet vehicles, all GHG leaks or releases.
- Scope 2 internal data (ALL Indirect Emissions)
  - Account for all purchased energy (electricity, steam, hot oil, comp. gases, etc)
- Will you include Scope 3 (or even Scope 4)? Business travel, Logistics, Waste, and Water are Scope 3.
- Make sure you are using the most recent GHG conversion factors.
  - EPA eGrid Factors in US, Canadian for Canada, IEA for rest of world.
- Talk to your third party auditor early and often.

Scope 1, 2, and 3 Emissions



Emission Factors

- My suggestion is use the most recent factors, and use only one set of factors.
- IEA Factors are converted from gCH4 and gN2O to gCO2eq using the 100-year Global Warming Potential (GWP).
- EPA eGrid Factors DO NOT make this conversion!

	GHG Emissions (kg CO_2eq/GJ)
Diesel	87.4
Gasoline	85.8
Natural Gas (EU-mix)	61
Grid Electricity (UK-mix)	160

Internal Data

- For each scope, decide on granularity, frequency, and accuracy needed
- For financial reporting, define what constitutes a material error.
- Define where you'll be reporting data, and what each report requires.
  - There are a hundred ways to slice the same pie, and each is different enough to create headaches. Plan ahead for all reporting needs!
- Depending on the size of your company, a unique source numbering system may save you many headaches
  - Looking at invoices for Cabangu, Minas Gerais, and Brazil. All the same site!

Internal Data (Page 2)

- Plan ahead for third party auditing!
  - Keep dated copies of all raw data, all factors used, all conversion sheets, all corrections made, etc. Keep separate data for each data collection segment (i.e., if you collect monthly, quarterly, or yearly)
  - It is easier to explain one big workbook to an auditor than many smaller workbooks.
- If you are an engineer, accountants speak a different language. SAP records dollars not engineering units!
- Think ahead about IParks where you are the host or a tenet. Make sure you understand all of the contracts involved.
- Make sure you have data with sufficient granularity to be able to do all desired reporting!

Questions?

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