

LEBANON'S EXPERIENCE

In using IPCC inventory softwares

BEIRUT . AUGUST 2024
LEA KAI- GHG INVENTORY COMPILER

National Context



4 national communications
(1999, 2011, 2016, 2022)
4 BURs
(2015, 2017, 2019, 2021)

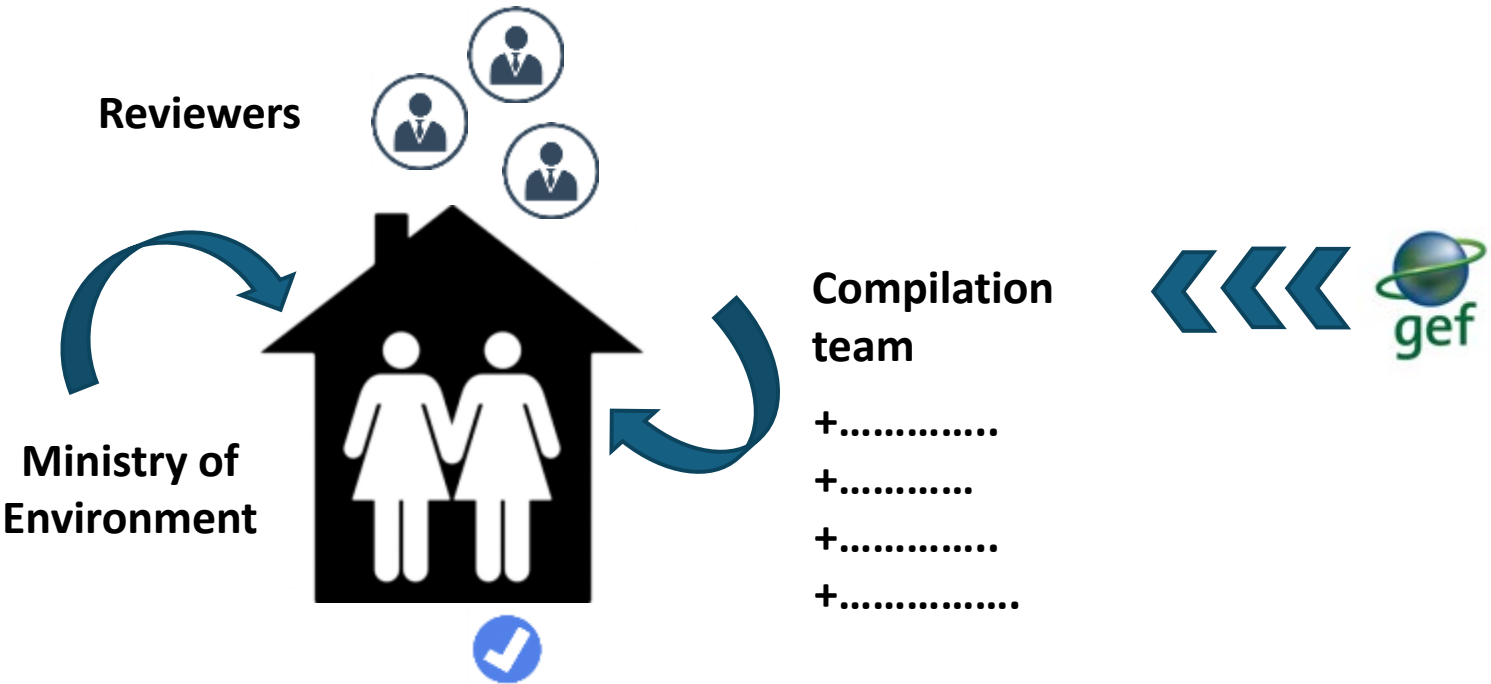
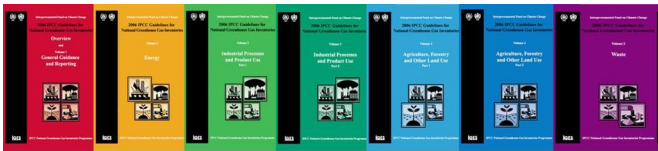


Revised 1996 IPCC guidelines

Revised 2006 IPCC guidelines –
starting BUR3 and NC3

**BTR 1 to be submitted in
December 2024**

Using the 2006 IPCC GL
and the IPCC software 2.93



IPCC inventory 2.69

1999-2022



In line with 1996/2006 IPCC guidelines

Embedded EFs and parameters-
validates chosen defaults EFs

Easy time series function for
recalculations

Easy create new year based on a
previous year

Intensive capacity building sessions and
peer-to-peer learning



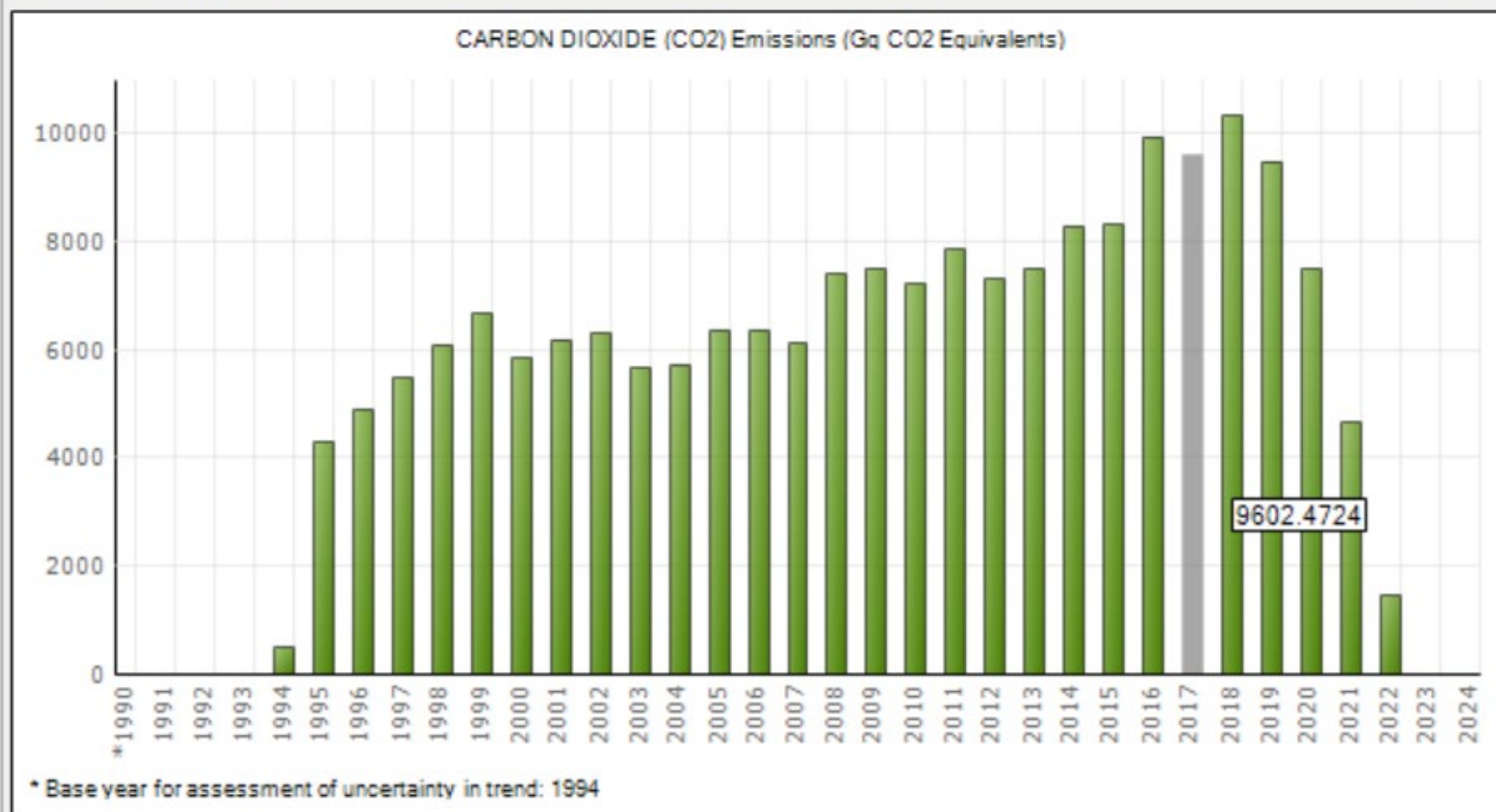
No embedded default values for
uncertainties

F-gases Tier 2 very complicated – no
function of adding manually totals
calculated externally

No trend data – will have to be done
manually on excel sheets

No automatic calculation of CO₂
equivalent in totals

1.A.1.a.i - Time Series



Gg CO2 eq	% growth					% Growth					Energy total	% Growth			
	Energy	co2	ch4	n2o		Transport	co2	ch4	n2o			co2	ch4	n2o	
1994	4,624		4,605	10	9	1,296		1265	14.3	16.23	5,919.17		5870	24.17	25
1995	8,153	76%	8,124	13	16	1,428	10%	1394	15.6	18.2	9,580.90	62%	9518	28.9	34
1996	8,412	3%	8,383	13	16	1,597	12%	1559	16.9	20.8	10,009.00	4%	9942	30	37
1997	8,666	3%	8,636	13	17	1,782	12%	1740	18.2	23.6	10,448.00	4%	10376	31	41
1998	8,920	3%	8,889	14	18	1,946	9%	1900	19.24	26.4	10,866.00	4%	10789	33	44
1999	10,808	21%	10,769	17	22	2,094	8%	2045	20.09	29	12,902.00	19%	12814	37	51
2000	9,469	-12%	9,436	14	19	2,219	6%	2167	20.76	31.38	11,688.00	-9%	11603	35	50
2001	10,873	15%	10,834	18	22	2,366	7%	2310	21.49	34.1	13,239.00	13%	13144	39	56
2002	10,434	-4%	10,397	16	21	2,512	6%	2453	22.18	36.9	12,946.00	-2%	12850	38	58
2003	9,269	-11%	9,236	14	18	2,659	6%	2597	22.87	39.6	11,928.00	-8%	11833	37	58
2004	9,486	2%	9,453	14	19	2,849	7%	2782	23.6	43.28	12,335.00	3%	12235	38	62
2005	9,096	-4%	9,064	14	18	3,026	6%	2955	24.5	46.7	12,122.00	-2%	12019	38	65
2006	9,348	3%	9,317	13	18	3,204	6%	3129	25.26	50.1	12,552.00	4%	12446	38	68
2007	8,209	-12%	8,181	12	17	3,407	6%	3326	26.21	54.46	11,616.00	-7%	11507	38	71
2008	10,012	22%	9,979	13	20	3,705	9%	3617	27.6	60.3	13,717.00	18%	13596	41	80
2009	13,263	32%	13,209	28	26	4,120	11%	4022	29.5	68.6	17,383.00	27%	17231	57	95
2010	11,055	-17%	11,016	18	22	4,558	11%	4449	31.5	77.25	15,613.00	-10%	15465	49	99
2011	12,268	11%	12,220	24	24	4,890	7%	4773	32.9	83.89	17,158.00	10%	16993	57	108
2012	13,973	14%	13,922	24	28	5,221	7%	5096	34.5	90.5	19,194.00	12%	19018	58	118
2013	14,925	7%	14,871	25	29	5,537	6%	5404	35.9	96.79	20,462.00	7%	20275	61	126
2014	15,670	5%	15,613	26	31	5,870	6%	5729	37.5	103	21,539.00	5%	21342	63	134
2015	16,604	6%	16,542	29	33	6,221	6%	6072	39.1	110.2	22,825.00	6%	22614	68	143
2016	19,245	16%	19,173	33	39	6,592	6%	6434	40.89	117.38	25,836.79	13%	25607	73.59	156.2
2017	18,449	-4%	18,381	31	37	7,013	6%	6845	42.84	125.43	25,462.70	-1%	25226	74	162.7
2018	19,297	5%	19,226	32	39	7,404	6%	7226	44.7	132.9	26,700.79	5%	26452	76.9	171.89
2019	16,552	-14%	16,491	28	33	7,665	4%	7480.96	46.02	137.89	24,217.22	-9%	23972.32	73.7	171.2
2020	(4,825)	-129%	(4,886)	30	32	4,999	-35%	4886.26	30.73	81.83	174.27	-99%		60.53	113.74
2021	(5,191)	8%	(5,235)	22	22	5,356	7%	5235	32.62	88.04	164.22	-6%		54.34	109.88
2022	9,962	-292%	9,919	23	20	6,663	24%	6,509.72	41.24	111.64	16,624.78	10023%	16,428.80	64.54	131.44
	2,745	4%	3.592182	2.928065	3.740023	4.802127315	7%				average increase	4%			
							5.714726791								
	40%					13%					31%				

Categories	Net CO2	CH4	N2O	CH4 Co2 eq	N2O Co2 eq	F-gases CO2 eq	Total emissions	NET emissions
Total National Emissions and Removals	22,191.73	78.85	2.84	2,207.78	751.46	1,877.75	30,089.63	27,028.72
1 - Energy	23,872.32	2.63	0.65	73.70	171.20		24,117.22	
1.A - Fuel Combustion Activities	23,872.32	2.63	0.65	73.70	171.20		24,117.22	26,839.46
1.A.1 - Energy Industries	9,362.41	0.37	0.07	10.35	19.59		9,392.34	
1.A.2 - Manufacturing Industries and Construction	3,514.68	0.13	0.03	3.69	6.97		3,525.34	
1.A.3 - Transport	7,480.96	1.64	0.52	46.02	137.98		7,664.96	
1.A.4 - Other Sectors	3,514.27	0.49	0.03	13.64	6.67		3,534.58	
1.A.5 - Non-Specified	-	-	-	-	-		-	
1.B - Fugitive emissions from fuels	-	-	-	-	-		-	
1.B.1 - Solid Fuels	-	-	-	-	-		-	
1.B.2 - Oil and Natural Gas	-	-	-	-	-		-	
1.B.3 - Other emissions from Energy Production	-	-	-	-	-		-	
1.C - Carbon dioxide Transport and Storage	-	-	-	-	-		-	
1.C.1 - Transport of CO2	-			-	-		-	
1.C.2 - Injection and Storage	-			-	-		-	
1.C.3 - Other	-			-	-		-	
2 - Industrial Processes and Product Use	1,339.03	-	0.13	-	33.39	1,877.75	3,250.17	
2.A - Mineral Industry	1,338.52	-	-	-	-	-	1,338.52	
2.A.1 - Cement production	1,336.56			-	-		1,336.56	
2.A.2 - Lime production	0.75			-	-		0.75	
2.A.3 - Glass Production	-			-	-		-	
2.A.4 - Other Process Uses of Carbonates	1.21			-	-		1.21	
3 - Agriculture, Forestry, and Other Land Use	(3,052.25)	17.82	1.54	498.91	406.92		914.49	(2,146.42)
3.A - Livestock	-	17.75	0.41	497.08	107.95	-	605.03	
3.A.1 - Enteric Fermentation		14.39		402.90			402.90	
3.A.2 - Manure Management		3.36	0.41	94.18	107.95		202.13	
3.B - Land	(3,060.91)	-	-	-	-	-	(3,060.91)	
3.B.1 - Forest land	(1,897.80)			-	-		(1,897.80)	
3.B.2 - Cropland	(1,219.94)			-	-		(1,219.94)	
3.B.3 - Grassland	-			-	-		-	
3.B.4 - Wetlands	-		-	-	-		-	
3.B.5 - Settlements	56.82			-	-		56.82	
3.B.6 - Other Land	-			-	-		-	
3.C - Aggregate sources and non-CO2 emissions sources on land	8.66	0.07	1.13	1.82	298.98		309.46	
3.C.1 - Emissions from biomass burning		0.07	0.00	1.82	0.98		2.81	
3.C.2 - Liming	-			-	-		-	
3.C.3 - Urea application	8.66			-	-		8.66	
3.C.4 - Direct N2O Emissions from managed soils			0.75	-	199.94		199.94	
3.C.5 - Indirect N2O Emissions from managed soils			0.28	-	73.15		73.15	
3.C.6 - Indirect N2O Emissions from manure management			0.09	-	24.90		24.90	
3.C.7 - Rice cultivations		-		-	-		-	
3.C.8 - Other (please specify)		-	-	-	-		-	
3.D - Other	-	-	-	-	-	-	-	
3.D.1 - Harvested Wood Products				-	-		-	
3.D.2 - Other (please specify)	-		-	-	-		-	
4 - Waste	32.63	58.40	0.53	1,635.18	139.95		1,807.75	
4.A - Solid Waste Disposal	-	30.40	-	851.32	-		851.32	
4.B - Biological Treatment of Solid Waste	-	2.17	0.12	60.65	31.64		92.29	
4.C - Incineration and Open Burning of Waste	32.63	4.71	0.09	131.96	23.51		188.10	
4.D - Wastewater Treatment and Discharge	-	21.12	0.32	591.25	84.80		676.05	

IPCC inventory 2.930 2024



Not very different than the old version
(colors, design, format)

Exportable databases for Energy, IPPU,
and Agriculture

Embedded EFs and parameters-
validates chosen defaults EFs (2019?)

Exportable CRT tables (*yet to be
discovered*)



Overrides old software and
paralyzes old mdb files

No export of LULUCF and waste files

Fuel manager - parameters cannot
be different for subcategories

New defaults EFs (waste)

Very short timeframe → Not enough
training on the tool

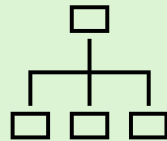
Lesson learnt and best practices



Document and archive data

Always have a back up plan if the software crashes (or new versions invade!)

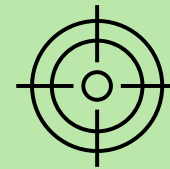
*All AD and Efs with links
Old and new datasets in case of recalculations*



One compiler, one user

The lead compiler collects all data and enters them manually in the software

*Good QA/QC
Understanding the data
Noticing differences*



Specific tasks

Don't reinvent the wheel and recreate the model on excel

Trust the process!



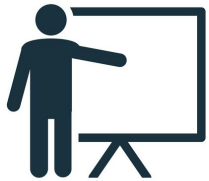
Build and retain capacities

Lead compiler and sectoral experts are regularly trained

*Same people sticking around
Mentoring sessions and one-on-ones*

Way forward

Trainings and capacity building sessions, even for senior and experienced people

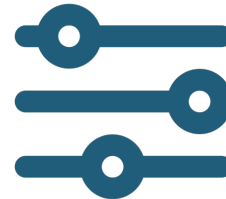


CAPACITY BUILDING

Compliance of any new version with the old datasets



Add the options for:
Manual input in the totals
Export of time series results



Easier documentation-
exportable data on sectoral
factsheets





THANK YOU