

Aruba: information on national emissions, population and GDP, and mitigation targets

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TODO

- Table with info on target (main and reclass; emissions from NDC; target quantis + plot).
- GWP: NDC emissions converted from AR2 to AR4 by national conversion factor (2010–2017, PRIMAP-hist v2.1).
- References!

1 Non-LULUCF emissions and socio-economic data

With national emissions of 1.0 Mt CO₂eq, Aruba contributed 0.002% to global emissions in 2017, while in 2030 its share is estimated to decrease to 0.001% (Table 1). The estimates for 2030 are based on the downscaled SSP2¹ Middle of the Road marker scenario (dmSSP2), in which Aruba is estimated to emit 1.1 Mt CO₂eq in 2030. That change in emissions would constitute an increase of 7.3% compared to 2017. The pathways dmSSP1–5 show a range of 1.1–1.1 Mt CO₂eq in 2030, and 2.9–2.9 Mt CO₂eq in 2050. The country’s global rank in terms of total emissions per unit of GDP² was 157 in 2017, and 42 regarding the per-capita emissions (190 and 46 in 2030). In terms of accumulated historical emissions, Aruba contributed to the global 1850–2017 emissions by 0.01%. When only accounting for the years 1990–2017, its contribution decreases to 0.005%. All of the emissions are presented following GWP AR4³, and

¹**SSPs:** Shared Socio-economic Pathways. Narratives and challenges to mitigation and adaptation: SSP1: Sustainability, Taking the Green Road (low / low); SSP2: Middle of the Road (medium / medium); SSP3: Regional Rivalry, A Rocky Road (high / high); SSP4: Inequality, A Road Divided (low / high); and SSP5: Fossil-fuelled Development, Taking the Highway (high / low).

²**GDP:** Gross Domestic Product. Throughout this document the GDP is given as GDP PPP, with PPP being the Purchasing Power Parity.

³**Global Warming Potential (GWP):** we use GWP values from the IPCC 4th Assessment Report (AR4). They reflect the forcing potential of one kilogram of a gas’ emissions in comparison to one kilogram of CO₂ (GWP_{CO2} = 1). The GWPs correspond to a 100-yr period and are for CH₄: 25, for N₂O: 298, for SF₆: 22800, and for NF₃: 17200. For the basket of HFC-gases the GWPs from AR4 are in the range 4–14800, and for PFCs 7190–12200. To assess emissions of several GHGs, their emissions are weighted by their respective GWPs and presented in CO₂ equivalents (CO₂eq).

exclude emissions from LULUCF⁴ (exclLU), and bunkers fuels⁵ emissions (exclBunkers).

Table 1: National emissions (dmSSP2), GDP and population for Aruba, together with the emissions per unit of GDP and per capita emissions (all for 2017 and 2030). Additionally, the global share and its rank are displayed.

	Year	Total	Unit	Glob. share	Rank
Emissions	2017	1.0	Mt CO ₂ eq	0.002%	175
	2030	1.1	Mt CO ₂ eq	0.001%	175
GDP	2017	3.9	Billion 2011 GK\$	0.003%	170
	2030	7.5	Billion 2011 GK\$	0.004%	168
Emissions per GDP	2017	261.9	t CO ₂ eq / Million 2011 GK\$	0.2%	157
	2030	147.0	t CO ₂ eq / Million 2011 GK\$	0.1%	190
Population	2017	105.4	Thousand Pers	0.001%	185
	2030	117.6	Thousand Pers	0.001%	181
Emissions per capita	2017	9.7	t CO ₂ eq / Pers	0.7%	42
	2030	9.4	t CO ₂ eq / Pers	0.6%	46

For Aruba, in 2017 the main emissions share on sectoral level (Fig. 1) came from the Energy sector (91.0%), followed by IPPU (6.2%), and Waste (2.7%). The Kyoto GHG⁶ with the highest emissions in 2017 was CO₂, constituting as much as 95.2% of the national emissions. Second largest contributor was CH₄ (3.7%), followed by N₂O (1.1%). The total of F-gases⁷ only represented 0.0%. The total CO₂ emissions are expected to be 88.0% of the national Kyoto GHG emissions in 2030 (dmSSP2).

The national GDP increased in recent years, and the emissions per unit of GDP had an opposite trend (Fig. 2). The population increased, while the per capita emissions dropped. Following dmSSP2, the GDP is projected to increase towards 2050. The emissions per GDP are estimated to decrease towards 2050. Aruba's population is assumed to grow towards 2050, and the per capita emissions are expected to increase towards 2050.

2 LULUCF emissions

LULUCF emissions data for Aruba are available from the following sources (Fig. 3): .

High fluctuations? Data gaps? Difference between sources?

3 Mitigation targets (NDC)

Give the %cov for the base and target year (and 2017). Global share for 2030 for the mitigated pathways and % reduction relative to 1990 and 2017. Table with the 'input' data and the resulting targets (like ndcs_targets.csv). Aruba does not have an (I)NDC. Therefore the assumed 'mitigated' emissions pathways used for global aggregates equal the baseline emissions (dmSSP1–5).

⁴**LULUCF**: Land Use, Land-Use Change and Forestry. Emissions from LULUCF are excluded throughout the document, unless stated otherwise.

⁵**Bunkers fuels**: emissions from international aviation and shipping.

⁶**Kyoto GHG** (Greenhouse Gas) basket: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃).

⁷**F-gases** (fluorinated gases): basket of HFCs, PFCs, and the gases SF₆ and NF₃. Some F-gases have very long atmospheric lifetimes and high Global Warming Potentials.

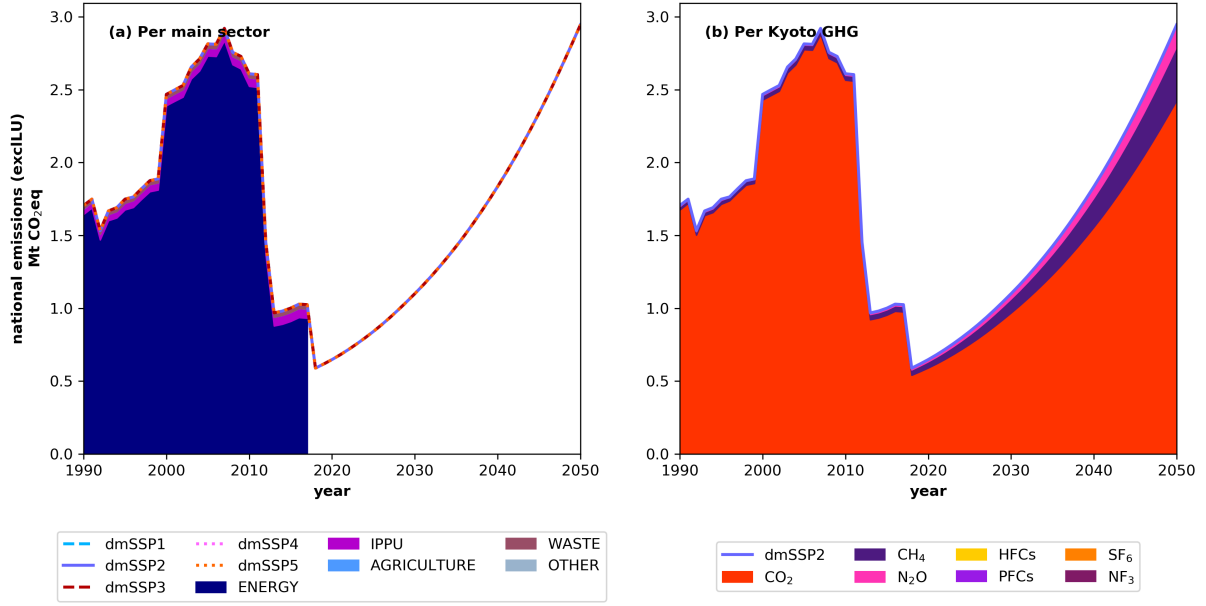


Figure 1: 'Stacked' timeseries of national emissions (exclLU) per main-sector (a) and Kyoto GHG (b). No information available on the sectoral contributions after 2017.

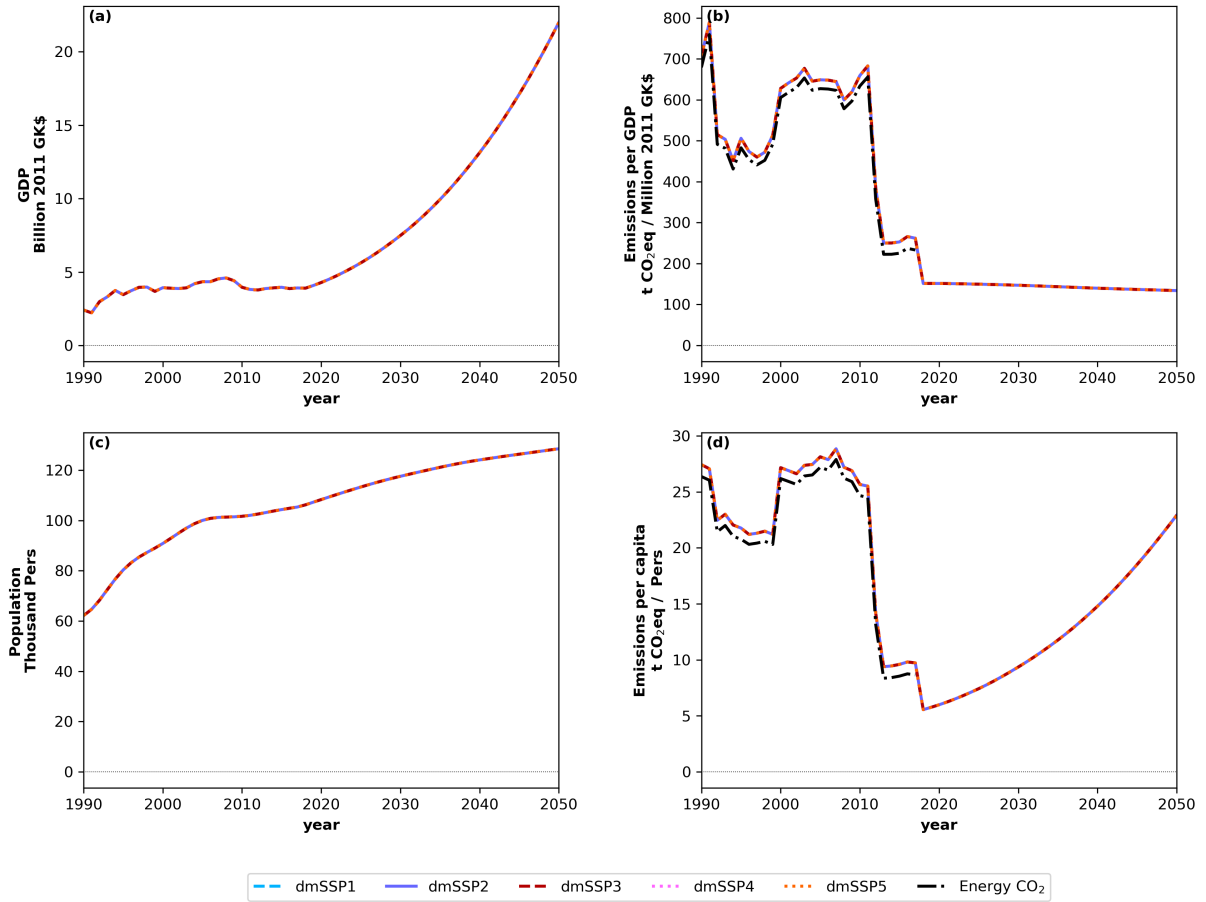


Figure 2: Timeseries of national GDP (a) and population (c), and Kyoto GHG emissions (exclLU, exclBunkers) per unit of GDP (b) or per capita (d).

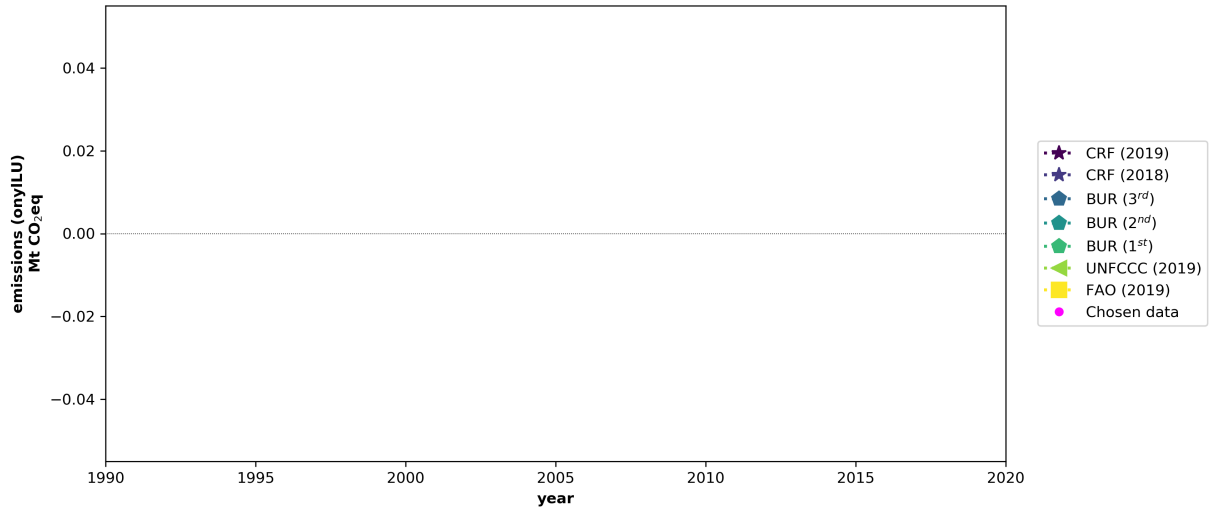


Figure 3: Timeseries of emissions from LULUCF (CO_2 plus CH_4 and N_2O) as available from different data-sources. Indicated in pink are the 'chosen' data, as used in our assessment of Aruba's NDC (if needed). The pink timeseries was inter- and / or extrapolated (interpolation: linear, extrapolation: constant).

4 Data sources and references

PRIMAP-hist v2.1: emissions from PRIMAP-hist are data from the country reported data priority scenario (HISTCR).