

In FY2022, total GHG emissions from Scope 1 and Scope 2 for Malaysia and International assets under operational control boundary is 49.58 Million tCO<sub>2</sub>e.

In the oil and gas value chain, GHG emissions from Gas business contributed 46 per cent, followed by 28 per cent from Upstream and 26 per cent from Downstream. 96 per cent of emissions were from Scope 1 where the sources were mainly from stationary combustion, flaring and venting. Meanwhile Scope 2 only contributed to 4 per cent of Scope 1 and 2 emissions.

GHG emissions from Malaysia operations have been showing positive improvements, as it remained below the cap of 49.5 Million tCO<sub>2</sub>e. This was contributed by ongoing investment in GHG emissions reduction efforts from FY2019 to FY2022 despite economic downturn. For international operations, total GHG emissions from Scope 1 and Scope 2 increased in FY2022 due to the increase in production from Iraq and Canada operations.

### GHG Emissions Breakdown by Scope, Gases and Sources for Operational Control

(Excludes Corporate and Others)

Key Performance Indicators	2018	2019	2020	2021	2022
GHG Emissions (Million tCO <sub>2</sub> e)	51.62	55.02	49.06	46.43	<b>49.58</b>
<b>Breakdown by Scope</b>					
Scope 1 (Million tCO <sub>2</sub> e)	49.66	53.09	47.14	44.67	<b>47.62</b>
Scope 2 (Million tCO <sub>2</sub> e)	1.96	1.93	1.92	1.76	<b>1.96</b>
<b>Breakdown by Gas (only Scope 1)</b>					
Carbon dioxide (CO <sub>2</sub> ) (million tonnes)	39.65	42.57	38.40	38.71	<b>42.15</b>
Methane (CH <sub>4</sub> ) (thousand tonnes)	394.33	413.51	343.49	232.23	<b>215.40</b>
Nitrous Oxide (N <sub>2</sub> O) (thousand tonnes)	0.53	0.62	0.54	0.59	<b>0.69</b>
<b>Breakdown by Sources (only Scope 1)</b>					
Combustion (Million tCO <sub>2</sub> e)	31.65	34.93	31.62	31.85	<b>33.53</b>
Flaring (Million tCO <sub>2</sub> e)	8.98	8.37	7.16	7.33	<b>8.33</b>
Venting (Million tCO <sub>2</sub> e)	8.28	9.20	7.53	4.81	<b>3.74</b>
Others (Million tCO <sub>2</sub> e)	0.76	0.58	0.82	0.68	<b>2.01</b>

PETRONAS uses the Global Warming Potential values from the Intergovernmental Panel on Climate Change (IPCC) 4<sup>th</sup> Assessment Report.

### GHG Intensity by Business Segments

	2018	2019	2020	2021	2022
<b>Upstream</b>					
Total (tCO <sub>2</sub> e/kboe)	56.75	51.39	50.30	38.93	<b>34.57</b>
Malaysia Assets (tCO <sub>2</sub> e/kboe)	75.55	65.83	65.27	47.69	<b>40.15</b>
International Assets (tCO <sub>2</sub> e/kboe)	21.07	19.28	14.99	19.47	<b>23.92</b>
<b>Downstream</b>					
Refineries (tCO <sub>2</sub> e/bbl)	0.018	0.018	0.019	0.018	<b>0.020</b>
Petrochemicals (tCO <sub>2</sub> e/tonnes)	0.68	0.68	0.66	0.67	<b>0.68</b>