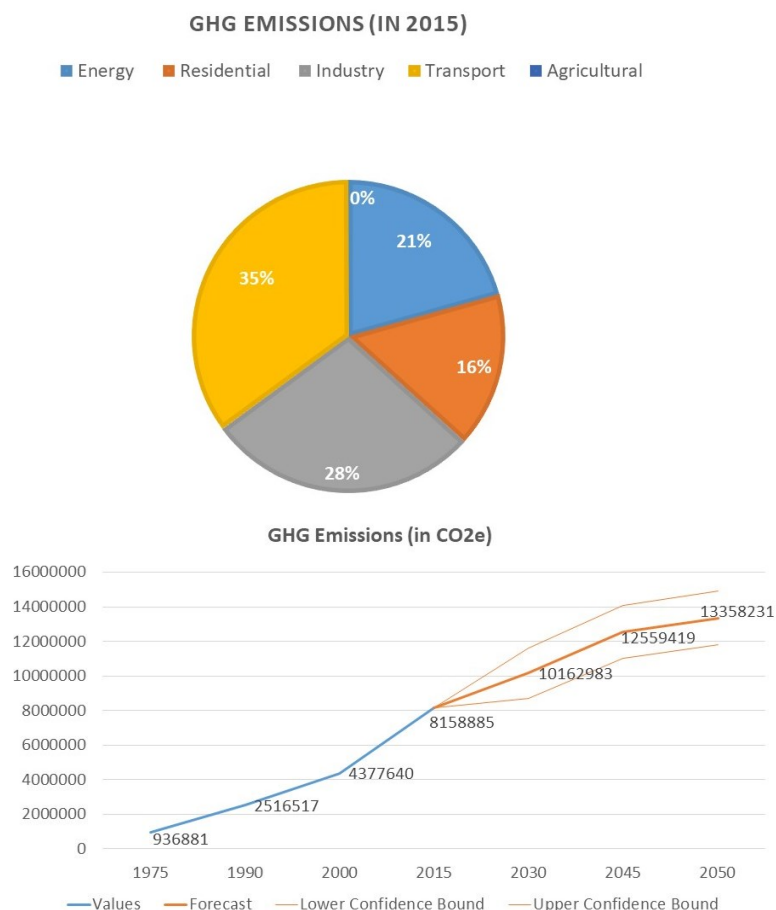


### 8.3.2 Lahore

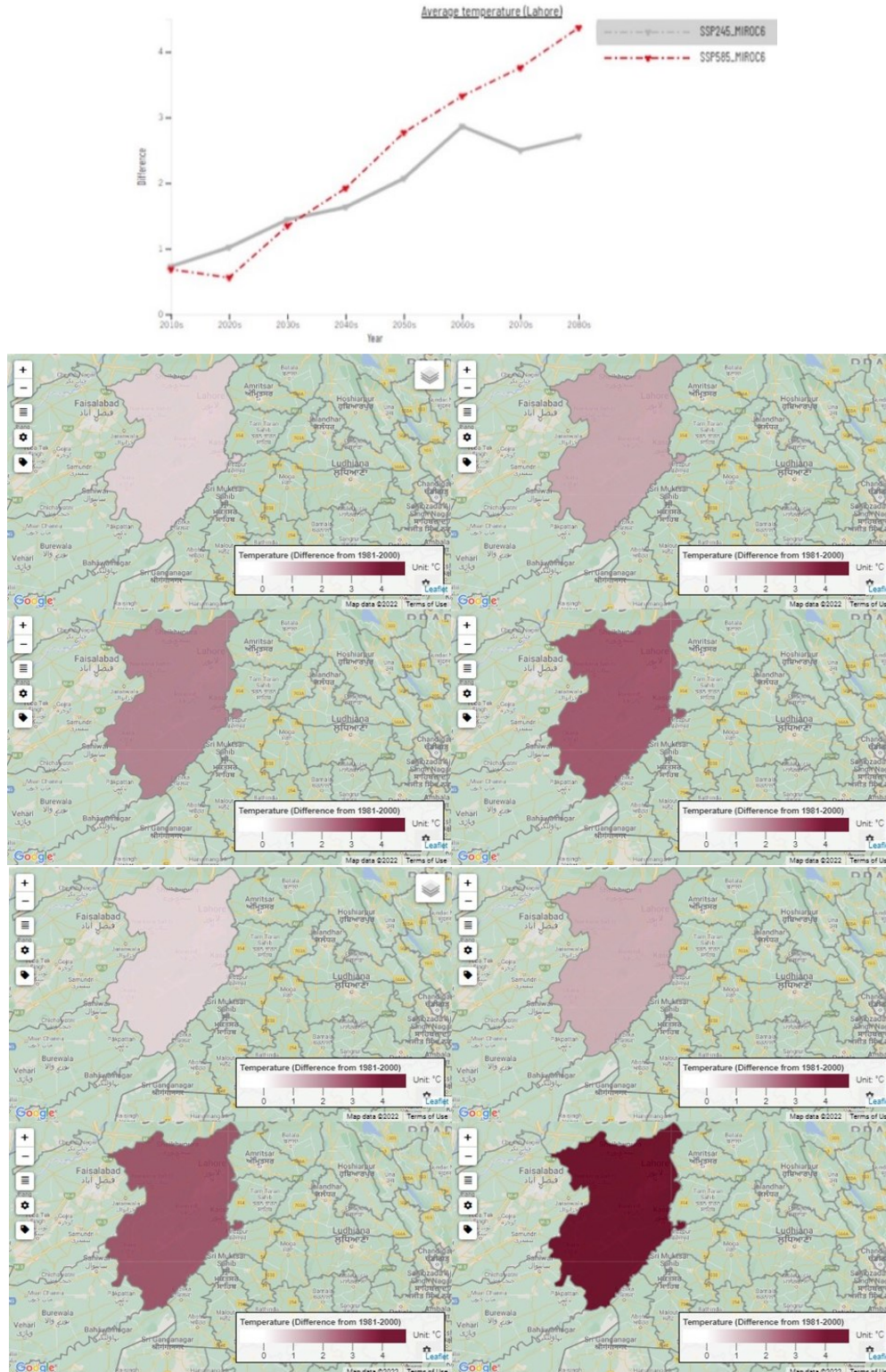
The GHG emissions of Lahore was 0.9 MtCO<sub>2e</sub> in 1975, that escalated to 2.5 MtCO<sub>2e</sub> in 1990 and 8.1 MtCO<sub>2e</sub> in 2015. A majority of the GHG emissions in 2015 (Figure 8.22, top) were contributed by the transport sector (35%) and industry sector (28%), followed by energy sector (21%) and residential sector (16%). As per the ICLAP model estimates (Figure 8.22, below), there would be an increase in emissions at 5.6% per annum, leading to 10.1 MtCO<sub>2e</sub> in 2030 and 13.3 MtCO<sub>2e</sub> in 2050.



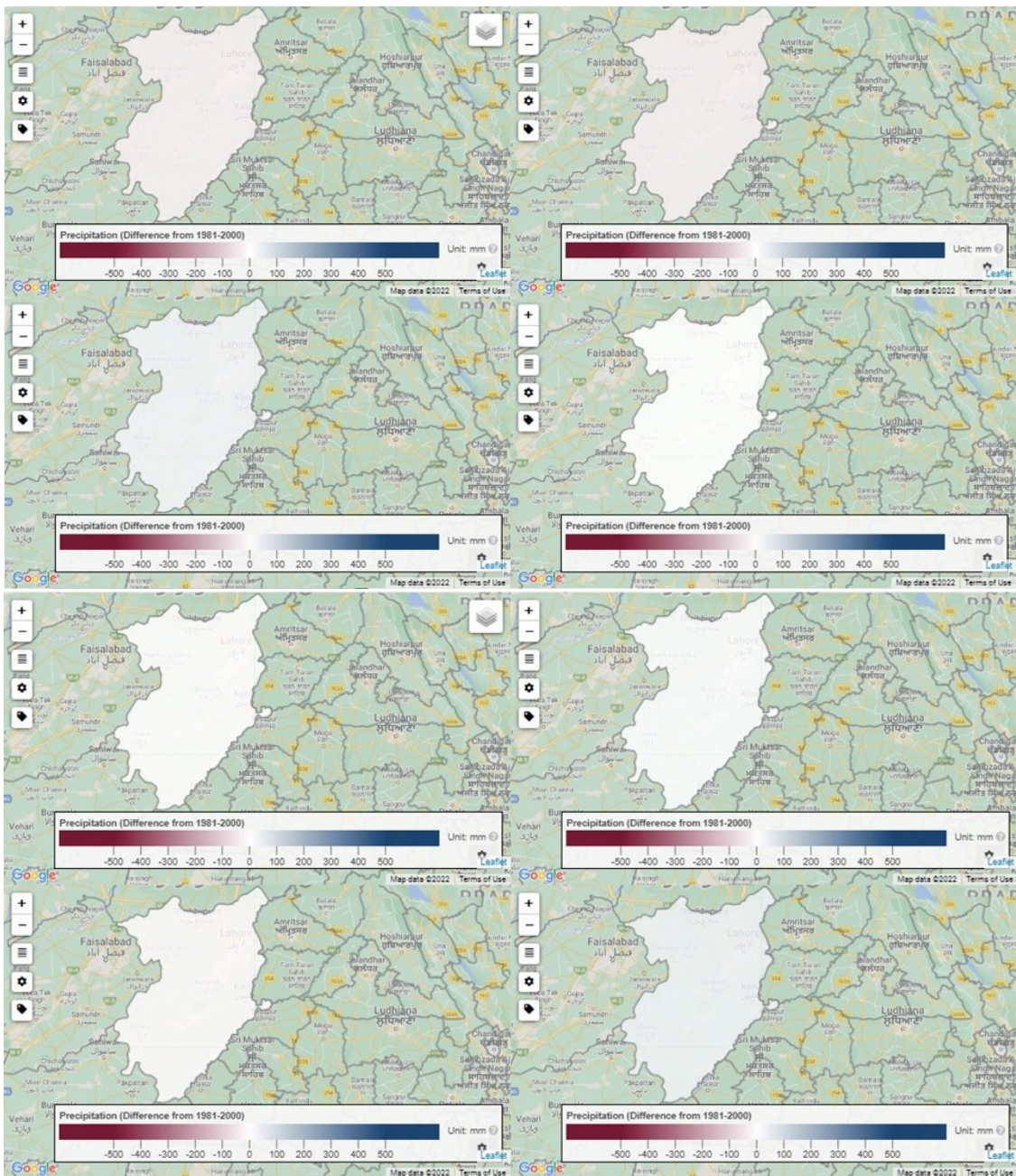
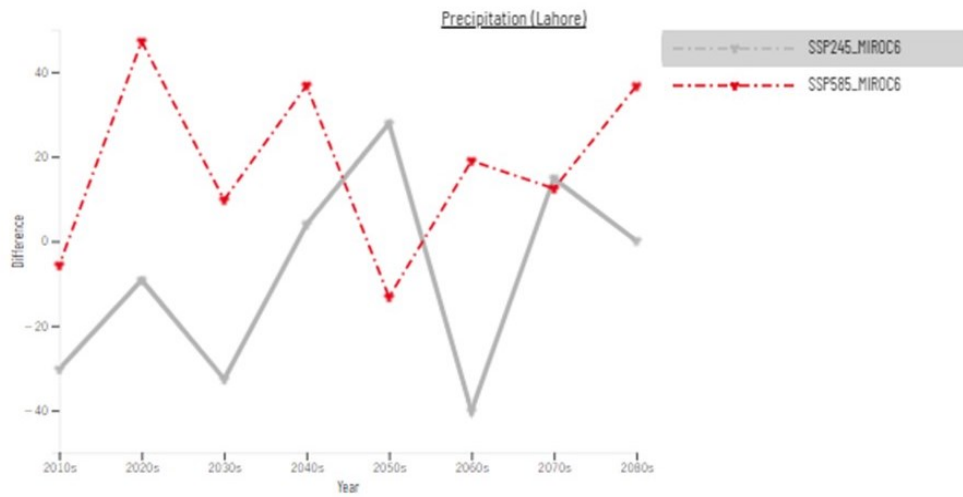
**Figure 8.22: GHG contributions from different sectors in Lahore (top); ICLAP model estimates for Lahore GHG emissions till 2050 (bottom)**

The results for climate variability in Lahore indicate that depending on the emission scenarios, there would be a temperature increase of 1.3–4.3 degC from 2030–80s (Figure 8.23, top). The scenario corresponding to the pathway with moderate GHGs (SSP245\_MIROC6) exhibits an increase of 1.4 degC in 2030s (above the 1980 baseline temperature), 2.0 degC in 2050s, peaking to 2.8 degC in 2080s. The spatial results for moderate scenario over 2010–80s are mapped in Figure 8.23 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585\_MIROC6) exhibits an increase of 1.3 degC during 2030s (above the 1980 baseline temperature), 2.8 degC in 2050s further rising sharply to 4.3 degC above normal up to 2080s. The spatial results for high emission scenario over 2010–80s are mapped in Figure 8.23 (bottom). Meanwhile, the precipitation change for Lahore shows a very low variability in the long run, ranging from -42 to 35 mm from the normal (Figure 8.24, top) depending on the emission scenarios. The scenario corresponding to the pathway with moderate GHGs (SSP245\_MIROC6) exhibits an increase of about -32 mm in 2030s (above the 1980 baseline rainfall), rising to 28 mm

in 2050s, varying unevenly to 0 mm in 2080s. The spatial results for moderate scenario over 2010-80s are mapped in Figure 8.24 (middle). Meanwhile, the scenario corresponding to the pathway with the highest GHGs (SSP585\_MIROC6) shows Lahore's city rainfall increase to around 8 mm (above the 1980 baseline rainfall) in 2030s, declining to -16 mm in 2050s, rising to 18 mm in 2060s and about 37 mm in 2080s. The spatial results for high emission scenario over 2010-80s are mapped in Figure 8.24 (bottom).



**Figure 8.23: Temperature increase in Lahore under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)**



**Figure 8.24: Precipitation variation in Lahore under medium (grey) and high (red) emission scenario till 2080s (top); Spatial results for medium scenario for 2010s, 2030s, 2050s, 2080s (middle); Spatial results for high scenario for 2020s, 2030s, 2050s, 2080s (bottom)**