Data Archiving for WG III

**Instructions: Please complete one file per figure.**

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| **Report** | WG III TS |
| **Figure Number**  (e.g. SPM.1) | TS.1 Figure 1 |
| **Authors Names** | William F. Lamb |
| **List of all input research papers and grey literature sources**  Please provide links or DOIs where applicable. This step is crucial for traceability. | Liu, Z., Ciais, P., Deng, Z., Lei, R., Davis, S. J., Feng, S., Zheng, B., Cui, D., Dou, X., Zhu, B., Guo, R., Ke, P., Sun, T., Lu, C., He, P., Wang, Y., Yue, X., Wang, Y., Lei, Y., … Schellnhuber, H. J. (2020). Near-real-time monitoring of global CO2 emissions reveals the effects of the COVID-19 pandemic. *Nature Communications*, *11*, 5172. https://doi.org/10.1038/s41467-020-18922-7  Le Quéré, C., Jackson, R. B., Jones, M. W., Smith, A. J. P., Abernethy, S., Andrew, R. M., De-gol, A. J., Willis, D. R., Shan, Y., Canadell, J. G., Friedlingstein, P., Creutzig, F., & Peters, G. P. (2020). Temporary reduction in daily global CO2 emissions during the COVID-19 forced confinement. *Nature Climate Change*, *10*, 647–654. https://doi.org/10.1038/s41558-020-0797-x  Quéré, C. Le, Peters, G. P., Friedlingstein, P., Andrew, R. M., Canadell, J. G., Davis, S. J., Jackson, R. B., & Jones, M. W. (2021). Fossil CO2 emissions in the post-COVID-19 era. *Nature Climate Change*, *11*(March). https://doi.org/10.1038/s41558-021-01001-0  Minx, J. C., Lamb, W. F., Andrew, R. M., Canadell, J. G., Crippa, M., Döbbeling, N., Forster, P. M., Guizzardi, D., Olivier, J., Peters, G. P., Pongratz, J., Reisinger, A., Rigby, M., Saunois, M., Smith, S. J., Solazzo, E., & Tian, H. (2021). A comprehensive and synthetic dataset for global, regional, and national greenhouse gas emissions by sector 1970–2018 with an extension to 2019. *Earth System Science Data*, *13*, 5213–5252. https://doi.org/10.5194/essd-13-5213-2021 |
| **Data Source**  If the data is provided by IEA (International Energy Agency) then we will use the follow statement:  *OR*  EDGAR (Emission Database for Global Atmospheric research) then we will use the following statement: | Data sources are: Liu et al. (2020), Le Quere et al. (2020) and Minx et al. (2021) See references above. |
| **Data processing or treatment**  Please provide a text based description of any data pre-processing or transformations undertaken to the input or source data in order to produce the figure in the report.  This is important if the traceable dataset or numbers are different from those appearing on the figure. The reader should be able to understand how we arrived to the final data appearing on the SPM figure from reading this field, and should be able to replicate the steps. Therefore, the level of details presented here should be enabling such replication. | For the EDGAR (panel a) data:   * We applied an uncertainty range of 0.08 (following Minx et al.) to estimate upper and lower bounds   For the Carbon Monitor (Liu et al.) data:   * we summed domestic and international aviation to create the “Aviation” sector * we applied an uncertainty range of 0.072 (on discussion with the authors) to estimate upper and lower bounds * we subtracted daily emissions in 2020 from those in 2019 * we applied a 7 day rolling average (center aligned) to smooth the data   For the Le Quere data:   * no transformations applied   Code archived online at: <https://github.com/mcc-apsis/AR6-Emissions-trends-and-drivers/blob/master/R/Analysis%20and%20figures/covid_emissions.Rmd> |