Understanding the CO2 Figures in the "What can I do" Climate Impact Program

Our program aims to provide guidance about what types of personal actions have a stronger (or weaker) impact on carbon emissions.

This guidance draws from a range of data sources, described below. This factsheet explains the carbon emission figures used in our program.

It's important to note that it's very difficult to provide a specific estimate of how a behaviour influences carbon emissions – this is because the impact of a specific behaviour on emissions may depend on a range of factors such as how a person performs the action, the household context, and often, the broader state and social context. For example, the impact of changing air-conditioning settings will depend on typical patterns of AC use, weather, and elements of housing design such as the presence of insulation. As such, this information takes the form of general guidance about the relative benefits of different actions.

Our Data Sources

The primary source for our carbon emission figures was research conducted by the University of Technology Sydney for Australian Ethical.

For those actions not covered in the Australian Ethical report, we used additional sources:

- To estimate the rate by which a tree can absorb carbon dioxide we referred to the Winrock International Forest Landscape Restoration (FLR) Carbon Storage Calculator
- To estimate the carbon savings from switching to solar panels we referred to the IPCC Report: Technology-specific cost and performance parameters

While we are not affiliated with any of these organisations, we selected these sources because:

- They deliver an assessment of carbon impacts across a wide range of individual activities
- The data is relevant to the Australian context
- They apply recognised carbon accounting methodologies with transparent citations supporting the estimates provided
- They clearly document all assumptions and methods used

Validation Process

To ensure accuracy, we cross-referenced these figures against multiple sources, including:

- Established carbon calculators

- Peer-reviewed scientific papers on carbon emissions

This validation process confirmed that our figures represent reasonable estimates for the average Australian. A list of these sources has been provided below.

Understanding Variability in Carbon Emissions

As mentioned above, these figures are ***estimates*** only, and there are inherent variations and uncertainty when calculating carbon emissions.

Actual carbon emissions from any activity can vary based on several factors:

- Regional differences: Energy grid composition varies by location
- Technological factors: Production methods, efficiency of appliances etc.
- Methodological differences: Various carbon accounting approaches
- Other assumptions used in the calculation

Let's consider the example of reducing red meat intake:

Factor	How it affects emissions	Variation range
Meat source	Beef typically has higher emissions than lamb	±20-30%
Production method	Intensive feedlot vs. pasture-raised	±15-25%
Transportation	Local vs. imported meat	±5-15%

Individual Differences can also make a large difference!

The carbon savings can vary dramatically based on an individual's starting point, including the duration, frequency, and/or intensity of the target activity. Using reducing red meat consumption as an example:

- Person A reduces from 7 red meat meals per week to 2 (5 meals reduction)
- Person B reduces from 4 red meat meals per week to 2 (2 meals reduction)

Person A would achieve approximately 2.5 times the carbon savings of Person B, despite both ending at the same consumption level. This illustrates why our game provides an *average* figure based on a *typical* reduction.

For more accurate estimations based on your individual circumstances, calculate your current carbon footprint here:

Brisbane Carbon Challenge

Carbon Footprint Calculator | Carbon Positive Australia

The Carbon Calculator - Measure Your Footprint | Carbon Neutral

Further Information

For those interested in exploring carbon emission calculations in more detail, we recommend the following papers:

Crippa, M., Solazzo, E., Guizzardi, D., Monforti-Ferrario, F., Tubiello, F.N., & Leip, A. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. Nature Food, 2, 198-209. https://doi.org/10.1038/s43016-021-00225-9

Fabre, A., Howes, M., & Deweerdt, T. (2023). Best practice in urban transport decarbonisation: a case study of three initiatives in Brisbane. Australian Planner, 59(1), 64-85. https://doi.org/10.1080/07293682.2023.2190143

Kim, B., Santo, R., Scatterday, A., Fry, J.P., Synk, C.M., Cebron, S.R., Mekonnen, M.M., Hoekstra, A.Y., de Pee, S., Bloem, M.W., Neff, R.A., & Nachman, K.E. (2020). Country-specific dietary shifts to mitigate climate and water crises. Global Environmental Change, 62, 101926. https://doi.org/10.1016/j.gloenvcha.2019.05.010

Marchi, L., Vodola, V., Visconti, C., Gaspari, J., & Antonini, E. (2021). Contribution of individual behavioural change on household carbon footprint. E3S Web of Conferences, 263, 05024. https://doi.org/10.1051/e3sconf/202126305024

Msamadya, S., Joo, J.C., Lee, J.M., Lee, S., Kim, S., Go, H.W., & Lee, S.G. (2023). Estimated impacts of smart water meter implementation on domestic hot water consumption and related greenhouse gas emissions from case studies. Water, 15(17), 3045. https://doi.org/10.3390/w15173045

Poore, J. & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. Science, 360(6392), 987-992. https://doi.org/10.1126/science.aaq0216

Reynolds, C.J., Piantadosi, J., Buckley, J.D., Weinstein, P., & Boland, J. (2015). Evaluation of the environmental impact of weekly food consumption in different socio-economic households in Australia using environmentally extended input-output analysis. Ecological Economics, 111, 58-64. https://doi.org/10.1016/j.ecolecon.2015.01.007

Stanley, J., Ellison, R., Loader, C., & Hensher, D. (2018). Reducing Australian motor vehicle greenhouse gas emissions. Transportation Research Part A: Policy and Practice, 109, 76-88. https://doi.org/10.1016/j.tra.2018.01.002

Sun, Z., Scherer, L., Tukker, A., Spawn-Lee, S.A., Bruckner, M., Gibbs, H.K., & Behrens, P. (2022). Dietary change in high-income nations alone can lead to substantial double climate dividend. Nature Food, 3, 29-37. https://doi.org/10.1038/s43016-021-00431-5

Wynes, S. & Nicholas, K.A. (2017). The climate mitigation gap: education and government recommendations miss the most effective individual actions. Environmental Research Letters, 12(7), 074024. https://doi.org/10.1088/1748-9326/aa7541

Wynes, S., Nicholas, K.A., Zhao, J., & Donner, S.D. (2018). Measuring what works: quantifying greenhouse gas emission reductions of behavioural interventions to reduce driving, meat consumption, and household energy use. Environmental Research Letters, 13(11), 113002. https://doi.org/10.1088/1748-9326/aae5d7

Note: This factsheet was last updated April 2025.