

## Brief guide to using the MACCs tool

This document provides a brief overview of using the MACCs spreadsheet tool.

Please note that the tool was developed for internal use and as a result is not particularly straightforward to use. It was developed to be flexible and cover a wide range of abatement opportunities. This flexibility was prioritised over simplicity and ease-of-use. Improving the interface and usability of the tool is a potential area for future work.

The tool is based on the best available information that had been provided to the Ministry for the Environment at the time of its production in 2019.

### Files

- There are two excel files:
  - macc-tool which is the main calculation spreadsheet
  - His\_04 which includes historical data on a wide range of relevant variables.
- His\_04 is not required to run the tool, but the macc-tool spreadsheet links to it and has drawn data from it where relevant. The historical data spreadsheet is available for reference.
- To begin, open the macc-tool spreadsheet and it will prompt you to update links. Select do not update, as it has already drawn in the relevant data from the Historical data spreadsheet.

### General tab structure

- Blue tabs are generic tabs for: control, assumptions, and MACC display functionality.
- Green tabs are where MACC calculations are undertaken for individual sectors (i.e. industry, transport, electricity generation, space & water heating, land (agriculture & forestry)).
- Orange tabs contain historical energy and GHG data. They are used for providing GHG quantity estimates, and for sanity-checking the outputs of calculations.

### Specific functionality

The Ctrl tab is where a user can specify:

- which sectors they would like to generate MACCs for (by typing 1 or 0 in cells C5:C14)
- to what level of (dis)aggregation they would like the MACC generated within a sector (by selecting the option cells D5:H14). If multiple sectors are selected, only a high level of aggregation is allowed as the graph only allows for 14 separate categories
- for which year they would like to generate MACCs.
- which scenarios to choose (in the area labelled scenario management).

The Ass tab contains assumptions and constants including:

- various physical constants such as emissions factors
- commodity price scenarios for future years
- colouring and naming definition tables to facilitate the MACC graphing.

### MAC\_In

- brings in the abatement costs for the relevant sectors that have been selected for graphing in the Ctrl tab

- aggregates the abatement costs to the level of aggregation specified for the Ctrl tab
- formats the abatement costs into something that can be graphed.

BigMAC is the end result MACC for the options selected. Hitting the button 'Colour MACC' will recolour the graph.

The individual sector tabs generally consist of

- an initial tab called [SECTOR] (e.g. "Ind", "Elec" "Trans", etc.) which contains sector-specific assumptions and one-off calculations which then flow into ...
- ... a second tab called [SECTOR2] (e.g. "Ind2", "Elec2", "Trans2", etc.) where the abatement costs are calculated and formatted into a final data array which can be picked up by the MAC\_In tab.

This final data array is always at the bottom of this second tab, and uses standardised naming conventions to allow the use of the INDIRECT function in the MAC\_In tab to bring through the data from the specified sectors.

Other than this final data array, there is little that is common between the sector tabs. There are a lot of unique calculations which are specific to the sector issues in question, and multiple different modelling approaches.

The approaches taken to calculate the MACC within each sector are detailed in the main report.