

Description of electronic attachments to “Direct and indirect energy consumption of households in Beijing”

The electronic attachment includes 14 files that were used in the calculations. Each of the files is described briefly below.

Excel files:

Expenditures.xls: This file includes the raw expenditure data from the Chinese Survey of Consumer Expenditure (SCE). It also includes the extrapolations of expenditure level that was used in making projections of urban Household Energy Consumption (HEC) towards 2015.

Concordances.xls: This file includes concordances with data on how to: 1) Map expenditures by SCE categories (77 categories for urban households, 23 categories for rural households) to input-output sectors (122 sectors); 2) Aggregate final results (initially by 77 categories (urban) and 23 categories (rural)) into main consumption categories (12 categories (urban) and 11 categories (rural)).

Direct.xls: This file includes the calculations of direct HEC.

Results.xls: This file contains the results of the energy calculations. Initial (not aggregated) results for HEC in 2005 are in the sheet ‘Energy’. The sheet ‘Aggr(1)’ contains the aggregated results of HEC in 2005. The sheet ‘Wealth_distribution’ contains calculations for the investigation of how the distribution of wealth affects HEC (Section 4.2.1 in the report), as well as the calculations where the entire urban population is moved up in income corresponding to the high income group (Section 4.2.2 in the report). The results of the calculations of HEC towards 2015 are found in the sheet ‘Projections2015’. The other sheets are less important. They include discarded calculations or additional calculations to produce figures.

Matlab scripts:

very_high_income_group.m: The script loads aggregated expenditure data for the very-high income group (this data is already established in ‘Expenditures.xls’) and disaggregates the data. Finally, it writes the disaggregated data to excel file ‘Expenditures.xls’.

indirect.m: This script performs input-output calculations, i.e. it calculates the indirect HEC. The results are written to ‘Results.xls’. The script calls the functions ‘invert_conc.m’ and ‘calculate.m’.

direct.m: This script does not include any calculations. The script simply transfers results from one excel-file to another. The final results for direct HEC from ‘Direct.xls’ are copied to ‘Results.xls’.

projection.m: This script performs the calculations for the projections of urban HEC towards 2015. The script calls the function 'projection_fcn.m'.

aggregating_results.m: This script aggregates all results into main consumption categories.

Matlab functions:

invert_conc.m: This function 'inverts' the concordances matrix. The 'inverted' matrix is used for allocating energy use to SCE categories (the initial results are allocated to IO categories).

calculate.m: This function performs input-output calculations.

projection_fcn.m: This function determines the HEC at a given expenditure level, by interpolating (for each expenditure category) in the known data of HEC and expenditures of the low, medium-low, medium, medium-high, high and very-high income groups.

Convert_NaN.m: Converts any NaN to zero.

Other:

China_2002_data_mod: Data basis from Dr Glen Peters (see explanations in Section 3.2.2).