Supplemental Material

Health and Climate Impacts of Scaling Adoption of Liquefied Petroleum Gas (LPG) for Clean Household Cooking in Cameroon: A Modeling Study

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Figure S4. Disability-adjusted life-years (DALYs) lost from chronic obstructive pulmonary disease (COPD) in Cameroon. DALYs between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). DALYs after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.

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| Year | Mid-year total population size | Mid-year population under 5 (assuming 16.6% of the total population size) | Households (assuming a mean household size of 5) |
|------|-------------------------------|-------------------------------------------------|-----------------------------------------------|
| 2011 | 19900000                      | 3301794                                         | 3980000                                       |
| 2012 | 20400000                      | 3384753                                         | 4080000                                       |
| 2013 | 20900000                      | 3467713                                         | 4180000                                       |
| 2014 | 21400000                      | 3550673                                         | 4280000                                       |
| 2015 | 21917602                      | 3635553                                         | 4383520                                       |
| 2016 | 22459738                      | 3726504                                         | 4491948                                       |
| 2017 | 23001874                      | 3816454                                         | 460375                                        |
| 2018 | 23544010                      | 3906405                                         | 4708802                                       |
| 2019 | 24086146                      | 3996356                                         | 4817229                                       |
| 2020 | 24628282                      | 4086307                                         | 4925656                                       |
| 2021 | 25219361                      | 4184378                                         | 5043872                                       |
| 2022 | 25810440                      | 4282450                                         | 5162088                                       |
| 2023 | 26401518                      | 4380521                                         | 5280304                                       |
| 2024 | 26992597                      | 4478592                                         | 5398519                                       |
| 2025 | 27583676                      | 4576664                                         | 5516735                                       |
| 2026 | 28245684                      | 4686504                                         | 5649137                                       |
| 2027 | 28907692                      | 4796344                                         | 5781538                                       |
| 2028 | 29569701                      | 4906184                                         | 5913940                                       |
| 2029 | 30231709                      | 5016023                                         | 6046342                                       |
| 2030 | 30893717                      | 5125863                                         | 6178743                                       |
| 2031 | 31593613                      | 5241990                                         | 6318723                                       |
| 2032 | 32293509                      | 5358116                                         | 6458702                                       |
| 2033 | 32993406                      | 5474242                                         | 6598681                                       |
| 2034 | 33693302                      | 5590368                                         | 6738660                                       |
| 2035 | 34393198                      | 5706495                                         | 6878640                                       |
| 2036 | 35067526                      | 5818379                                         | 7013505                                       |
| 2037 | 35741854                      | 5930263                                         | 7148371                                       |
| 2038 | 36416182                      | 6042147                                         | 7283236                                       |
| 2039 | 37090511                      | 6154031                                         | 7418102                                       |
| 2040 | 37764839                      | 6265915                                         | 7552968                                       |
| 2041 | 38499250                      | 6387768                                         | 7699850                                       |
| 2042 | 39233661                      | 6509621                                         | 7846732                                       |
| 2043 | 39968072                      | 6631474                                         | 7993614                                       |
| 2044 | 40702483                      | 6753327                                         | 8140497                                       |
| 2045 | 41436894                      | 6875180                                         | 8287379                                       |
| 2046 | 42204056                      | 7002467                                         | 8440811                                       |
| 2047 | 42971217                      | 7129754                                         | 8594243                                       |
| 2048 | 43738379                      | 7257040                                         | 8747676                                       |
| 2049 | 44505540                      | 7384327                                         | 8901108                                       |
| 2050 | 45272702                      | 7511614                                         | 9054540                                       |
| 2051 | 46059303                      | 7642127                                         | 9211861                                       |
| Year | Mid-year total population size | Mid-year population under 5 (assuming 16.6% of the total population size) | Households (assuming a mean household size of 5) |
|------|--------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------|
| 2052 | 46845904                       | 7772639                                                                      | 9369181                                         |
| 2053 | 47632506                       | 7903151                                                                      | 9526501                                         |
| 2054 | 48419107                       | 8033664                                                                      | 9683821                                         |
| 2055 | 49205709                       | 8164176                                                                      | 9841142                                         |
| 2056 | 49999928                       | 8295952                                                                      | 9999986                                         |
| 2057 | 50794148                       | 8427729                                                                      | 10158830                                        |
| 2058 | 51588367                       | 8559505                                                                      | 10317673                                        |
| 2059 | 52382587                       | 8691281                                                                      | 10476517                                        |
| 2060 | 53176806                       | 8823058                                                                      | 10635361                                        |
| 2061 | 53970791                       | 8954795                                                                      | 10794158                                        |
| 2062 | 54764775                       | 9086532                                                                      | 10952955                                        |
| 2063 | 55558759                       | 9218269                                                                      | 11111752                                        |
| 2064 | 56352744                       | 9350007                                                                      | 11270549                                        |
| 2065 | 57146728                       | 9481744                                                                      | 11429346                                        |
| 2066 | 57934076                       | 9612380                                                                      | 11586815                                        |
| 2067 | 58721423                       | 9743016                                                                      | 11744285                                        |
| 2068 | 59508771                       | 9873653                                                                      | 11901754                                        |
| 2069 | 60296119                       | 10004289                                                                     | 12059224                                        |
| 2070 | 61083467                       | 10134925                                                                     | 12216693                                        |
| 2071 | 61854003                       | 10262772                                                                     | 12370801                                        |
| 2072 | 62624538                       | 10390618                                                                     | 12524908                                        |
| 2073 | 63395074                       | 10518465                                                                     | 12679015                                        |
| 2074 | 64165610                       | 10646312                                                                     | 12833122                                        |
| 2075 | 64936146                       | 10774159                                                                     | 12987229                                        |
| 2076 | 65680477                       | 10897658                                                                     | 13136095                                        |
| 2077 | 66424809                       | 11021157                                                                     | 13284962                                        |
| 2078 | 67169140                       | 11144656                                                                     | 13433828                                        |
| 2079 | 67913472                       | 11268154                                                                     | 13582694                                        |
| 2080 | 68657803                       | 11391653                                                                     | 13731561                                        |
| 2081 | 69366180                       | 11509187                                                                     | 13873236                                        |
| 2082 | 70074556                       | 11626720                                                                     | 14014911                                        |
| 2083 | 70782933                       | 11744253                                                                     | 14156587                                        |
| 2084 | 71491309                       | 11861787                                                                     | 14298262                                        |
| 2085 | 72199686                       | 11979320                                                                     | 14439937                                        |
| 2086 | 72861986                       | 12089208                                                                     | 14572397                                        |
| 2087 | 73524287                       | 12199097                                                                     | 14704857                                        |
| 2088 | 74186587                       | 12308985                                                                     | 14837317                                        |
| 2089 | 74848888                       | 12418874                                                                     | 14969778                                        |
| 2090 | 75511188                       | 12528762                                                                     | 15102238                                        |
| 2091 | 76120269                       | 12629820                                                                     | 15224054                                        |
| 2092 | 76729350                       | 12730879                                                                     | 15345870                                        |
| 2093 | 77338431                       | 12831937                                                                     | 15467686                                        |
| 2094 | 77947511                       | 12932995                                                                     | 15589502                                        |
| 2095 | 78556592                       | 13034053                                                                     | 15711318                                        |
| 2096 | 79108733                       | 13125664                                                                     | 15821747                                        |
| Year | Mid-year total population size | Mid-year population under 5 (assuming 16.6% of the total population size) | Households (assuming a mean household size of 5) |
|------|-------------------------------|-------------------------------------------------|-----------------------------------------------|
| 2097 | 79660873                      | 13217275                                        | 15932175                                      |
| 2098 | 80213014                      | 13308886                                        | 16042603                                      |
| 2099 | 80765155                      | 13400497                                        | 16153031                                      |
| 2100 | 81317296                      | 13492107                                        | 16263459                                      |

Notes: Mid-year population projection from 2015 to 2030, were only reported in 5-year intervals, and we used linear interpolation to estimate population sizes in-between the reported years.

We calibrated the UN projections (2031 onwards) by calculating the ratio between the two projections for the common years (2017-2030). We then projected the ratio assuming logarithmic growth and multiplied it with the median UN population projection. This produced a more conservative population projection than the median population projection from the UN, with better alignment to the official population projections from the National Statistics Institute of Cameroon.

For the number of children under the age of five, we used the estimate for the proportion of children under the age of five in 2005 which was approximately 16.6% of the population (INS 2011) and we assumed this proportion remained constant over time.

For the mean household size, we used the mean household size in Cameroon in 2011 which is five (INS and ICF International 2012) and we assumed that this also remained constant over time.
Table S2. Modeled mean and standard deviation from the log-normal distributions with the best fit to the LPG Adoption in Cameroon Evaluation (LACE) exposure data for women (cooks) and children (<5).

| Group    | Stove type | Mean PM$_{2.5}$ exposure ($\mu$g/m$^3$) | Standard deviation ($\mu$g/m$^3$) |
|----------|------------|----------------------------------------|-----------------------------------|
| Cooks    | Traditional | 94.2                                    | 108.2                             |
| Cooks    | LPG        | 18.5                                    | 17.7                              |
| Children | Traditional | 41.4                                    | 47.7                              |
| Children | LPG        | 18.9                                    | 38                                |

Notes: We used the children's exposure, as shown in the table only in the ‘dynamic approach.’ For the ‘comparative risk approach’ we used a fixed ratio of 0.82 for children's exposure, compared to cooks.

LACE studies included 48-hr monitoring of 102 women, 56 children (< 5 years of age) from peri-urban and rural households in South-West Cameroon exclusively using wood fuel and 67 women and 60 children primarily using LPG fuel. (Pope et al. 2018a, Pope et al. 2018b)

We used maximum likelihood estimation to fit a log-normal distribution to the LACE observed exposures by stove type.
Table S3. Cameroon disease burden data from the Global Burden of Disease 2016 database for years 1990 to 2016. Available from: http://ghdx.healthdata.org/gbd-results-tool?params=gbd-api-2016-permalink/ba8cb190a7fd0d999999555c99999995ceed909e5fa1. Numbers are rates per 100,000 population rounded to the first decimal digit. We used these data to fit the disease burden forecast models. DALY denotes disability-adjusted life years; YLL denotes years of life lost.

| Year | Cause                           | Age            | DALYs | Deaths | YLLs |
|------|---------------------------------|----------------|-------|--------|------|
| 1990 | Cerebrovascular disease         | Age-standardized | 2188.2 | 118.3  | 2073.4 |
| 1991 | Cerebrovascular disease         | Age-standardized | 2179.3 | 117.5  | 2065.1 |
| 1992 | Cerebrovascular disease         | Age-standardized | 2182.8 | 117.3  | 2069.1 |
| 1993 | Cerebrovascular disease         | Age-standardized | 2193.3 | 117.3  | 2080.1 |
| 1994 | Cerebrovascular disease         | Age-standardized | 2188.6 | 116.8  | 2075.5 |
| 1995 | Cerebrovascular disease         | Age-standardized | 2179.2 | 116.0  | 2066.0 |
| 1996 | Cerebrovascular disease         | Age-standardized | 2174.4 | 115.2  | 2061.3 |
| 1997 | Cerebrovascular disease         | Age-standardized | 2222.5 | 117.1  | 2109.2 |
| 1998 | Cerebrovascular disease         | Age-standardized | 2249.9 | 118.0  | 2136.3 |
| 1999 | Cerebrovascular disease         | Age-standardized | 2302.9 | 120.5  | 2188.8 |
| 2000 | Cerebrovascular disease         | Age-standardized | 2388.5 | 124.4  | 2273.8 |
| 2001 | Cerebrovascular disease         | Age-standardized | 2376.6 | 123.8  | 2262.2 |
| 2002 | Cerebrovascular disease         | Age-standardized | 2376.5 | 123.7  | 2261.6 |
| 2003 | Cerebrovascular disease         | Age-standardized | 2366.3 | 123.2  | 2250.8 |
| 2004 | Cerebrovascular disease         | Age-standardized | 2371.7 | 123.5  | 2255.6 |
| 2005 | Cerebrovascular disease         | Age-standardized | 2393.3 | 124.4  | 2276.3 |
| 2006 | Cerebrovascular disease         | Age-standardized | 2361.9 | 122.8  | 2244.8 |
| 2007 | Cerebrovascular disease         | Age-standardized | 2349.6 | 122.2  | 2233.1 |
| 2008 | Cerebrovascular disease         | Age-standardized | 2315.2 | 120.5  | 2198.7 |
| 2009 | Cerebrovascular disease         | Age-standardized | 2281.1 | 118.9  | 2164.3 |
| 2010 | Cerebrovascular disease         | Age-standardized | 2269.2 | 118.4  | 2151.9 |
| 2011 | Cerebrovascular disease         | Age-standardized | 2265.2 | 118.4  | 2148.7 |
| 2012 | Cerebrovascular disease         | Age-standardized | 2250.9 | 117.8  | 2134.5 |
| 2013 | Cerebrovascular disease         | Age-standardized | 2236.7 | 117.3  | 2120.6 |
| 2014 | Cerebrovascular disease         | Age-standardized | 2212.0 | 116.3  | 2096.4 |
| 2015 | Cerebrovascular disease         | Age-standardized | 2185.2 | 115.2  | 2069.8 |
| 2016 | Cerebrovascular disease         | Age-standardized | 2161.9 | 114.1  | 2045.9 |
| 1990 | Chronic obstructive pulmonary disease | Age-standardized | 1038.7 | 52.0   | 862.5 |
| 1991 | Chronic obstructive pulmonary disease | Age-standardized | 1017.3 | 50.9   | 844.1 |
| 1992 | Chronic obstructive pulmonary disease | Age-standardized | 998.5  | 49.9   | 827.9 |
| 1993 | Chronic obstructive pulmonary disease | Age-standardized | 983.3  | 49.1   | 817.0 |
| 1994 | Chronic obstructive pulmonary disease | Age-standardized | 954.9  | 47.5   | 789.6 |
| 1995 | Chronic obstructive pulmonary disease | Age-standardized | 923.4  | 45.8   | 759.8 |
| 1996 | Chronic obstructive pulmonary disease | Age-standardized | 892.4  | 44.0   | 730.3 |
| 1997 | Chronic obstructive pulmonary disease | Age-standardized | 878.0  | 43.0   | 716.6 |
| Year | Cause                                | Age        | DALYs | Deaths | YLLs  |
|------|--------------------------------------|------------|-------|--------|-------|
| 1998 | Chronic obstructive pulmonary disease | Age-standardized | 862.1 | 42.1   | 701.9 |
| 1999 | Chronic obstructive pulmonary disease | Age-standardized | 867.4 | 42.4   | 708.6 |
| 2000 | Chronic obstructive pulmonary disease | Age-standardized | 881.9 | 43.1   | 723.7 |
| 2001 | Chronic obstructive pulmonary disease | Age-standardized | 876.5 | 42.9   | 718.8 |
| 2002 | Chronic obstructive pulmonary disease | Age-standardized | 873.2 | 42.8   | 715.6 |
| 2003 | Chronic obstructive pulmonary disease | Age-standardized | 868.4 | 42.6   | 710.8 |
| 2004 | Chronic obstructive pulmonary disease | Age-standardized | 866.6 | 42.6   | 709.7 |
| 2005 | Chronic obstructive pulmonary disease | Age-standardized | 870.0 | 42.8   | 712.6 |
| 2006 | Chronic obstructive pulmonary disease | Age-standardized | 863.0 | 42.5   | 707.1 |
| 2007 | Chronic obstructive pulmonary disease | Age-standardized | 859.6 | 42.4   | 704.9 |
| 2008 | Chronic obstructive pulmonary disease | Age-standardized | 852.3 | 42.1   | 698.8 |
| 2009 | Chronic obstructive pulmonary disease | Age-standardized | 842.9 | 41.7   | 690.1 |
| 2010 | Chronic obstructive pulmonary disease | Age-standardized | 839.6 | 41.6   | 687.3 |
| 2011 | Chronic obstructive pulmonary disease | Age-standardized | 838.4 | 41.6   | 686.8 |
| 2012 | Chronic obstructive pulmonary disease | Age-standardized | 833.1 | 41.4   | 682.1 |
| 2013 | Chronic obstructive pulmonary disease | Age-standardized | 828.7 | 41.2   | 677.6 |
| 2014 | Chronic obstructive pulmonary disease | Age-standardized | 820.8 | 40.8   | 670.0 |
| 2015 | Chronic obstructive pulmonary disease | Age-standardized | 812.2 | 40.4   | 661.8 |
| 2016 | Chronic obstructive pulmonary disease | Age-standardized | 805.2 | 40.0   | 654.5 |
| 1990 | Ischemic heart disease               | Age-standardized | 1716.8| 110.9  | 1650.1|
| 1991 | Ischemic heart disease               | Age-standardized | 1750.9| 112.6  | 1684.7|
| 1992 | Ischemic heart disease               | Age-standardized | 1800.6| 115.1  | 1734.2|
| 1993 | Ischemic heart disease               | Age-standardized | 1862.4| 118.1  | 1796.0|
| 1994 | Ischemic heart disease               | Age-standardized | 1911.0| 120.8  | 1844.6|
| 1995 | Ischemic heart disease               | Age-standardized | 1965.1| 123.6  | 1898.8|
| 1996 | Ischemic heart disease               | Age-standardized | 2055.3| 127.9  | 1988.5|
| 1997 | Ischemic heart disease               | Age-standardized | 2192.1| 134.5  | 2124.5|
| 1998 | Ischemic heart disease               | Age-standardized | 2313.9| 140.2  | 2245.6|
| 1999 | Ischemic heart disease               | Age-standardized | 2405.3| 144.6  | 2336.4|
| 2000 | Ischemic heart disease               | Age-standardized | 2531.2| 150.5  | 2461.5|
| 2001 | Ischemic heart disease               | Age-standardized | 2548.1| 151.2  | 2478.4|
| 2002 | Ischemic heart disease               | Age-standardized | 2572.1| 152.4  | 2501.9|
| 2003 | Ischemic heart disease               | Age-standardized | 2590.7| 153.2  | 2520.7|
| 2004 | Ischemic heart disease               | Age-standardized | 2619.8| 154.4  | 2549.2|
| 2005 | Ischemic heart disease               | Age-standardized | 2663.2| 156.3  | 2592.2|
| 2006 | Ischemic heart disease               | Age-standardized | 2631.0| 154.9  | 2560.2|
| 2007 | Ischemic heart disease               | Age-standardized | 2617.7| 154.3  | 2547.1|
| 2008 | Ischemic heart disease               | Age-standardized | 2575.7| 152.4  | 2505.5|
| 2009 | Ischemic heart disease               | Age-standardized | 2529.2| 150.3  | 2459.2|
| Year | Cause                                    | Age         | DALYs    | Deaths | YLLs     |
|------|------------------------------------------|-------------|----------|--------|----------|
| 2010 | Ischemic heart disease                   | Age-standardized | 2506.4   | 149.4  | 2436.0   |
| 2011 | Ischemic heart disease                   | Age-standardized | 2495.9   | 149.3  | 2426.1   |
| 2012 | Ischemic heart disease                   | Age-standardized | 2471.7   | 148.2  | 2401.7   |
| 2013 | Ischemic heart disease                   | Age-standardized | 2451.7   | 147.3  | 2381.5   |
| 2014 | Ischemic heart disease                   | Age-standardized | 2421.7   | 145.9  | 2351.5   |
| 2015 | Ischemic heart disease                   | Age-standardized | 2391.5   | 144.6  | 2321.4   |
| 2016 | Ischemic heart disease                   | Age-standardized | 2364.5   | 143.4  | 2293.8   |
| 1990 | Lower respiratory infections              | Under 5     | 35490.6  | 414.5  | 35473.2  |
| 1991 | Lower respiratory infections              | Under 5     | 35335.8  | 413.0  | 35346.4  |
| 1992 | Lower respiratory infections              | Under 5     | 35372.3  | 413.4  | 35378.5  |
| 1993 | Lower respiratory infections              | Under 5     | 35704.7  | 417.3  | 35714.3  |
| 1994 | Lower respiratory infections              | Under 5     | 35872.3  | 419.2  | 35879.5  |
| 1995 | Lower respiratory infections              | Under 5     | 35885.1  | 419.0  | 35865.7  |
| 1996 | Lower respiratory infections              | Under 5     | 36049.2  | 421.3  | 36059.7  |
| 1997 | Lower respiratory infections              | Under 5     | 35935.3  | 419.9  | 35940.6  |
| 1998 | Lower respiratory infections              | Under 5     | 35288.6  | 412.2  | 35287.8  |
| 1999 | Lower respiratory infections              | Under 5     | 34408.1  | 402.0  | 34423.8  |
| 2000 | Lower respiratory infections              | Under 5     | 34072.3  | 397.7  | 34053.3  |
| 2001 | Lower respiratory infections              | Under 5     | 32771.8  | 382.7  | 32777.8  |
| 2002 | Lower respiratory infections              | Under 5     | 32814.8  | 383.2  | 32814.2  |
| 2003 | Lower respiratory infections              | Under 5     | 31152.7  | 363.7  | 31150.9  |
| 2004 | Lower respiratory infections              | Under 5     | 29279.5  | 341.9  | 29291.4  |
| 2005 | Lower respiratory infections              | Under 5     | 28515.8  | 332.7  | 28498.8  |
| 2006 | Lower respiratory infections              | Under 5     | 28548.3  | 333.1  | 28532.0  |
| 2007 | Lower respiratory infections              | Under 5     | 28148.4  | 328.8  | 28161.5  |
| 2008 | Lower respiratory infections              | Under 5     | 28444.6  | 332.1  | 28447.8  |
| 2009 | Lower respiratory infections              | Under 5     | 28744.9  | 335.6  | 28742.6  |
| 2010 | Lower respiratory infections              | Under 5     | 28638.7  | 334.3  | 28625.1  |
| 2011 | Lower respiratory infections              | Under 5     | 27831.3  | 325.1  | 27836.3  |
| 2012 | Lower respiratory infections              | Under 5     | 26774.5  | 312.7  | 26779.0  |
| 2013 | Lower respiratory infections              | Under 5     | 25104.3  | 293.2  | 25108.4  |
| 2014 | Lower respiratory infections              | Under 5     | 24027.3  | 280.5  | 24028.0  |
| 2015 | Lower respiratory infections              | Under 5     | 22638.7  | 264.4  | 22643.7  |
| 2016 | Lower respiratory infections              | Under 5     | 21902.6  | 255.5  | 21888.9  |
| 1990 | Tracheal, bronchus, and lung cancer       | Age-standardized | 248.7    | 11.6   | 246.8    |
| 1991 | Tracheal, bronchus, and lung cancer       | Age-standardized | 249.4    | 11.6   | 247.5    |
| 1992 | Tracheal, bronchus, and lung cancer       | Age-standardized | 251.2    | 11.7   | 249.3    |
| 1993 | Tracheal, bronchus, and lung cancer       | Age-standardized | 253.7    | 11.7   | 251.9    |
| 1994 | Tracheal, bronchus, and lung cancer       | Age-standardized | 252.6    | 11.7   | 250.8    |
| Year | Cause                        | Age                        | DALYs | Deaths | YLLs  |
|------|------------------------------|----------------------------|-------|--------|-------|
| 1995 | Tracheal, bronchus, and lung cancer | Age-standardized         | 252.0 | 11.7   | 250.1 |
| 1996 | Tracheal, bronchus, and lung cancer | Age-standardized         | 254.7 | 11.8   | 252.9 |
| 1997 | Tracheal, bronchus, and lung cancer | Age-standardized         | 259.0 | 12.0   | 257.2 |
| 1998 | Tracheal, bronchus, and lung cancer | Age-standardized         | 262.2 | 12.1   | 260.4 |
| 1999 | Tracheal, bronchus, and lung cancer | Age-standardized         | 265.9 | 12.3   | 264.0 |
| 2000 | Tracheal, bronchus, and lung cancer | Age-standardized         | 272.5 | 12.6   | 270.5 |
| 2001 | Tracheal, bronchus, and lung cancer | Age-standardized         | 273.0 | 12.7   | 271.1 |
| 2002 | Tracheal, bronchus, and lung cancer | Age-standardized         | 273.7 | 12.8   | 271.7 |
| 2003 | Tracheal, bronchus, and lung cancer | Age-standardized         | 274.7 | 12.9   | 272.7 |
| 2004 | Tracheal, bronchus, and lung cancer | Age-standardized         | 276.2 | 13.0   | 274.1 |
| 2005 | Tracheal, bronchus, and lung cancer | Age-standardized         | 278.7 | 13.1   | 276.5 |
| 2006 | Tracheal, bronchus, and lung cancer | Age-standardized         | 278.9 | 13.2   | 276.8 |
| 2007 | Tracheal, bronchus, and lung cancer | Age-standardized         | 279.9 | 13.2   | 277.9 |
| 2008 | Tracheal, bronchus, and lung cancer | Age-standardized         | 278.8 | 13.2   | 276.8 |
| 2009 | Tracheal, bronchus, and lung cancer | Age-standardized         | 277.0 | 13.2   | 275.0 |
| 2010 | Tracheal, bronchus, and lung cancer | Age-standardized         | 276.1 | 13.2   | 274.0 |
| 2011 | Tracheal, bronchus, and lung cancer | Age-standardized         | 278.0 | 13.3   | 276.0 |
| 2012 | Tracheal, bronchus, and lung cancer | Age-standardized         | 278.4 | 13.3   | 276.4 |
| 2013 | Tracheal, bronchus, and lung cancer | Age-standardized         | 279.2 | 13.4   | 277.2 |
| 2014 | Tracheal, bronchus, and lung cancer | Age-standardized         | 279.5 | 13.4   | 277.5 |
| 2015 | Tracheal, bronchus, and lung cancer | Age-standardized         | 279.9 | 13.5   | 277.9 |
| 2016 | Tracheal, bronchus, and lung cancer | Age-standardized         | 280.7 | 13.5   | 278.6 |
Table S4. The emission factors applied to climate modeling.

| Emission factors (g/kg fuel) | CO₂  | CO   | CH₄  | VOC | OC  | BC   | SO₂ | NOₓ |
|------------------------------|------|------|------|-----|-----|------|-----|-----|
| Wood                         | 418  | 35   | 4.8  | 3.2 | 4   | 1.5  | 0.01| 1.57|
| LPG                          | 841  | 6.4  | 0    | 14.1| 0.1 | 0.2  | 0   | 3.26|
| Charcoal (direct emissions)  | 1113 | 205.7| 46.5 | 63.5| 8   | 2.3  | 0.01| 0.853|
| Charcoal (emissions from production) | 2488 | 314 | 44.5 | 9.9 | 4   | 1.2  | 0.005| 3.0 |

Note: For wood, we have used emission factors for traditional stove burning wood unvented (i.e. stove without chimney), for LPG an LPG metal stove unvented, and for charcoal a charcoal stove unvented, all from Grieshop et al. (2011) for all species except NOx. We supplemented NOx emission factors with values from Zhang et al. (2000) with a metal stove without flue from India with brushwood and fuelwood for fuelwood and charcoal and LPG traditional stove without flue for LPG. Emissions of VOC are based on estimates of non-methane hydrocarbon (NMHC) in Grieshop et al. (2011) We also include emissions from charcoal production. We apply emissions factors that are the average of Sparrevik et al. (2015). Emissions of CO2 are in units of C.
Table S5. Global warming potential (GWP) and global temperature change potential (GTP) values and the emission metric parameterization used (time horizons in years given in brackets). These values are unitless and indicate how strong emissions are relative to CO₂. We have followed the parameterization used in IPCC (2014), the chapter of Myhre et al.(2013), with the exception of the upward revision of CH₄ due to newer research (Etminan et al., 2016) finding stronger radiative forcing due to processes previously not accounted for. Here, we cite the original source.

|        | GTP(20) | GTP(100) | GWP(20) | GWP(100) | Parameterization from                        |
|--------|---------|----------|---------|----------|---------------------------------------------|
| BC     | 700     | 91       | 2400    | 660      | Myhre et al. (2013), based on Bond et al. (2013) |
| OC     | -71     | -9.1     | -240    | -66      | Fuglestvedt et al. (2010)                    |
| SO₂    | -41     | -5.3     | -140    | -38      | Fuglestvedt et al. (2010)                    |
| NOₓ    | -220    | -5.2     | 120     | -11      | Wild et al. (2001), value for the Tropics   |
| CO     | 3.7     | 0.27     | 5.9     | 1.9      | Derwent et al. (2001)                        |
| VOC    | 7.4     | 0.61     | 14      | 4.3      | Collins et al. (2002), see Table 3 in Fuglestvedt et al. (2010) |
| CH₄    | 77      | 4.9      | 96      | 32       | Myhre et al.(2013), but increased by 14% based on Etminan et al. (2016) |
| CO₂    | 1       | 1        | 1       | 1        | Myhre et al. (2013)                          |

Note: The most common emission metric is GWP(100). CO₂ has, by definition, value of 1. Values higher than 1 indicate a stronger climate impact per unit emission than for CO₂. Negative values translate to cooling.
Figure S1. Mortality rate of acute lower respiratory infection (ALRI) in children under the age of five in Cameroon. Mortality rates between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). Mortality rates after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.

Figure S2. Disability-adjusted life-years (DALYs) lost from acute lower respiratory infection (ALRI) in children under the age of five in Cameroon. DALYs between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). DALYs after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.
Figure S3. Age-standardised mortality rate (ASMR) of chronic obstructive pulmonary disease (COPD) in Cameroon. ASMR between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). ASMR after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.

Figure S4. Disability-adjusted life-years (DALYs) lost from chronic obstructive pulmonary disease (COPD) in Cameroon. DALYs between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). DALYs after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.
Figure S5. Age-standardised mortality rate (ASMR) of lung cancer in Cameroon. ASMR between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). ASMR after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.

Figure S6. Disability-adjusted life-years (DALYs) lost from lung cancer in Cameroon. DALYs between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). DALYs after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.
Figure S7. Age-standardised mortality rate (ASMR) of ischemic heart disease in Cameroon. ASMR between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). ASMR after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.

Figure S8. Disability-adjusted life-years (DALYs) lost from ischemic heart disease in Cameroon. DALYs between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). DALYs after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.
Figure S9. Age-standardised mortality rate (ASMR) of cerebrovascular disease in Cameroon. ASMR between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). ASMR after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.

Figure S10. Disability-adjusted life-years (DALYs) lost from cerebrovascular disease in Cameroon. DALYs between 1990 and 2016 are from the Global Burden of Disease 2016 database (IHME 2018). DALYs after 2016 are exponential smoothing projection of the 1990-2016 time series. The shaded area depicts 95% prediction intervals.
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