



Population using modern fuels for cooking/heating/lighting

Abbreviated name	Population using modern fuels for cooking/heating/lighting
Indicator name	Population using modern fuels and technologies for cooking/heating/lighting (indoor air)
Domain	Risk factors
Subdomain	Environment
Associated terms	Environmental risk factors
Definition	Percentage of households/population using modern fuels and technologies for cooking/heating/lighting as defined by the recommendations set forth in the <i>WHO guidelines for indoor air quality: household fuel combustion</i> .
Numerator	Number of households (population) using modern fuels and technologies for cooking/heating/lighting.
Denominator	Total number of households (population).
Disaggregation/ additional dimension	Place of residence, sex, socioeconomic status Fuel type, end use (i.e. cooking, heating, lighting)
Method of measurement	The indicator is calculated as the number of people using modern fuels and technologies divided by the total population, expressed as a percentage. Data on the use of fuels and technologies for different end uses (e.g. cooking, heating, lighting) are routinely collected at national and subnational levels in most countries using censuses and surveys. Currently, modern fuels exclude solid fuels and kerosene. For the purpose of estimating the health impacts, it is recommended to monitor the use of kerosene also as a separate category.
Method of estimation	<p>The indicator is modelled with household survey data compiled by WHO. The information on cooking fuel use and cooking practices from more than 700 nationally representative data sources, such as those listed above, is used in combination with the most recent survey data available on heating and lighting fuels and technologies.</p> <p>Unless stated otherwise, estimates for cooking using modern fuels and technologies for the total (urban and rural) population for a given year were obtained separately using a multilevel model. The model accounts only for regions, countries and time as a spline function, and estimates were restricted to values ranging from zero to one. All analyses were conducted using STATA software (version 12, StataCorp LP, College Station, TX, USA).</p> <p>Estimates for countries with no available surveys were obtained as follows: When no information on the fuels and technologies use in the home was available for the country, the regional population-weighted mean was used. Note that this approach was also applied to Equatorial Guinea instead of the one used for high-income countries (see below); Countries classified as high-income with a Gross National Income (GNI) of more than US\$ 12 616 per capita (The World Bank, http://data.worldbank.org/about/country-classifications, accessed July 2013) are assumed to have made a complete transition to using modern fuels and technologies as the primary source of domestic energy for cooking and heating, and solid fuel use is reported to be less than 5%.</p>
Measurement frequency	Every 3–5 years
Monitoring and evaluation framework	Outcome
Preferred data sources	Household surveys, population census
Other possible data sources	Other sources, including estimation and modelling
Further information and related links	<p>Bonjour S, Adair-Rohani H, Wolf J, Bruce NG, Mehta S, Prüss-Ustün A et al. Solid fuel use for household cooking: country and regional estimates for 1980–2010. <i>Environ Health Perspect</i>. 2013;121(7):784–90.</p> <p>Indoor air quality guidelines: household fuel combustion. Geneva: World Health Organization; 2014 [in press] (http://www.who.int/indoorair/publications/household-fuel-combustion/en/, accessed 29 March 2015).</p> <p>Rehfuess E, Mehta S, Prüss-Üstün A. Assessing household solid fuel use: multiple implications for the Millennium Development Goals. <i>Environ Health Perspect</i>. 2006;114(3):373–8).</p> <p>World health statistics 2014. Geneva: World Health Organization; 2014 (http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671_eng.pdf?ua=1, accessed 29 March 2015).</p>