Pollutant Emissions from Improved Cookstoves used in Sub-Saharan Africa

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**Supplementary Information**

The Supplementary Information consists of

(1) Emissions profiles are given in Figures S1, S2 and S3 for a number of fuels burning on different stoves. Further information is available from, *Emissions from Residential Solid Fuel Combustion and Implications for Air Quality and Climate Change*. E.J.S.Mitchell, PhD Thesis University of Leeds, 2017

(2) Sources of data and their references are given in Table S1 in relation to Figure 7 in the body of the paper.

Emission Profiles as detailed in the Legends. The units are ppm



Figure S1. Emissions profiles for MCE, CO, NH3, HCl and OM from using charcoal on the Gyapa stove; single cycle. Charcoal is the normal fuel for this stove.

Figure S. Emissions profiles for MCE, CO, NH3, HCl and OM from dry and wet oak on the CarbonZero stove; the vertical line shows the end of the dry and wet cycles: the first cycle is for dry and the second for wet oak.



Fig. S3. Emissions profiles MCE, CO, NH3, HCl and OM for wood pellets burning on the Lucia Stove. The stove is reloaded at the point indicated by the vertical line..

**Literature Data Set**

The data from the literature survey presented in Figure 7 is presented in its raw form in Table S1.

Table S1. Literature review of emission factors by stove and fuel type. Imp-char = Improved stove using charcoal; Trad = Traditional stove or three stone fire; Imp-rocket = improved rocket-type stove, Imp-fan = improved fan-assisted stove.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Fuel** | **PM**  **(g/kg)** | **CO**  **(g/kg)** | **EC/TC** | **CH4**  **(g/kg** | **NOx**  **(g/kg)** | **Reference** |
| Trad | dry wood | 1.84 | 30.2 |  | 1.1 |  | Jetter et al. (2012) |
| Trad | wet wood | 6.92 | 51.6 |  | 2 |  | Jetter et al. (2012) |
| Improved | dry wood | 1.47 | 32.5 |  | 0.8 |  | Jetter et al. (2012) |
| Improved | wet wood | 4.17 | 52.3 |  | 1.6 |  | Jetter et al. (2012) |
| Imp-rocket | dry wood | 3.21 | 35.7 |  | 2 |  | Jetter et al. (2012) |
| Imp-rocket | wet wood | 1.96 | 26.4 |  | 1 |  | Jetter et al. (2012) |
| Imp-rocket | dry wood | 1.38 | 14.5 |  | 0.5 |  | Jetter et al. (2012) |
| Gasifier | dry wood | 4.91 | 37.0 |  | 1.6 |  | Jetter et al. (2012) |
| Gasifier | wet wood | 2.96 | 61.9 |  | 3.3 |  | Jetter et al. (2012) |
| Gasifier | dry wood | 0.47 | 10.4 |  | 0.2 |  | Jetter et al. (2012) |
| Gasifier | wet wood | 1.36 | 25.8 |  | 1.3 |  | Jetter et al. (2012) |
| Gasifier | dry wood | 2.97 | 39.3 |  | 2 |  | Jetter et al. (2012) |
| Gasifier | wet wood | 1.48 | 58.2 |  | 3.1 |  | Jetter et al. (2012) |
| Imp-rocket | dry wood | 2.71 | 35.1 |  | 2.2 |  | Jetter et al. (2012) |
| Imp-rocket | wet wood | 2.68 | 40.8 |  | 2.8 |  | Jetter et al. (2012) |
| Improved | dry wood | 3.76 | 49.2 |  | 3.1 |  | Jetter et al. (2012) |
| Improved | wet wood | 10.10 | 67.6 |  | 4.7 |  | Jetter et al. (2012) |
| Imp-char | charcoal | 3.24 | 101.8 |  | 3.7 |  | Jetter et al. (2012) |
| Imp-char | charcoal | 4.30 | 209.0 |  | 5.4 |  | Jetter et al. (2012) |
| Imp-char | charcoal | 3.96 | 197.8 |  | 5.4 |  | Jetter et al. (2012) |
| Imp-char | charcoal | 5.16 | 185.7 |  | 5.5 |  | Jetter et al. (2012) |
| Imp-char | charcoal | 3.00 | 189.0 |  | 6.9 |  | Jetter et al. (2012) |
| Imp-char | charcoal | 3.38 | 209.8 |  | 9 |  | Jetter et al. (2012) |
| Imp-char | charcoal | 4.10 | 141.7 |  | 2.3 |  | Jetter et al. (2012) |
| Trad | dry wood | 7.7 | 96.3 |  |  |  | Wathore et al. (2017) |
| Improved | dry wood | 6.1 | 56.4 |  |  |  | Wathore et al. (2017) |
| Gasifier | dry wood | 4.1 | 53.8 |  |  |  | Wathore et al. (2017) |
| Trad | dry wood | 7.8 | 98.6 |  |  |  | Wathore et al. (2017) |
| Improved | dry wood | 6.7 | 105.9 |  |  |  | Wathore et al. (2017) |
| Trad | dry wood | 7.1 | 105 | 0.18 |  |  | Wathore et al. (2017) |
| Improved | dry wood | 3.5 | 43 | 0.25 |  |  | Wathore et al. (2017) |
| Improved | dry wood | 2.4 | 33 | 0.61 |  |  | Wathore et al. (2017) |
| Gasifier | dry wood | 1.8 | 29 | 0.45 |  |  | Wathore et al. (2017) |
| Trad | dry wood | 1.34 | 51.88 |  |  |  | MacCarty et al. (2010) |
| Improved | dry wood | 4.90 | 57.14 |  |  |  | MacCarty et al. (2010) |
| Trad | dry wood | 3.12 | 64.99 |  |  |  | MacCarty et al. (2010) |
| Improved | dry wood | 3.22 | 64.37 |  |  |  | MacCarty et al. (2010) |
| Improved | dry wood | 3.45 | 49.16 |  |  |  | MacCarty et al. (2010) |
| Improved | dry wood | 1.34 | 32.96 |  |  |  | MacCarty et al. (2010) |
| Improved | dry wood | 1.30 | 23.49 |  |  |  | MacCarty et al. (2010) |
| Improved | dry wood | 0.72 | 54.05 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 1.84 | 20.03 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 1.23 | 16.38 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 0.60 | 9.71 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 1.48 | 14.73 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 1.48 | 25.70 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 0.89 | 20.75 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 0.93 | 20.10 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 0.59 | 15.60 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 0.94 | 24.00 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 0.74 | 22.92 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 0.98 | 24.26 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 0.94 | 24.10 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 1.47 | 30.72 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 1.59 | 22.46 |  |  |  | MacCarty et al. (2010) |
| Imp-rocket | dry wood | 1.08 | 21.38 |  |  |  | MacCarty et al. (2010) |
| Gasifier | dry wood | 0.09 | 10.80 |  |  |  | MacCarty et al. (2010) |
| Gasifier | dry wood | 0.23 | 28.10 |  |  |  | MacCarty et al. (2010) |
| Gasifier | dry wood | 0.81 | 34.85 |  |  |  | MacCarty et al. (2010) |
| Imp-fan | dry wood | 0.11 | 5.05 |  |  |  | MacCarty et al. (2010) |
| Imp-fan | dry wood | 0.48 | 9.77 |  |  |  | MacCarty et al. (2010) |
| Imp-fan | dry wood | 0.08 | 14.78 |  |  |  | MacCarty et al. (2010) |
| Imp-fan | dry wood | 0.06 | 15.22 |  |  |  | MacCarty et al. (2010) |
| Imp-fan | dry wood | 0.21 | 8.31 |  |  |  | MacCarty et al. (2010) |
| Imp-char | Charcoal | 0.40 | 172.52 |  |  |  | MacCarty et al. (2010) |
| Imp-char | Charcoal | 0.41 | 166.39 |  |  |  | MacCarty et al. (2010) |
| Imp-char | Charcoal | 0.11 | 108.07 |  |  |  | MacCarty et al. (2010) |
| Imp-char | Charcoal | 0.10 | 93.39 |  |  |  | MacCarty et al. (2010) |
| Trad | dry wood | 11.7 |  |  |  |  | Roden et al. (2006) |
| Trad | dry wood | 6.5 |  |  |  |  | Roden et al. (2006) |
| Trad | dry wood | 5 |  |  |  |  | Roden et al. (2006) |
| Trad | dry wood | 9.4 | 125 | 0.15 |  |  | Roden et al. (2006) |
| Trad | dry wood | 16.1 | 138 | 0.18 |  |  | Roden et al. (2006) |
| Improved | dry wood | 5.6 | 46 | 0.64 |  |  | Roden et al. (2006) |
| Trad | dry wood | 10.3 | 79 | 0.34 |  |  | Roden et al. (2006) |
| Trad | dry wood | 4.9 | 20 | 0.55 |  |  | Roden et al. (2006) |
| Trad | dry wood | 5.3 | 145 | 0.16 |  |  | Roden et al. (2006) |
| Trad | dry wood | 5.7 | 134 | 0.43 |  |  | Roden et al. (2006) |
| Trad | dry wood | 9.9 | 217 | 0.07 |  |  | Roden et al. (2006) |
| Trad | dry wood | 11.7 | 141 | 0.08 |  |  | Roden et al. (2006) |
| Improved | dry wood | 2.1 | 70 | 0.44 |  |  | Roden et al. (2009) |
| Imp-fan | dry wood | 2 | 42 | 0.22 |  |  | Roden et al. (2009) |
| Imp-fan | dry wood | 2 | 30 | 0.71 |  |  | Roden et al. (2009) |
| Imp-fan | dry wood | 0.4 | 10 | 0.44 |  |  | Roden et al. (2009) |
| Gasifier | dry wood | 0.6 | 32 | 0.4 |  |  | Roden et al. (2009) |
| Trad | dry wood | 1.7 | 46 | 0.54 |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.4 | 30 | 0.8 |  |  | Roden et al. (2009) |
| Gasifier | dry wood | 1.2 | 30 | 0.23 |  |  | Roden et al. (2009) |
| Imp-fan | dry wood | 1.1 | 19 | 0.19 |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.5 | 32 |  |  |  | Roden et al. (2009) |
| Trad | dry wood | 2.5 | 57 |  |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.4 | 39 |  |  |  | Roden et al. (2009) |
| Gasifier | dry wood | 1.3 | 40 |  |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.9 | 37 |  |  |  | Roden et al. (2009) |
| Improved | dry wood | 6.7 | 65 | 0.61 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3.4 | 105 | 0.22 |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.7 | 37 | 0.5 |  |  | Roden et al. (2009) |
| Improved | dry wood | 5.1 | 98 | 0.22 |  |  | Roden et al. (2009) |
| Improved | dry wood | 8.8 | 111 | 0.7 |  |  | Roden et al. (2009) |
| Improved | dry wood | 2 | 139 | 0.52 |  |  | Roden et al. (2009) |
| Improved | dry wood | 11.5 | 28 | 0.89 |  |  | Roden et al. (2009) |
| Improved | dry wood | 9 | 80 | 0.07 |  |  | Roden et al. (2009) |
| Improved | dry wood | 11.1 | 113 | 0.05 |  |  | Roden et al. (2009) |
| Improved | dry wood | 6.5 | 79 | 0.35 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3.9 | 81 | 0.6 |  |  | Roden et al. (2009) |
| Improved | dry wood | 9 | 45 | 0.57 |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.9 | 111 | 0.61 |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.2 | 63 | 0.57 |  |  | Roden et al. (2009) |
| Improved | dry wood | 8.2 | 73 | 0.79 |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.7 | 91 | 0.22 |  |  | Roden et al. (2009) |
| Improved | dry wood | 0.7 | 53 | 0.52 |  |  | Roden et al. (2009) |
| Improved | dry wood | 5.6 | 30 | 0.82 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3.6 | 65 | 0.33 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3.5 | 71 | 0.58 |  |  | Roden et al. (2009) |
| Improved | dry wood | 2.9 | 60 | 0.72 |  |  | Roden et al. (2009) |
| Improved | dry wood | 6.5 | 98 | 0.49 |  |  | Roden et al. (2009) |
| Improved | dry wood | 4.7 | 56 | 0.48 |  |  | Roden et al. (2009) |
| Improved | dry wood | 2.2 | 67 | 0.22 |  |  | Roden et al. (2009) |
| Improved | dry wood | 10 | 108 | 0.07 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3 | 54 | 0.47 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3.4 | 170 | 0.18 |  |  | Roden et al. (2009) |
| Improved | dry wood | 1.6 | 88 | 0.11 |  |  | Roden et al. (2009) |
| Improved | dry wood | 2.1 | 46 | 0.61 |  |  | Roden et al. (2009) |
| Improved | dry wood | 2 | 105 | 0.36 |  |  | Roden et al. (2009) |
| Improved | dry wood | 6.1 | 72 | 0.22 |  |  | Roden et al. (2009) |
| Improved | dry wood | 8.2 | 143 | 0.04 |  |  | Roden et al. (2009) |
| Improved | dry wood | 4.3 | 56 | 0.69 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3.3 | 52 | 0.36 |  |  | Roden et al. (2009) |
| Trad | dry wood | 5.5 | 103 | 0.19 |  |  | Roden et al. (2009) |
| Trad | dry wood | 5.3 | 92 | 0.24 |  |  | Roden et al. (2009) |
| Improved | dry wood | 2.6 | 53 | 0.54 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3.4 | 91 | 0.56 |  |  | Roden et al. (2009) |
| Improved | dry wood | 2.3 | 96 | 0.16 |  |  | Roden et al. (2009) |
| Improved | dry wood | 6.1 | 58 | 0.55 |  |  | Roden et al. (2009) |
| Improved | dry wood | 7.4 | 102 | 0.27 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3.7 | 90 | 0.09 |  |  | Roden et al. (2009) |
| Improved | dry wood | 7 | 88 | 0.18 |  |  | Roden et al. (2009) |
| Improved | dry wood | 3 | 76 | 0.45 |  |  | Roden et al. (2009) |
| Trad | dry wood |  |  |  | 1.27 | 1.38 | Stockwell et al. (2014) |
| Trad | dry wood |  |  |  | 1.37 | 1.18 | Stockwell et al. (2014) |
| Trad | dry wood |  |  |  | 1.29 | 1.91 | Stockwell et al. (2014) |
| Imp-rocket | dry wood |  |  |  | 0.9 | 1.62 | Stockwell et al. (2014) |
| Imp-rocket | dry wood |  |  |  | 1.32 | 0.29 | Stockwell et al. (2014) |
| Imp-rocket | dry wood |  |  |  | 0.23 | 1.63 | Stockwell et al. (2014) |
| Imp-rocket | dry straw |  |  |  | 2.64 | 1.03 | Stockwell et al. (2014) |
| Imp-rocket | dry wood |  |  |  | 0.41 | 2.14 | Stockwell et al. (2014) |
| Gasifier | dry wood |  |  |  | 0.37 | 2.27 | Stockwell et al. (2014) |
| Trad | dry wood | 4.2 | 70 | 0.071 |  |  | Coffey et al. (2017) |
| Improved | dry wood | 2.6 | 58 | 0.22 |  |  | Coffey et al. (2017) |
| Gasifier | dry wood | 2.5 | 45 | 0.163 |  |  | Coffey et al. (2017) |
| Gasifier | Charcoal | 1.6 | 92 | 0.059 |  |  | Coffey et al. (2017) |
| Trad-Char | Charcoal | 0.8 | 187 | 0.019 |  |  | Coffey et al. (2017) |
| Trad | dry wood | 1.5449 | 40.6 |  | 1.1 | 0.6 | Mutlu et al. (2016) |
| Imp-rocket | dry wood | 0.9207 | 20.5 |  | 0.4 | 0.7 | Mutlu et al. (2016) |
| Imp-fan | dry wood | 0.4542 | 7.2 |  | 0.2 | 0.6 | Mutlu et al. (2016) |
| Trad | dry wood |  | 25.3 |  | 2.7 | 0.01 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 27.3 |  | 8.4 | 0.1 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 38.6 |  | 3.9 | 0.07 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 136 |  | 26.8 | 0.1 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 26.4 |  | 10 | 0.12 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 22.1 |  | 4.2 | 0.1 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 20.5 |  | 5 | 0.12 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 19.1 |  | 10.8 | 0.11 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 25.2 |  | 11 | 0.1 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 24.4 |  | 5.4 | 0.1 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 28.7 |  | 8.1 | 0.16 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 45.1 |  | 9.7 | 0.2 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 28.6 |  | 8.9 | 0.17 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 136 |  | 26.8 | 0.07 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 113 |  | 29.5 | 0.05 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 45.6 |  | 18.9 | 0.07 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 51.9 |  | 6 | 0.19 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 47.1 |  | 5.3 | 0.15 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 41.2 |  | 12.3 | 0.2 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 16.8 |  | 10 | 0.2 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 15.4 |  | 10.5 | 0.15 | Bhattacharya et al. (2002) |
| Trad | dry wood |  | 22.1 |  | 12.4 | 0.11 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 24.7 |  | 14 | 0.13 | Bhattacharya et al. (2002) |
| Improved | dry wood |  | 18.7 |  | 13.7 | 0.11 | Bhattacharya et al. (2002) |
| Trad-Char | Charcoal |  | 34.2 |  | 7.7 | 0.07 | Bhattacharya et al. (2002) |
| Imp-Char | Charcoal |  | 35.7 |  | 6.8 | 0.03 | Bhattacharya et al. (2002) |
| Trad-Char | Charcoal |  | 175 |  | 7.8 | 0.3 | Bhattacharya et al. (2002) |
| Imp-Char | Charcoal |  | 198 |  | 8 | 0.22 | Bhattacharya et al. (2002) |
| Trad-Char | Charcoal |  | 155 |  | 7.8 | 0.14 | Bhattacharya et al. (2002) |
| Imp-Char | Charcoal |  | 134 |  | 9.8 | 0.19 | Bhattacharya et al. (2002) |
| Imp-Char | Charcoal |  | 87.2 |  | 10.8 | 0.3 | Bhattacharya et al. (2002) |
| Imp-Char | Charcoal |  | 155 |  | 8.2 | 0.43 | Bhattacharya et al. (2002) |
| Trad-char | Charcoal |  | 178 |  | 8.7 | 0.42 | Bhattacharya et al. (2002) |
| Trad | dry wood | 15.1 | 120.6 | 0.12 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 12.7 | 104.9 | 0.08 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 7.9 | 93.3 | 0.12 |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood | 6.8 | 92.7 | 0.17 |  |  | Grieshop et al. (2017) |
| Trad | wet wood | 7.2 | 90.8 | 0.18 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 10.5 | 89.4 | 0.08 |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood | 20.1 | 152.5 | 0.14 |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood | 8.6 | 98.9 | 0.11 |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood | 8.0 | 106.5 | 0.14 |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood | 12.7 | 128.7 | 0.11 |  |  | Grieshop et al. (2017) |
| Trad | wet wood | 8.0 | 61.8 | 0.49 |  |  | Grieshop et al. (2017) |
| Trad | wet wood | 4.2 | 61.4 | 0.23 |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood | 8.1 | 98.8 | 0.13 |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood | 9.6 | 84.8 | 0.14 |  |  | Grieshop et al. (2017) |
| Trad | wet wood | 6.0 | 73.1 | 0.20 |  |  | Grieshop et al. (2017) |
| Trad | wet wood |  | 94.0 |  |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 6.2 | 104.7 | 0.23 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 5.1 | 71.8 | 0.21 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 5.1 | 52.9 | 0.17 |  |  | Grieshop et al. (2017) |
| Trad | dry wood |  | 51.3 |  |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood | 10.5 | 112.3 | 0.08 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 7.3 | 88.1 | 0.21 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 6.9 | 102.7 | 0.17 |  |  | Grieshop et al. (2017) |
| Trad | dry wood |  | 99.0 |  |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 8.9 | 89.3 | 0.11 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 8.4 | 96.3 | 0.23 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 6.6 | 88.4 | 0.28 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 8.8 | 74.9 | 0.21 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 7.9 | 76.4 | 0.24 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 12.0 | 87.8 | 0.11 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 4.6 | 61.6 | 0.21 |  |  | Grieshop et al. (2017) |
| Trad | wet wood | 6.3 | 82.0 | 0.19 |  |  | Grieshop et al. (2017) |
| Imp-rocket | wet wood |  | 77.6 |  |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 11.7 | 87.0 | 0.08 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 16.5 | 113.4 | 0.09 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 4.8 | 65.5 | 0.30 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 7.0 | 72.7 | 0.17 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 10.8 | 87.1 | 0.12 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 24.2 | 149.6 | 0.12 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 13.3 | 81.3 | 0.09 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 15.7 | 82.4 | 0.10 |  |  | Grieshop et al. (2017) |
| Trad | wet wood | 5.6 | 72.7 | 0.37 |  |  | Grieshop et al. (2017) |
| Trad | wet wood | 5.8 | 83.3 | 0.15 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 8.0 | 112.5 | 0.23 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 6.4 | 73.2 | 0.25 |  |  | Grieshop et al. (2017) |
| Trad | dry wood |  | 102.2 |  |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 7.3 | 93.7 | 0.09 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 5.0 | 78.5 | 0.24 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 5.9 | 89.2 | 0.43 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 5.2 | 80.3 | 0.71 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 4.4 | 63.1 | 0.70 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 5.0 | 78.3 | 0.53 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 5.3 | 70.6 | 0.65 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 3.9 | 45.8 | 0.55 |  |  | Grieshop et al. (2017) |
| Trad | dry wood |  | 100.7 |  |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 8.4 | 103.4 | 0.40 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 2.5 | 65.2 | 0.43 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 4.9 | 76.7 | 0.20 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 7.9 | 69.4 | 0.12 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 5.8 | 79.4 | 0.15 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 6.3 | 77.8 | 0.55 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 6.2 | 82.8 | 0.56 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 4.4 | 78.2 | 0.14 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 4.5 | 89.8 | 0.28 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 4.7 | 68.8 | 0.64 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 5.3 | 87.9 | 0.17 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 4.5 | 70.0 | 0.18 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 2.7 | 49.5 | 0.45 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 1.8 | 34.3 | 0.82 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 5.9 | 82.9 | 0.15 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 3.3 | 55.9 | 0.39 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 7.4 | 101.6 | 0.09 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 9.8 | 119.7 | 0.12 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 7.4 | 144.0 | 0.33 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 4.2 | 52.4 | 0.61 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 11.8 | 127.6 | 0.07 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 8.7 | 76.2 | 0.24 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 3.7 | 38.2 | 0.16 |  |  | Grieshop et al. (2017) |
| Trad | wet wood | 7.2 | 78.4 | 0.21 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 6.9 | 84.7 | 0.25 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 6.6 | 61.1 | 0.27 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 7.9 | 69.7 | 0.30 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 5.6 | 63.0 | 0.39 |  |  | Grieshop et al. (2017) |
| Imp-rocket | dry wood | 5.0 | 60.1 | 0.37 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 9.3 | 76.1 | 0.13 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 8.3 | 81.5 | 0.12 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 9.4 | 82.5 | 0.11 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 9.2 | 82.0 | 0.18 |  |  | Grieshop et al. (2017) |
| Trad | dry wood | 4.9 | 86.0 | 0.19 |  |  | Grieshop et al. (2017) |
| Gasifier | dry wood | 2.6 | 43.0 | 0.14 | 6.1 | 1 | Du et al. (2017) |
| Imp-char | Charcoal |  |  | 0.15 |  |  | Garland et al. (2017) |
| Imp-char | Charcoal |  |  | 0.07 |  |  | Garland et al. (2017) |
| Improved | dry wood |  | 40.1 |  | 12.01 | 0.19 | Bhattacharya et al. (2002b) |
| Improved | dry wood |  | 45.7 |  | 11.92 | 0.17 | Bhattacharya et al. (2002b) |
| Improved | wet wood |  | 72.1 |  | 10.25 | 0.10 | Bhattacharya et al. (2002b) |
| Improved | wet wood |  | 78.2 |  | 9.75 | 0.10 | Bhattacharya et al. (2002b) |
| Trad | dry wood |  | 38.6 |  | 7.82 | 0.07 | Bhattacharya et al. (2002b) |
| Trad | dry wood |  | 39.2 |  | 7.98 | 0.06 | Bhattacharya et al. (2002b) |
| Trad | wet wood |  | 53.2 |  | 8.07 | 0.05 | Bhattacharya et al. (2002b) |
| Trad | wet wood |  | 55.2 |  | 7.98 | 0.05 | Bhattacharya et al. (2002b) |
| Improved | dry wood |  | 19.7 |  | 10.83 | 0.11 | Bhattacharya et al. (2002b) |
| Improved | dry wood |  | 25.4 |  | 11.21 | 0.10 | Bhattacharya et al. (2002b) |
| Improved | wet wood |  | 55.4 |  | 10.11 | 0.09 | Bhattacharya et al. (2002b) |
| Improved | wet wood |  | 55.8 |  | 9.78 | 0.08 | Bhattacharya et al. (2002b) |

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