*Supplement of*

**Estimation of CFC-11 emissions from coal combustion in China**

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**Table S1** Detailed information on domestic fuels in this study.

| Types | Domestic fuels | Sources | | Abbreviation |
|---|---|---|---|---|
| | | Province | City | |
| Coal | Chunk coal | Xinjiang | Wulumuqi | WLMQ |
| | | Gansu | Jiuquan | JQ |
| | | Shanxi | Datong | DT |
| | | Shandong | Jinan | JN |
| | | Guizhou | Liupanshui | LPS |
| | | Yunnan | Kunming | KM |
| | | Heilongjiang | Haerbin | HEB |
| | | Shanxi | Jincheng | JC |
| | | Xinjiang | Zhundong | ZD |
| | | | Chongqing | CQ |
| | Honeycomb | Hubei | Wuhan | WH |
| | | Shandong | Jinan | JN |
| | | Gansu | Tianshui | TS |
| | | Fujian | Fuzhou | FZ |
| | | Zhejiang | Linan | LA |
| | | Anhui | Dingyuan | DY |
| | | Guangxi | Guilin | GL |
| | | Henan | Xinxiang | XX |
| | | Hunan | Changsha | CS |
| | | Henan | Pingdingshan | PDS |
| | | Hebei | Handan | HD |

**Table S2** The emission factors (mg $kg^{-1}$) of domestic coal combustion used for estimating domestic CFC-11 emissions.

| Types | Sources | CFC-11 |
|---|---|---|
| Chunk coal | Northeast Plain | 5.5 |
| | Arid and semi-arid regions of north China | 5.6 |
| | Loess Plateau | 3.6 |
| | North China plain | 2.1 |
| | Yangtze Plain | 2.5 |
| | Sichuan Basin | 3.4 |
| | Yunnan-Guizhou Plateau | 1.6 |
| | Tibet Plateau | 2.2 |
| | South China | 1.6 |
| Honeycomb briquette | Northeast Plain | 3.3 |
| | Arid and semi-arid regions of north China | 1.5 |
| | Loess Plateau | 3.3 |
| | North China plain | 3.8 |
| | Yangtze Plain | 3.2 |
| | Sichuan Basin | 3.1 |
| | Yunnan-Guizhou Plateau | 1.5 |
| | Tibet Plateau | 3.3 |
| | South China | 4.7 |
| Coal | Power plant | 0.02 |

**Table S3** Comparison of CFC-11 emissions with other studies (t $yr^{-1}$).

| Areas | Emission sources | Year | CFC-11 | References |
|---|---|---|---|---|
| China [a] | Coal | 2001–2021 | 188.5–268.7 | This study |
| China | / | 2001 | 22300 | Palmer et al., 2003 |
| China | / | 2006–2008 | 33000 | Vollmer et al., 2009 |
| China | / | 2007–2008 | 11000 | Li et al., 2011 |
| China | / | 2008 | 12000 | Kim et al., 2010 |
| China | / | 2009 | 15800 | An et al., 2012 |
| China | / | 2010–2011 | 10500 | Wang et al., 2014 |
| China | Obsolete household refrigerators | 2011 | 4600 | Zhao et al., 2011 |
| China | / | 2009–2019 | 11900 | Yi et al., 2021 |
| China[a] | / | 2014 | 22000 | Fang et al., 2018 |
| China | / | 2019 | 5000 | Park et al., 2021 |
| Eastern China | / | 2008–2012 | 64000 | Rigby et al., 2019 |
| Eastern China | / | 2014–2017 | 13400 | Rigby et al., 2019 |
| Eastern China | / | 2014–2018 | 19000 | Adcock et al., 2020 |
| Eastern China | / | 2017–2018 | 14700 | Huang et al., 2021 |
| PRD | / | 2002 | 1000 | Guo et al., 2009 |
| PRD | / | 2004 | 400 | Shao et al., 2011 |
| PRD | / | 2008 | 1000 | Zhang et al., 2014 |
| PRD | / | 2009 | 500 | Zhang et al., 2014 |
| Taiwan | / | 2007–2008 | 300 | Li et al., 2011 |
| Korea | / | 2007–2008 | 900 | Li et al., 2011 |

| | | | | |
|---|---|---|---|---|
| Japan | / | 2007–2008 | 1100 | Li et al., 2011 |
| Global | / | 2007 | 82000 | Kim et al., 2010 |
| Global | / | 2012 | 50191 | Rigby et al., 2014 |
| Global | / | 2014–2016 | 67000 | Montzka et al., 2018 |
| Global | / | 2014–2016 | 77600 | Lickley et al., 2021 |

[a]: The calculation method was “bottom-up”;

/: Emission source classification is not performed.

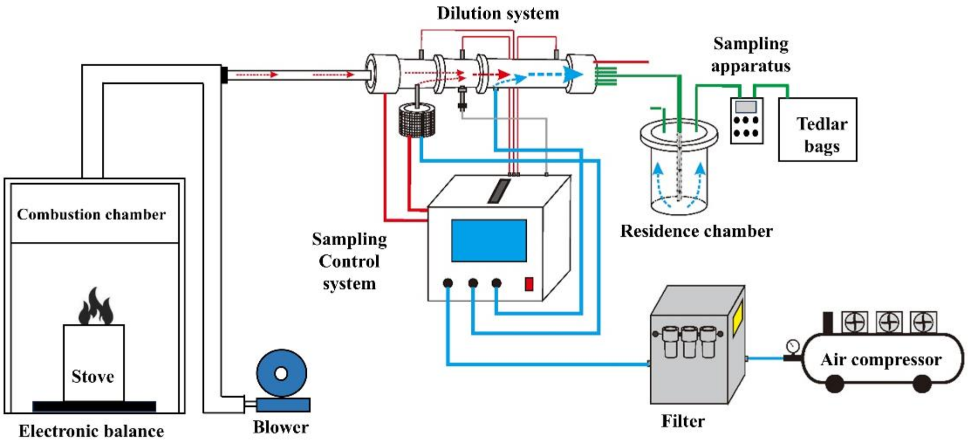

**Figure S1** Structure of the combustion and dilution sampling system adopted in this study.

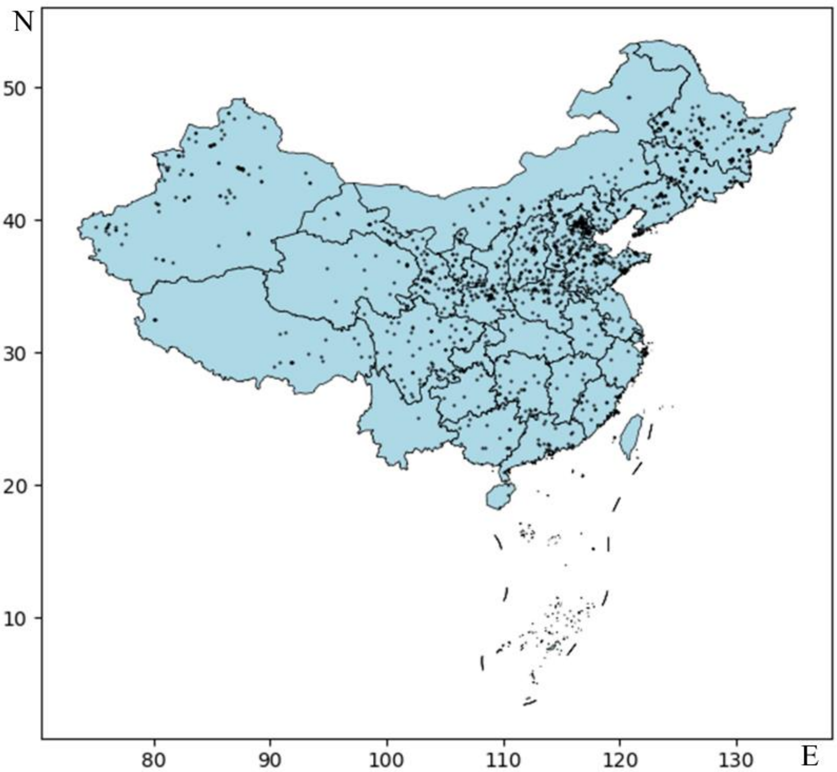


**Figure S2** The point of coal-fired power plants.

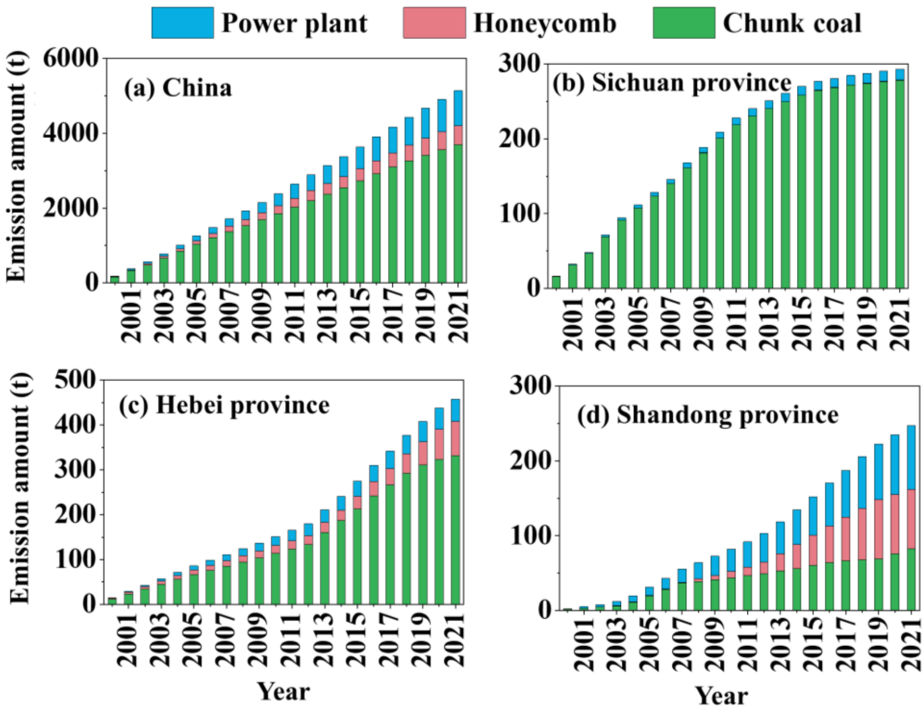


**Figure S3** The cumulative CFC-11 emissions from coal combustion in China (a), Sichuan Province (b), Hebei Province (c), and Shandong Province (d) during 2000~2021.

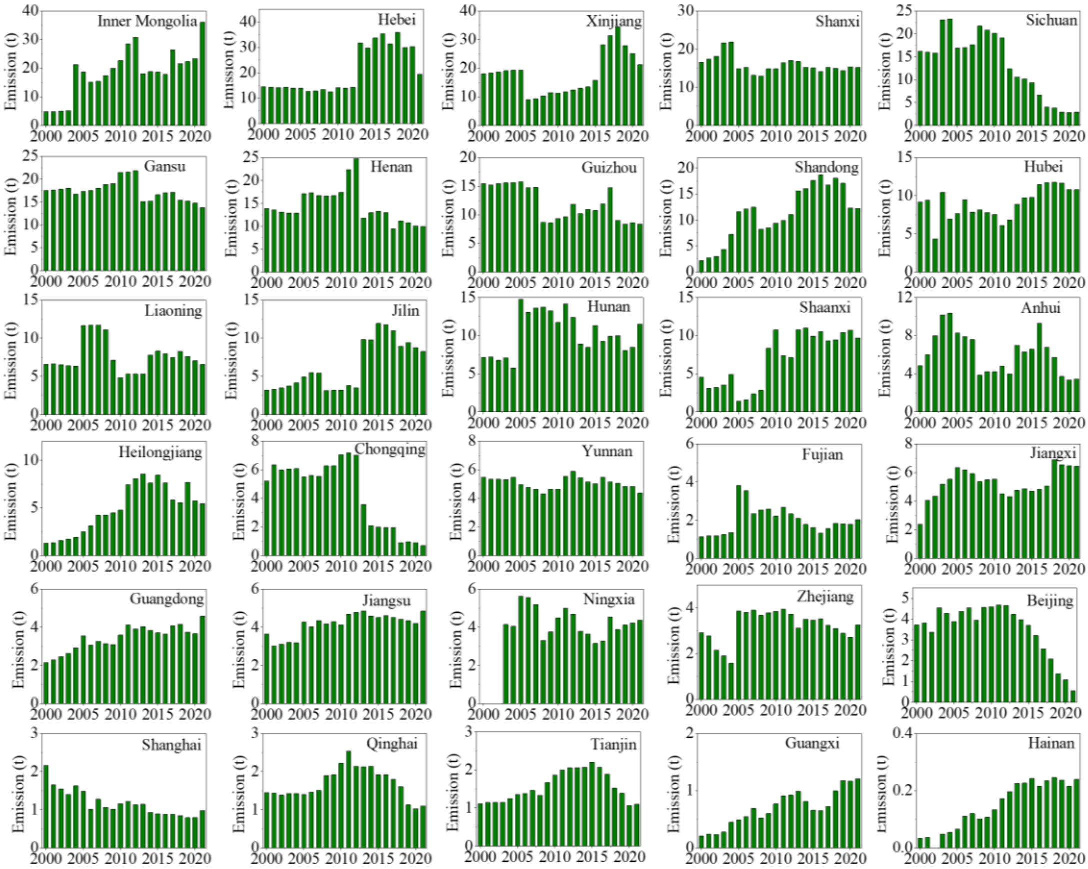


**Figure S4** The CFC-11 emissions from coal combustion in different provinces in China, in which Xizang, Taiwan, Hongkong, and Macau were not calculated due to the lack of activity data.

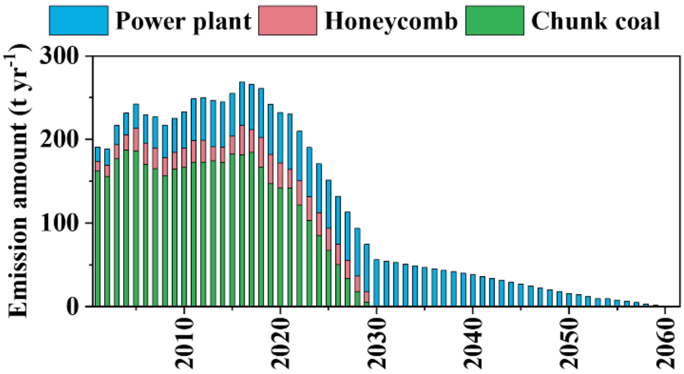


**Figure S5** The annual CFC-11 emissions from coal combustion in China from 2001 to 2060.

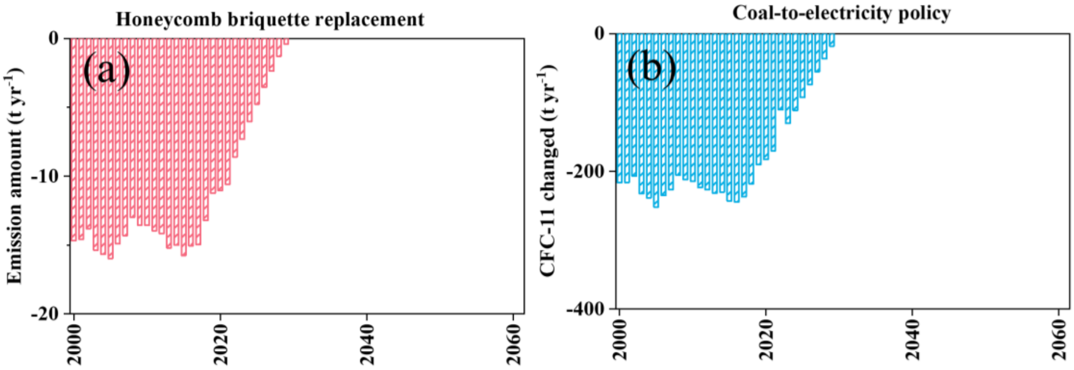


**Figure S6** The changes of annual CFC-11 emissions if chunk coal was replaced by honeycomb (a) and if domestic coal was replaced by electricity from coal-fired power plant (b).

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