**Supplementary Table 7** The proportions of petroleum consumption in 2010, 2015, 2020 and 2025 of 30 provinces, as well as their proportions predicted using equations

| Number | Provinces | Wpetroleum,2010 | Wpetroleum,2015 | Wpetroleum,2020 | Wpetroleum,2025 | Equations | R2 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | Qinghai | 7.2 | 18 | 2.2 | 0.89 | y=-4.55lnx+7.2 | 0.23 |
| 2 | Yunnan | 1.6 | 10.8 | 15.1 | 22.67\* | y=6.75x-4.33 | 0.96 |
| 3 | Sichuan | 12.9 | 21.9 | 18 | 21 | y=5.01lnx+14.47 | 0.55 |
| 4 | Guangdong | 27.2 | 24.6 | 26.2 | 22.9 | y=-1.13x+28.05 | 0.6 |
| 5 | Gansu | 17 | 16.5 | 15.3 | 14.5 | y=-0.87x+18 | 0.98 |
| 6 | Guangxi | 16.6 | 17.7 | 12.7 | 10.2 | y=-2.42x+20.35 | 0.81 |
| 7 | Fujian | 24.8 | 23.7 | 21.5 | 17.1 | y=-2.53x+28.1 | 0.92 |
| 8 | Chongqing | 17.6 | 16.8 | 15.8 | 15 | y=-0.88x+18.5 | 0.99 |
| 9 | Zhejiang | 26.7 | 22.4 | 20.6 | 17.6 | y=-2.91x+29.1 | 0.97 |
| 10 | Hainan | 38.2 | 34.5 | 30.4 | 26.57\* | y=-3.9x+42.17 | 0.99 |
| 11 | Hunan | 11.1 | 16.1 | 9.7 | 9 | y=-0.7x+11.8 | 0.21 |
| 12 | Shanghai | 32.9 | 39 | 39 | 33 | y=0.03x+32.87 | 0.18 |
| 13 | Guizhou | 3.6 | 10.6 | 12 | 14.97\* | y=7.91lnx+4 | 0.95 |
| 14 | Hubei | 17 | 22.2 | 24 | 25 | y=5.84lnx+17.41 | 0.97 |
| 15 | Jiangxi | 13.7 | 17.3 | 18.3 | 18 | y=3.3lnx+14.20 | 0.87 |
| 16 | Inner Mongolia | 10.1 | 6.5 | 4.7 | 4 | y=-4.51lnx+9.9 | 0.98 |
| 17 | Jiangsu | 22.6 | 20.7 | 20.1 | 19.29\* | y=-2.33lnx+22.52 | 0.98 |
| 18 | Jilin | 17.3 | 16.7 | 19.9 | 13 | y=-1.49x+19.15 | 0.19 |
| 19 | Henan | 9.9 | 13.2 | 11.4 | 13 | y=0.75x+10 | 0.21 |
| 20 | Shaanxi | 17.3 | 15 | 14.1 | 13.13\* | y=-2.96lnx+17.23 | 0.99 |
| 21 | Anhui | 13.3 | 16 | 15.4 | 14 | y=-x+17.13 | 0.95 |
| 22 | Ningxia | 8 | 6.4 | 3.6 | 3 | y=-3.81lnx+8.28 | 0.95 |
| 23 | Heilongjiang | 24.3 | 23.9 | 20.5 | 18 | y=-2.23x+27.25 | 0.93 |
| 24 | Beijing | 30.4 | 28.3 | 29.3 | 30.6 | y=1.15x+27.1 | 0.99 |
| 25 | Liaoning | 29.8 | 29.8 | 30.3 | 29.5 | y=0.25x+29.46 | 0.75 |
| 26 | Shandong | 18.2 | 16.1 | 13.6 | 14 | y=-1.51lnx+19.25 | 0.84 |
| 27 | Hebei | 7.9 | 8.9 | 10.8 | 12.1 | y=1.45x+6.3 | 0.97 |
| 28 | Shanxi | 8.4 | 8.7 | 9.3 | 12.1 | y=1.17x+6.7 | 0.8 |
| 29 | Tianjin | 24 | 46.3 | 38.6 | 39 | y=3.73x+27.65 | 0.27 |
| 30 | Xinjiang | 7.2 | 8.6 | 9.3 | 10.5 | y=1.05x+6.27 | 0.96 |

\* The data was not available in 2025, which predicted using Equations