Supplementary Section

Supplementary section 1

"Ecosystem service supply refers to the ability to provide ecosystem products and services in specific time periods and specific regions. The calculation of ecosystem service supply in this study is mainly based on the Costanza ecosystem service value theory and the construction of an expert knowledge based on ecosystem service value method by Xie et al [9, 15]. The equivalent factor method is more simple to estimate the ecosystem services values at larger scales and require fewer data. By considering the research scale and the data availability in this study, the equivalent factor method was appropriate for claculating the supply of ecosystem services for resource-based cities in China. The method assumes that the ecosystem service value equivalent factor per unit area of farmland food production is 1. the value equivalent factor of 1 standard unit is the economic value of the natural annual grain yield of 1 hm^2 of nationally averaged yielding farmland, therefore, the three-year national production averages of rice, wheat and maize in 2000, 2010 and 2020 were determined as the basic data and weighted to obtain the ecological service supply coefficient per unit area. The ecosystem services values coefficients were calculated as follows:

$$E_a = 1/7 \sum_{i=1}^{n} \left(\frac{m_i p_i q_i}{M}\right) \qquad i = (1, \dots n)$$

E_a is the ecosystem services values coefficients (yuan·hm^{-2}); i is the crop type; p_i is the national average price of i food crops, q_i is the yield of i food crops(yuan·t^{-1}); m_i is the area of i food crops(yuan·t^{-1}); M is the total area of food crops. The calculation given an equivalent supply coefficient of RMB 1,489.24(hm^{-2}·a^{-1}). According to the equivalent weight factor of ESV per unit area of terrestrial ecosystem in China , we obtained ecosystem services supply coefficient per unit area of national ecosystem(Table 1), which is calculated as follows:

$$\mathrm{VC_{ki}} = \mathrm{E_a} \times \mathrm{V_{ki}}$$

VC_{ki} is the value coefficient of the ith ecosystem service of the land use type k (Yuan/hm^2), $\mathrm{V_{ki}}$ is equivalent weight factor of the ith ecosystem service of the land use type k, which is shown in Table 1.

Table S1. The equivalent weight factor of ESV per unit area of terrestrial ecosystem in China.

Primary Ecological Services	**Secondary Ecological Services**	**Arable Land**	**Woodland**	**Grassland**	**Water Area**	**Unused Land**
Supply services	Food production	1.00	0.10	0.30	0.10	0.01
	Raw materials	0.10	2.60	0.05	0.01	0.00
Reconciliation services	Gas regulation	0.50	3.50	0.80	0.00	0.00
	Climate regulation	0.89	2.70	0.90	0.46	0.00
	Water harvesting	0.60	3.20	0.80	20.40	0.03
	Waste disposal	1.64	1.31	1.31	18.20	0.01
Support services	Soil formation and conservation	1.46	3.90	1.95	0.01	0.02
	Biodiversity conservation	0.71	3.26	1.09	2.49	0.34
Cultural services	Entertainment culture	0.01	0.28	0.04	4.34	0.01
	Total	6.91	21.85	7.24	46.01	0.42