Supplementary information

The parameters used to evaluate the ecosystem services mentioned in Section 2.2 are detailed here.

(1) Carbon Sequestration Service

We calculated the carbon density data for the study area by collating existing research data within our study area. The respective carbon density data for each land type were derived from the aforementioned research studies[1-3], as illustrated in Table S1.

Table S1. The carbon density of each land use/land cover (mg/ha).

Land use/land cover	C_above	C_below	C_soil	C_dead
Farmland	9.0	4.0	25.0	0.3
Forest	39.6	30.3	42.4	7.2
Water bodies	1.0	0.5	16.0	0.0
Grassland	18.1	13.7	31.0	0.4
Built-up land	0.0	0.0	12.0	0.0
Wetland	1.7	1.0	15.0	0.0
Shrubland	29.1	19.4	2.8	32.1

Note: C_above is carbon density in aboveground biomass; C_below is carbon density in belowground biomass; C_soil is carbon density in the soil; C_dead is carbon density in dead matter.

(2) Water Conservation Service

The table of biophysical parameters (Table S2) essential for assessing water yield in this study primarily encompasses plant root depth (Root Depth) and crop evapotranspiration coefficient (Kc). These parameters were sourced from pertinent literature references[4,5] , as well as the InVEST modeling manual.

Table S2. Biophysical table.

Land use/land cover	Root_depth(mm)	Kc	LULC_veg
Farmland	2100	0.65	1
Forest	5200	0.93	1
Water bodies	1	0.9	0
Grassland	2300	0.75	1
Built-up land	500	0.23	0

Wetland	1000	0.7	1
Shrubland	5200	0.9	0

Note: Root_depth is Maximum root depth (mm); Kc is the evapotranspiration coefficient of plants corresponding to the land type; LULC_veg means whether the the LULC class is vegetated

(3) Soil and Water Conservation Service

We conducted a quantitative assessment of the spatial and temporal variations in soil retention. This assessment was performed using the Sediment Delivery Ratio module within the InVEST model. The specific parameters are adjusted based on the actual conditions in the study area [4,5]

Table S3. Biophysical table.

Land use/land cover	usle_c	usle_p
Farmland	0.23	0.30
Forest	0.08	1.00
Water bodies	0.00	0.00
Grassland	0.24	1.00
Built-up land	0.00	0.00
Wetland	1.00	0.5
Shrubland	0.02	1.0

(4) Habitat Quality Service

The InVEST model necessitates the inclusion of a Threat Factor Table (Table S4) and Sensitivity Table (Table S5), and these are determined through a combination of referencing existing studies and tailoring them to the specific conditions within our study area [4,6].

Table S4. Threat source impact distance level weights.

Threat factors	Maximum distance of influence	Weights	Spatial decay types
Farmland	3.3	0.85	linear
Built-up land	2.8	0.9	linear

Table S5. Sensitivity of threat factors for different land uses.

Land use/land cover	Habitat	Sensitivity to threats	
		farmland	residential area
Farmland	0	0	0
Forestland	1	0.65	0.9
Water bodies	1	0.45	0.9
Grassland	1	0.5	0.9
Built-up land	0	0	0
Wetland	1	0.65	0.9
Shrubland	1	0.7	0.9

References

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