

Table S1. Climate variables and the data sources.

Code	Data name	Accuracy	Data sources
Bio1	Annual Mean Temperature/°C	1km	
Bio2	Mean Diurnal Range (Mean of monthly (max temp - min temp)) /°C	1km	
Bio3	Isothermality (BIO2/BIO7) (×100)	1km	
Bio4	Temperature Seasonality (standard deviation ×100)	1km	
Bio5	Max Temperature of Warmest Month/°C	1km	
Bio6	Min Temperature of Coldest Month/°C	1km	
Bio7	Temperature Annual Range (BIO5-BIO6)/°C	1km	
Bio8	Mean Temperature of Wettest Quarter/°C	1km	
Bio9	Mean Temperature of Driest Quarter/°C	1km	
Bio10	Mean Temperature of Warmest Quarter/°C	1km	WorldClim(https://worldclim.org/data/worldclim21.html (accessed on 20 January 2024))
Bio11	Mean Temperature of Coldest Quarter/°C	1km	
Bio12	Annual Precipitation/mm	1km	
Bio13	Precipitation of Wettest Month/mm	1km	
Bio14	Precipitation of Driest Month/mm	1km	
Bio15	Precipitation Seasonality (Coefficient of Variation)/mm	1km	
Bio16	Precipitation of Wettest Quarter/mm	1km	
Bio17	Precipitation of Driest Quarter/mm	1km	
Bio18	Precipitation of Warmest Quarter/mm	1km	
Bio19	Precipitation of Coldest Quarter/mm	1km	

Table S2. Scenario setting for the PLUS model.

Scenario	Description	Restricted area
NDS (Natural Development Scenario)	Maintains land development probabilities from 2010 to 2020 and simulates land use in 2030.	Water bodies
EPS (Enhanced Protection Scenario)	According to the "China Land Use Master Plan (2006-2020)," appropriately protects arable land, forest land, and water bodies, reduces their conversion rates, and does not set conversion prohibitions.	None
UDS (Urban Development Scenario)	Increases the expansion proportion of construction land, permits the conversion of other land types to construction land.	Water bodies