



Figure 1. Comparison of (a) groundwater consumption and (b) surface water consumption under the EFs scenario in 2020 at the provincial level. The validation results for groundwater consumption are reliable, except for NME. For surface water consumption, the validation excludes NME, HNA, and SDO, where significant deviations are observed. The discrepancy arises because the bulletin covers entire administrative regions of the three provinces, while this study only includes areas within the Yellow River Basin boundary.

Table 1. Data source and calibration data.

Data	Source	Time span	Time resolution	Spatial resolution	Calibration data
Irrigation water use	Khan et al., 2023	2010-2050	Month	0.5°	Zhou et al., 2020
Industry water use		2015-2050			Hou et al., 2024
Urban water use					
Rural water use					
Reservoir capacity	Wang et al., 2022	1990-2050	10 years	Shapefile	
Evaporation	ISIMIP	2010-2050	Month	0.5°	
Surface runoff		2015-2050			Gou et al., 2021
Groundwater recharge					
Grain yield	GAEZ	2015	Year	0.08333°	
Crop area					Tu et al., 2024
Crop demand	Predicted based on production level, population	2015-2050	Year	0.08333°	
Industry electricity demand	Chen et al., 2022 Predicted based on population, GDP	2015-2050	Month	1km	
Urban electricity demand					
Rural electricity demand					
Power plant capacity	Global Power Plant Database	2015-2020	Year	Shapefile	
Population	Jones and O'Neill, 2016	2000-2050	10 years	0.125°	
Elevation, flow direction	HydroSHEDS			0.004°	

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