Category	Indicator	Type	Added/Replaced Indicator
Climate Exposure	Maximum daily precipitation (mm)	-	Maintained
Climate Exposure	Number of days with daily precipitation ≥110 mm	-	Maintained
Climate Exposure	Number of days exceeding 70% of design rainfall (100-year return period)	-	Maintained
Climate Exposure	Ratio of rainfall to design rainfall (100-year return period) (mm)	-	Maintained
Sensitivity	Impervious surface ratio (%)	Physical	Maintained
Sensitivity	Ratio of old buildings located in flood-prone areas (%)	Physical	S3: Distribution of old buildings
Sensitivity	Ratio of underground buildings located in flood-prone areas (%)	Physical	S3: Distribution of underground buildings
Sensitivity	Number of buildings located in flood-prone areas	Physical	Maintained
Sensitivity	Flood-prone (inundation) area ratio (%)	Physical	Maintained
Sensitivity	Ratio of aged sewer pipelines (≥10 years) (%)	Physical	Maintained
Sensitivity	Ratio of flooded area over the past 10 years (%)	Physical	Maintained
Sensitivity	Lack of socio-environmental indicators (added based on literature)	Social	S1, 2: Elderly population ratio (≥65 years)
Sensitivity	Lack of socio-environmental indicators (added based on literature)	Environmental	S2, 3: Topographic Wetness Index (TWI)
Sensitivity	Distance to river (m)	Environmental	S3: Distance-based spatial indicator from river
Adaptive Capacity	Financial independence ratio (%)	-	Maintained
Adaptive Capacity	GRDP per capita (million KRW)	-	Maintained
Adaptive Capacity	Number of disaster management officials per 10,000 people	-	Maintained
Adaptive Capacity	Number of pumping stations per urban area (units/km²)	-	Maintained
Adaptive Capacity	River density (%)	-	Maintained

This table presents the original VESTAP indicators for flood-induced building inundation vulnerability and the indicators added or modified in this study. VESTAP is a national standardized vulnerability assessment tool in South Korea based on the IPCC AR4 framework, which consists of climate exposure, sensitivity, and adaptive capacity. In this study, while maintaining the original structure, selected sensitivity indicators were refined by incorporating the spatial distribution of old and underground buildings, the elderly population ratio, and the Topographic Wetness Index (TWI) to examine the applicability of spatially explicit analysis.