

氣候變遷風險對土地利用影響評估

Assessment of the Impact of Climate Change Risks on Land Use

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摘要

隨著氣候變遷加劇，極端降雨與地質災害對我國空間發展與土地安全構成日益嚴峻的威脅。《國土計畫法》已將氣候調適列為空間規劃目標之一，惟過去相關風險評估多僅供政策參考，尚缺乏具操作性之量化成果。為強化土地使用領域對氣候風險的辨識與治理能力，本研究依據 TCCIP 國家氣候變遷調適架構（2022）和「氣候變遷風險評估作業準則」草案，針對淹水與坡地崩塌災害進行全國尺度的土地利用氣候變遷風險評估。分析流程涵蓋範疇界定、風險評估、高風險區位指認，並以「居住安全」作為主要關注議題，應用氣候變遷災害風險調適平台之圖資，整合氣候變遷推估降雨機率、淹水潛勢圖、社會脆弱度指標、人口密度、住商生活使用及公共設施面積等資料，辨識現況和不同升溫情境（1.5°C 與 2.0°C）下的高風險區位。結果指出，北中南主要都市及其周邊地區之高風險區呈擴大趨勢，城鄉發展區與農業發展區皆面臨顯著衝擊，坡地地區之聚落亦顯現崩塌風險升高之潛勢。研究成果可作為國土空間調適策略研擬之依據，並提供未來國土計畫滾動式檢討與調適策略之指引，強化土地政策與高風險地區之空間治理。

關鍵詞：風險評估，淹水災害，坡地災害

Abstract

As climate change intensifies, extreme rainfall and geological hazards pose increasing threats to Taiwan's spatial development and land safety. The Spatial Planning Act has included climate adaptation as a key objective in spatial planning; however, past climate risk assessments have largely served as policy references, lacking operational and quantitative applicability. To strengthen the capacity for identifying and managing climate risks in the land use sector, this study adopts the National Climate Change Adaptation Framework (TCCIP, 2022) and the draft Guidelines for Climate Change Risk Assessment, conducting a nationwide climate risk assessment focusing on land use under flood and hillslope landslide hazards.

The assessment framework includes three major stages: scope definition, risk assessment, and identification of high-risk areas. The study focuses on residential safety as the core concern and utilizes geospatial data from the Climate Change Risk Adaptation Platform. Key indicators include projected rainfall probability under climate change, flood potential maps, social vulnerability indices, population density, and the spatial extent of residential, commercial, and public facility uses. High-risk areas are identified under 1.5°C and 2.0°C warming scenarios. The results show an expanding trend of high-risk zones in major metropolitan areas and their surrounding regions. Both urban-rural development zones and agricultural areas face significant impacts, while certain hillside settlements also exhibit increasing potential for landslide risks. The findings provide a scientific basis for developing land-use adaptation strategies and serve as a reference for the rolling review and adjustment of national spatial plans, ultimately enhancing land policy and spatial governance in high-risk regions.

Keywords: Climate change risk assessment, Flood, Slope land disaster