

農地重劃區內農路安全挑戰與改善

Improving Farm Road Safety in Land Consolidation Zones: Challenges and Strategies

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摘要

臺灣自 1960 年代起推動農地重劃政策，致力於改善農業生產環境與提升灌排設施現代化，歷經數十年已大幅改善農業條件。然而，隨著農村空間利用日益多元，農路除服務農業機械通行外，亦承載社區通勤、觀光與物流等多重功能，導致交通安全風險逐漸顯現。現行農路系統普遍面臨路幅較窄、車輛混行加以農路設計標準原為農機具及農產運輸車輛通行且使用者違規行為頻繁導致農路事故風險升高。本研究分析農地重劃區農路的安全現況與挑戰，綜合現地勘查，分析農路安全問題的成因與改善成效，並彙整國內外相關案例，提出結合工程手段、生態工法、智慧監測與社區參與的整合性策略，期能提供未來農路安全政策規劃與永續經營之參考依據。

各國在改善農地重劃區農路安全上，會依據當地的農業型態與社會需求採取不同策略。像日本因應農村高齡化與人口外流，推動人本導向的農路整備計畫，強化照明與警示設施，並與觀光發展結合；荷蘭則因農路使用多元，設計分流道路、慢車道與智慧監控系統，兼顧安全與效率。臺灣方面，彰化二林鎮藉由拓寬路面、改善照明並結合社區參與，有效提升農路安全與產業發展；嘉義六腳鄉則針對低窪易淹地區導入透水鋪面與排水設施，結合農民管理提升道路安全。這些案例顯示，農路安全涉及多面向，未來臺灣可借鏡各案例經驗並結合本土特色，發展永續且安全的農村交通環境。

配合行政院召開之「中央道路交通安全會報工作會議」，落實推動《道路交通安全法基本法》，提升道路交通安全，加強策劃、協調及推動全國道路交通安全事務，本研究擬蒐集農地重劃區農水路設置道路安全設施之完工工程資料，以全臺北中南東四區案例進行探討。

總結而言，農地重劃區農路安全不僅關乎農業生產效率，更攸關農村居民與使用者的生命 safety 與生活品質。面對使用功能多元與交通風險提升的趨勢，唯有透過跨部門協作、結合工程與非工程手段，建立完善的農路安全標準與長期維管機制，方能實現農村交通的安全永續。未來相關政策與工程推動，應更強化在地參與與數據導向治理，並結合中央法令與地方實務，建構一套具韌性與前瞻性的農路安全管理體系，為臺灣農村發展打造更穩健的基礎。

關鍵詞：農地重劃、農路安全、交通風險、農村基礎建設

Abstract

Since the 1960s, Taiwan has promoted a policy of land consolidation, dedicated to improving agricultural production environments and modernizing irrigation and drainage facilities. Over several decades, this has significantly enhanced agricultural conditions. However, as rural land use has become increasingly diversified, farm roads now serve not only agricultural machinery but also community commuting, tourism, and logistics. This has led to growing traffic safety risks.

Current farm road systems commonly face issues like narrow widths, deteriorating surfaces, mixed vehicle traffic, and a high risk of disasters. Compounding these problems are inconsistent design standards, inadequate maintenance systems, and frequent user violations, making the risk of farm road accidents a pressing concern. This study analyzes the current safety situation and challenges of farm roads in land consolidation zones. It combines on-site surveys with project completion data to analyze the causes of farm road safety problems and the effectiveness of improvements. By integrating relevant domestic and international case studies, this research proposes a comprehensive strategy that combines engineering solutions, ecological construction methods, smart monitoring, and community participation. The goal is to provide a reference for future farm road safety policy planning and sustainable management.

Different countries adopt varying strategies to improve farm road safety in land consolidation zones, based on their local agricultural patterns and social needs. For example, in response to rural aging and population outflow, Japan has promoted a human-centered farm road development plan, enhancing lighting and warning facilities and integrating them with tourism development. In the Netherlands, due to the diverse use of farm roads, the country has designed split-flow roads, slow lanes, and smart monitoring systems to balance safety and efficiency.

In Taiwan, Erlin Township in Changhua has effectively enhanced farm road safety and industrial development by widening roads, improving lighting, and involving the community. Likewise, Liujiao Township in Chiayi has introduced permeable pavement and drainage facilities in low-lying, flood-prone areas, and combined this with farmer-led management to improve post-disaster resilience. These cases demonstrate that farm road safety is a multifaceted issue. Taiwan can learn from these experiences and integrate them with local characteristics to develop a sustainable and safe rural transportation environment.

In alignment with the "Central Road Traffic Safety Conference Working Meeting" convened by the Executive Yuan to implement the Road Traffic Safety Basic Act, enhance road

traffic safety, and strengthen the planning, coordination, and promotion of national road safety affairs, this study plans to collect data on completed projects for road safety facilities on agricultural roads and waterways in land consolidation zones. We will explore cases from four regions across Taiwan—the North, Central, South, and East—to understand the current situation.

In conclusion, farm road safety in land consolidation zones is not only crucial for agricultural production efficiency but also for the life safety and quality of life of rural residents and users. Facing the trend of diversified functions and increasing traffic risks, the only way to achieve safe and sustainable rural transportation is through cross-departmental collaboration. We must combine both engineering and non-engineering methods and establish comprehensive farm road safety standards and long-term maintenance mechanisms.

Future policy and engineering efforts should further strengthen local participation and data-driven governance. By integrating central regulations with local practices, we can build a resilient and forward-looking farm road safety management system, creating a more solid foundation for Taiwan's rural development.

keywords: Land Consolidation, Farm Road Safety, Traffic Risk, Rural Infrastructure