

# 太陽能板設置分布調查及初步分析

## Solar Panel Installation Distribution Survey and Preliminary Analysis

國家災害防救科技中心

助理研究員	研究員	專案佐理研究員
陳怡臻	李欣輯	劉玫婷
Yi-Chen Chen	Hsin-Chi Li	Mei-Ting Liu

### 摘要

2016 年起政府以非核家園為目標，積極發展再生能源，其中又以太陽光電設施增加最多。在政策大力推動下，越來越多農業用地投入種電行列。為探究近年太陽能設施於各縣市及不同用地的設置分布情況、設置種類與規模，本研究於 2021 年 3 月起，選定七個太陽能主要開發縣市（臺中市、彰化縣、雲林縣、嘉義縣、台南市、高雄市、屏東縣）為研究樣區，並依據太陽能發電容量之比率進行分層隨機抽樣電話調查，共獲得有效樣本 333 筆。

本研究定義的太陽能光電設施分為太陽能光電設備及太陽能熱水器兩類，調查結果發現：(1) 住宅屋頂裝設類型主要為太陽能熱水器，工廠/公司屋頂和農業用地則是裝設太陽能光電設備為主。(2) 以建置時間來說，住宅屋頂有 73% 的設備已裝設五年以上，而工廠/公司屋頂及農業用地上的設備以五年內設置為主。(3) 大部分縣市的太陽能板以裝設於住宅屋頂的比例最多，唯台南市不同，轄內高達 62.9% 的太陽能板是置於工廠/公司屋頂，且裝設片數多為 300 片以上。另外就各縣市農業用地設置太陽能板的比例來看，雲林縣約有 41% 的太陽能板設於農地，是比例最高的縣市，且這些設備由業者管理的比例高於自行興建，顯見太陽能源產業對當地已產生具規模的影響力。透過本研究調查，可初步了解太陽能設施在台灣分布特性、設置地點、建置方式與規模數量等，可作為當前太陽能光電設施建置規畫參考。

關鍵詞：太陽能板，空間分布，問卷調查

## Abstract

Since 2016, the government has actively developed renewable energy with the goal of nuclear-free homeland, among which solar panel facilities have increased the most. Under the powerful promotion of policies, more and more agricultural land has been put into the ranks of solar farms. In order to explore the installation distribution, types and amount of solar panel facilities in various counties and different land use types in recent years, this study selected 7 counties (Taichung, Changhua, Yunlin, Chiayi, Tainan, Kaohsiung, and Pingtung) as research areas. Based on the ratio of solar power generation capacity of the counties, this study had 333 valid samples by stratified random sampling telephone interview in March 2021.

The solar panel facilities in this study had two categories: solar photovoltaic equipment and solar water heaters. The main results were (a) residential roof installations were mainly solar water heaters, while factory/company roofs and agricultural land were largely installed solar photovoltaic equipment. (b) In terms of construction time, 73% of the equipment on residential roofs has been installed for more than five years, while equipment on factory/company roofs and agricultural land was mainly installed within five years. (c) Most of the counties had the largest proportion of solar panels installed on residential roofs, but Tainan City was different. As high as 62.9% of solar panels were installed on factory/company roofs, with more than 300 panels installed in Tainan. In addition, in terms of the percentage of solar panels installed on agricultural land in counties, there were about 41% in Yunlin County was the highest one, and the equipment was mainly managed by the industry, which seems that the solar energy industry had exerted an obvious influence on the local area. Through this survey, we can get a preliminary understanding of the distribution characteristics, installation locations, construction methods, and quantity of solar energy facilities in Taiwan, which can be used as a reference for the current construction planning of solar panel facilities.

Keywords: solar panels, spatial distribution, questionnaire survey