



Status of PV Module Recycling in Selected IEA PVPS Task 12 Countries

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Status of photovoltaic module recycling



Introduction

- PV deployment has accelerated more quickly than expected in the early 2010s. In anticipation of the large volume of PV module waste in the coming decades, PV module recycling has become a key topic, and various discussions and activities have been conducted and developed by governments, organizations, and companies.
- This report provides an overview of the status of PV module recycling in some IEA PVPS Task 12 participating countries in two main sections. First, regulatory schemes, information on PV module waste and relevant companies, and the outlook of each region and/or country are surveyed. Second, practical treatments of PV module recycling in the markets are surveyed by questionnaire to PV module recyclers in some countries. The data were collected in 2021, reflective of the latest year available.

Status of PV module recycling

- In Europe, PV module recycling has been mandated since 2012 through the WEEE Directive. All EU member states have implemented the PV regulation into national law, requiring all producers with PV modules in the EU market to either operate their own take-back and recycling scheme or to join existing producer compliance schemes.
- In South Korea, the EPR regulations will be enforced in 2023, whereas in Australia, PV modules are expected to be covered by the Product Stewardship Act 2011, in addition to state-level discussions. In the United States, regulations specific to PV waste exist in some states. In Japan and China, where there are no compulsory PV waste regulations at this time, several recycling activities and projects for supporting PV EOL have been carried out. R&D funding for PV recycling has been available in Japan, which resulted in commercial PV recycling technology.

PVPS

Although there are no reliable world data on PV waste volume, it seems that a few thousand tons of PV module waste are annually processed in Germany, France, Italy, and Japan. In Spain and South Korea, the amount of PV module waste is still less than 1 000 tons/year.

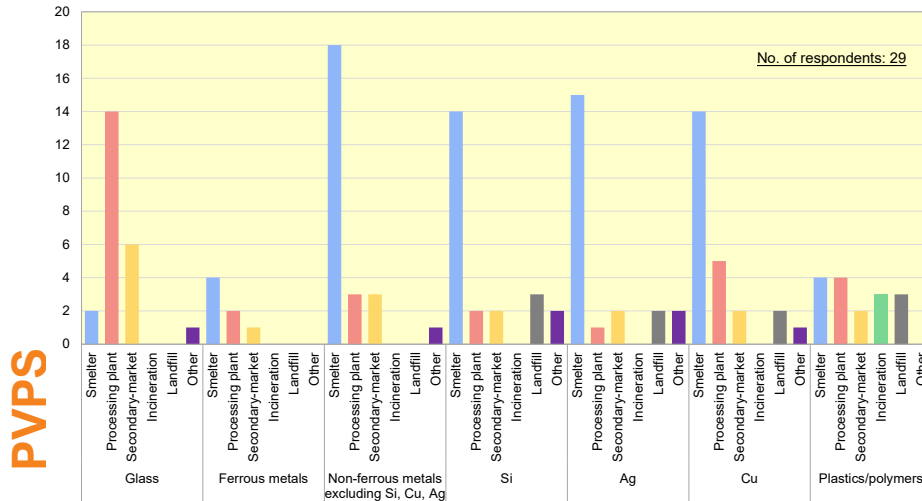
Photovoltaic module recycling in the market



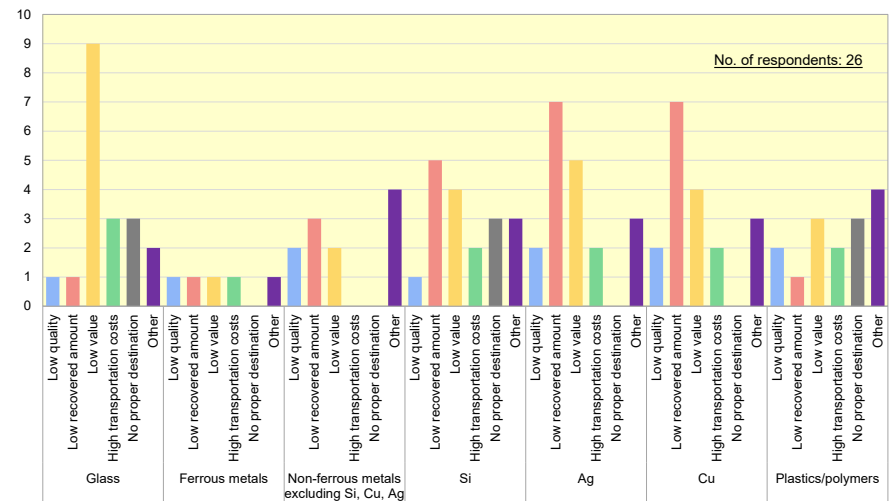
PV module recycling in the market

- Looking at the treatment of PV module waste in the market, regardless of whether there are PV-specific waste regulations have been implemented, several companies are treating PV module waste for proper EOL management and recycling.
- The total amount of PV module waste is still small and the current situation is not suitable to deploy PV module recycling in the long term. The implementation of further improvements in PV EOL process is needed to meet future demand and to realize high-value, low-cost recycling.

<Destination of the recovered or recycled materials from PV modules>



<Issues or barriers for recovering or recycling PV module materials>



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