기후에너지환경부 보도자료 대체불가 대한민국

보도시점 2026. 7. 2.(목) 12:00 (금요일 조간) 배포 2026. 7. 1.(수)

Discarded Clothing and Tires to Return as Valuable Resource Materials

- MCEE launches waste clothing and tire circular use technology development with KRW 73 billion investment

The Ministry of Climate, Energy and Environment (MCEE, Minister Kim Sungwhan) and the Korea Environmental Industry & Technology Institute (President Nam Kwangwoo) announced that they are officially launching a national research and development (R&D) project to recycle waste clothing and used tires into high-quality, valuable raw materials.

Waste clothing is difficult to recycle into high-quality raw materials because it is made from a wide variety of materials, such as polyester and nylon, and contains numerous accessories such as zippers and buttons. Most waste clothing collected through used clothing collection bins is currently exported overseas, while some is recycled into construction materials.

More than 60% of waste tires are recycled as thermal feedstock, such as solid fuel products, and some are made into recycled carbon black, a recycled material used in manufacturing new tires; however, due to issues such as durability, it is difficult to use more than 5% recycled material.

Accordingly, conditions are insufficient to respond to the European Union's Ecodesign for Sustainable Products Regulation (ESPR*) that require the use of recycled materials in the production of clothing and tires.

* EU Ecodesign for Sustainable Products Regulation entered into force in July 2024

Adoption of subordinate legislation for clothing and tires under the Ecodesign Regulation (scheduled for the first half of 2027) and implementation (scheduled for the second half of 2028)

Accordingly, the MCEE will invest a total of KRW 73 billion from this year (2026) through 2030 to promote the following projects: development of flagship recycling technologies to address the waste clothing problem (KRW 25 billion) and development of technologies to secure high-quality raw materials from waste tires and commercialize products (KRW 48 billion).

First, to establish a circular resource system for waste clothing, the project will promote the development of an AI-based automated waste clothing sorting and screening system and technologies for converting waste clothing into recycled materials and products. Through this, it will establish an AI-based fiber material sorting and classification system with an accuracy of over 95% and support the development of technologies to turn waste clothing and textile waste into raw materials for recycling into clothing, automotive interior materials, and construction and civil engineering materials.

In addition, technologies will be developed to secure high-quality recycled raw materials from waste tires and to produce tires using recycled materials. The project will also advance technologies for pretreating waste tires through shredding and other processes prior to pyrolysis to recover high-quality recycled carbon black, as well as technologies that enable the use of more than 15% recycled carbon black in the production of new tires.

The MCEE plans to strengthen the circular use system by encouraging the recycling of waste clothing and waste tire materials through this technology development. It also expects this effort to contribute to achieving the Nationally Determined Contribution (NDC) and to enable a proactive response to overseas environmental regulations, including the EU Ecodesign Regulation.

Kim Goeung, Director General of the Resource Circulation Bureau at the MCEE, said, “This R&D project will serve as a catalyst for circular use by turning clothing and tires, which were considered difficult to recycle, into new products.” He added, “We will actively support the entire technology development process so that R&D outcomes can take root in the field and spread throughout the recycling industry.”