

## Why should WEEE care?

Technological innovation has been a key driver in boosting the enhancement of the life quality as well as the economic growth, widening the spectrum of opportunities in a variety of areas, often from local to global scale. Such evolution in technology has developed intensively for the last years, providing deep changes in the society as well as in its economic activities. The design and marketing of a wide variety of electric and electronic equipment (EEE) have developed at an incredible pace, promoting their rapid obsolescence and their early discharge.

Waste Electrical and Electronic Equipment (WEEE) has thus gained greater and greater attention, standing as the waste flow characterized by a generation rate up to three times higher than that of other kinds of solid waste. The most recent studies report about a global generation that was almost 45 million tons in 2016 and is expected to exceed 50 million tons by 2021.

The huge amount of WEEE globally produced comes along with the numerous devices that are included in this waste category. Each discharged electric and electronic appliance has an average lifespan, so that it is produced in different quantities over time.

Moreover, the material composition varies significantly for the different WEEE components, requiring rather specific treatments to ensure the protection of both human and environmental health from inadequate management. The material composition further accounts for the economic value of different EEE, affecting the viability and profitability of its recycling, once become waste.

The management of WEEE has been traditionally carried out via conventional chemical-physical treatments, prior to refining processes based on pyro-metallurgical techniques: a number of successful industrial applications are operated to extract valuable metals like copper and gold.

More recently WEEE has been recognized also as a source of materials of strategic importance, due to its content in Rare Earth Elements (REEs). The access to these critical raw materials is fundamental to promote the development of sustainable technologies and the security of their supply for the European Union should be better focused on their extraction from WEEE rather than on the import from non-EU regions.

Advances in research have been thus directed towards the development of strategies and technologies for the efficient, environmentally friendly and cost-competitive recovery of critical materials from WEEE. Such aim is particularly ambitious, especially when considering that the recovery yields are influenced by the relevant losses of critical raw materials, occurring through inefficient waste collection systems as well as mislead WEEE flows, often directed to low-income regions to feed the informal recycling sector.

This *Special Issue of Global Nest Journal on Electric and Electronic Waste* collects a selection of the papers contributing to the success of the thematic session held during the International Conference on Environmental Science and Technology (CEST 2017) as well as valuable studies dealing with the challenging field of WEEE characterization and management.

The efforts in providing reliable data on WEEE material composition as well as in handling database including different kinds of information about this waste, the state of the art in WEEE recovery treatments as well as innovative approaches ensuring effective recovery of critical elements are among the research topics discussed in this Special Issue, creating a multidisciplinary collection of studies to address challenges and perspectives in the field.

The contents of the Special Issue reflects the latest focus points of the technical and scientific search for sustainable and novel solutions for WEEE treatment and management, that has mainly aimed at supporting the European socio-economic growth, while reducing the environmental burdens on global scale. This is also the key objective of ReCrew, the European Network European for innovative recovery strategies of rare earth and other Critical metals from electrical and electronic waste, involving researchers, engineers and scholars from 24 European countries working in the field of WEEE management and critical material recovery. Most papers in this Special Issue are authored by ReCrew members, developing the joint ideas originated in the interdisciplinary context of this network.

To all authors goes our gratitude for making up such an interesting insight in the field of WEEE, and so as to the reviewers for the constructive advice offered to improve the manuscripts. We would like to extend our sincere acknowledgments to the Editorial Board of Global Nest Journal that agreed on producing this Special Issue and, in particular, to the Editor-in-chief, Prof. Themistokles Lekkas, as well as to the Editorial Assistant, Dr Eleftheria Klontza.

We believe that these papers clearly figure out the complexity of this topic as well as the need to promote the sustainable take care of WEEE, in order to turn a potential issue into a real opportunity.

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