EDITORIAL

There is a growing trend towards the consumption of different electrical and electronic equipment (EEE), such as cell phones, televisions, and computers, among others. The conditions of trade and the ease of access to all these elements that represent technological innovation facilitate its renewal but cause short life cycles and increase the generation of waste from electrical and electronic equipment (WEEE). These WEEE waste is considered hazardous (Golinska & Kawa, 2011).

A study by the association of mobile industry companies GSMA and the United Nations University warned that the amount of WEEE is growing worldwide. In 2014, WEEE exceeded 41,000 kilotons (KT) and presented an annual increase of 5%. For its part, Latin America generates around 4,000 KT of WEEE (9% of the world total); and Colombia, after Brazil, Mexico, and Argentina, is one of the most significant WEEE generators in Latin America, reaching a generation of 341 KT by 2018 (Magalini, Kuehr, & Baldé, 2015). However, the growth of WEEE generation alone is not a difficulty. The problem lies in the absence of a management system that allows the treatment and recovery of waste to be carried out, or the proper disposal of waste (although the latter would be the last measure).

In Colombia, the issue of WEEE is being partially addressed. There are post-consumer programs that are already defined (e.g. used batteries, expired medications, disused computers and printers, used batteries, used light bulbs, used tires, and household packaging), while other programs are under construction (National Production Center Cleaner and Environmental Technologies, 2013). The design of a WEEE management system is important to meet the gradual growth of waste generation, and to materialize the political intentions, in terms of regulations, within the framework of the circular economy. In addition, the design of a WEEE management system is relevant from the great implications generated from an environmental, economic, and even an academic-scientific perspective.

The accumulation of WEEE represents a danger for the environment; electronical devices are functional because of to a mixture of chemical components such as lead, copper, mercury, nickel, and precious metals such as gold, silver, and palladium. When an EEE no longer functions, it is disposed of as garbage or it is delivered to those who cannot assume adequate final disposal processes. Therefore, there is a risk that all these dangerous and toxic materials will be released into the environment (Romero, 2014). In this regard, research from the University of Queensland concluded that direct contact with harmful materials such as lead or cadmium, contained in WEEE, could cause cancer-related diseases and affect pregnant women (Varela Penedo, 2016).

From an economic perspective, WEEE is a renewable source of resources (Fleischmann et al., 1997). According to EMPA studies, the 45,000 tons of computers accumulated in Colombia in 2007 contained around 3,000 tons of copper, which is equivalent to an approximate value of 25 million dollars, according to copper prices in early 2008 (Romero, 2014). Another case that exemplifies the economic impact of WEEE recovery is gold mining: while a ton of ore from a gold mine averages only 5 grams of gold, a ton of discarded mobile devices generates approximately 150 grams (Preston, 2012). Finally, the academic-scientific perspective denotes a relevant problem that is gaining increasing research interest worldwide (Achillas et al., 2014; Agrawal, Singh, & Murtaza, 2015). The complexity of the subject and the impact in practical terms suggest the creation of new methodologies that better represent real management systems (Mashhadi, Behdad, & Zhuang, 2016).

CÉSAR AUGUSTO GARCÍA-UBAQUE

Director