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WHERE IS REPAIR? | Computer Repair in the European Union

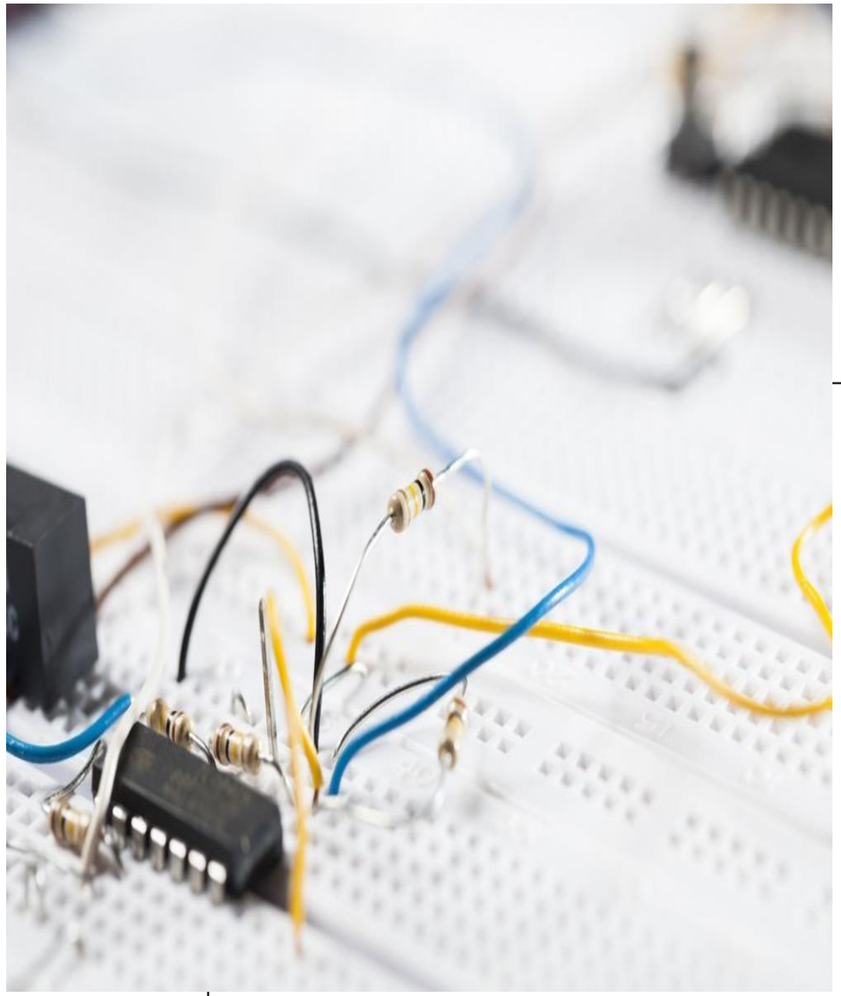
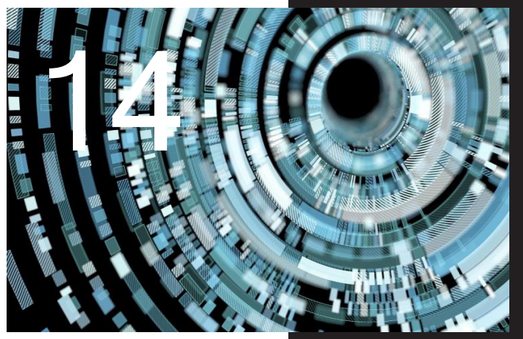


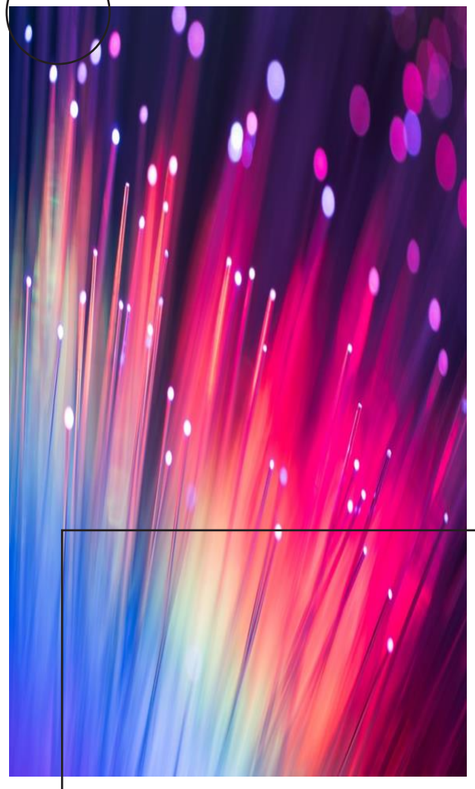
table of contents



EU & the RMC sector

Overview of the Repair and Maintenance of Computer and Communication Equipment in the European Union

At its peak in 2014 the computer repair and maintenance sector comprised some 54,000 individual enterprises in the European Union (EU). The sector achieved a turnover well above €16 billion in its best performing year (2015) while employing more than 170 thousand people. Over time, the sector has experienced rapid and substantial change. Macro-economic geographic shifts in the industry's location are apparent, for example, as the total number of enterprises grew in the UK while declining in France across the time period analyzed. One of the key defining features of the sector is the dominance of sole proprietor micro-enterprises, which suggests the importance of the industry for self-employment.



Where is repair?

Data for this study were obtained from the Eurostat database for repair of computers and communications equipment for all available years at the time of writing (2011-2015; see Appendix for full details). Data for characteristics such as number of enterprises by size (i.e., number of employees), employment, and turnover (total value of market sales of goods and services to third parties) were extracted. The data were imported into Tableau, a software for data visualization that also offers basic mapping abilities.

The total number of enterprises in the repair and maintenance of computer and communication equipment sector (RMC sector) is unevenly distributed across the EU 28 (Figure 1). The number of RMC enterprises operating in the EU 28 increased from 2011 to 2014, sharply declined in 2015, and then rebounded in 2016 but did not fully recover to the peak level of 53,973 enterprises in 2014 (see Figure 2).

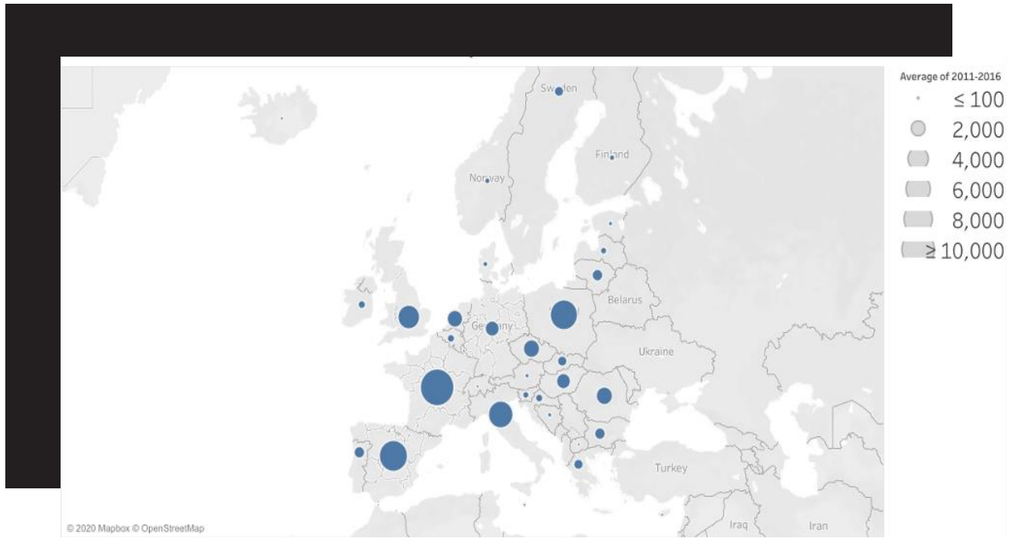


Figure 1

The RMC sector involves thousands of enterprises and employees.

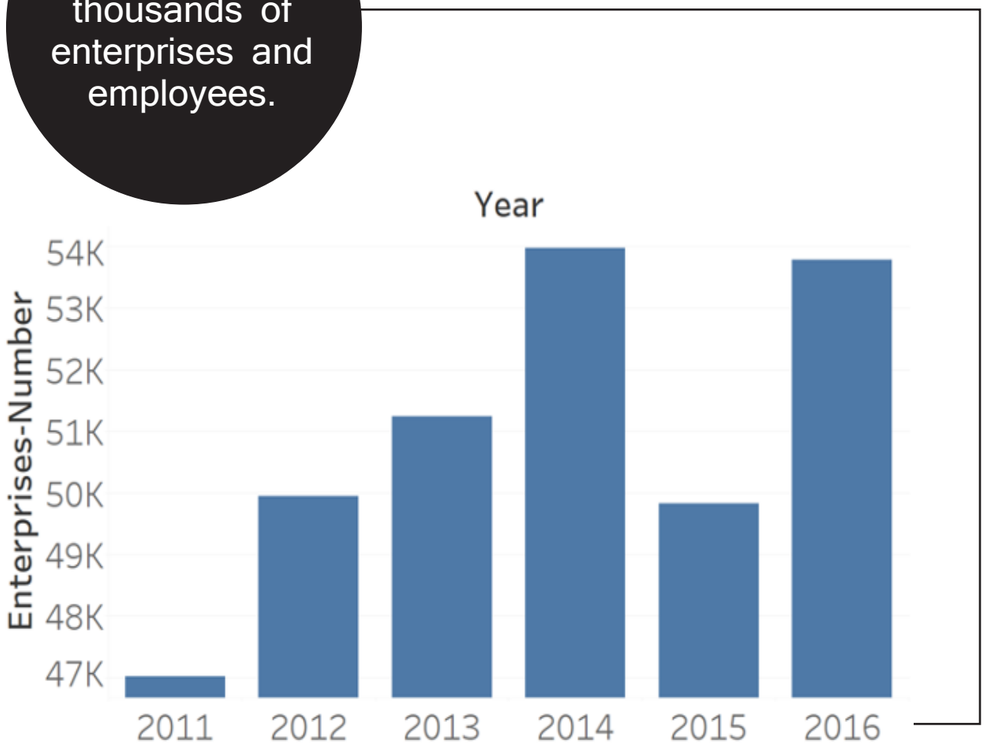


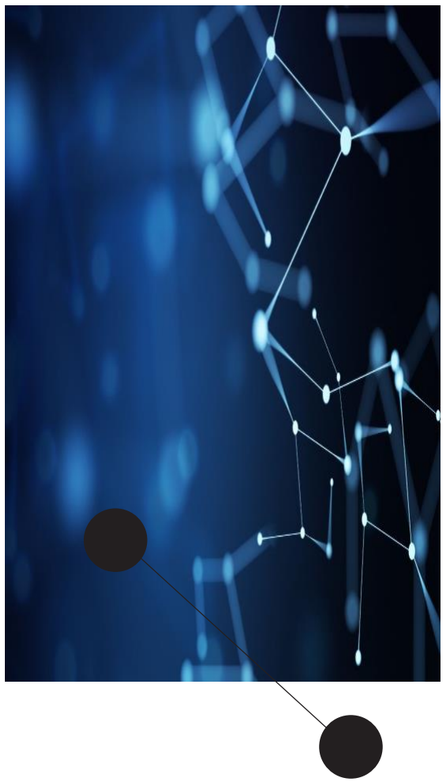
Figure 2

Over the available years of data, the average growth rate for RMC enterprises in the EU28 was 2.7 percent (Figure 3). The data indicates that a significant decline in the number of enterprises occurred in 2015 with a loss of over 4000 enterprises. Almost all of this decline is attributable to a single country: France (discussed in more detail below). In contrast, the rebound of 2016 occurs as a consequence of growth in the number of RMC enterprises across several EU28 countries, but, especially in Spain, France, Germany, the UK, and Poland. In those countries, the year-over-year increase in RMC enterprises was 1935 enterprises for Spain, 608 for France, 401 for Germany, 389 for the UK, and 213 for Poland. Such broadscale patterns of growth and decline are also tempered by differential changes occurring in the different size classes of enterprises in countries of the EU28.

Micro to Macro

The relative contribution of micro-enterprises is huge

The size of enterprises in the RMC sector of the EU28 skews strongly toward micro enterprises. This size class comprises over 98 percent of total enterprises in any given year of data (Figure 4a, Figure 4b). The dominance of sole proprietor micro-enterprises is a key defining features of the RMC sector. This feature suggests the importance of the industry for self-employment.



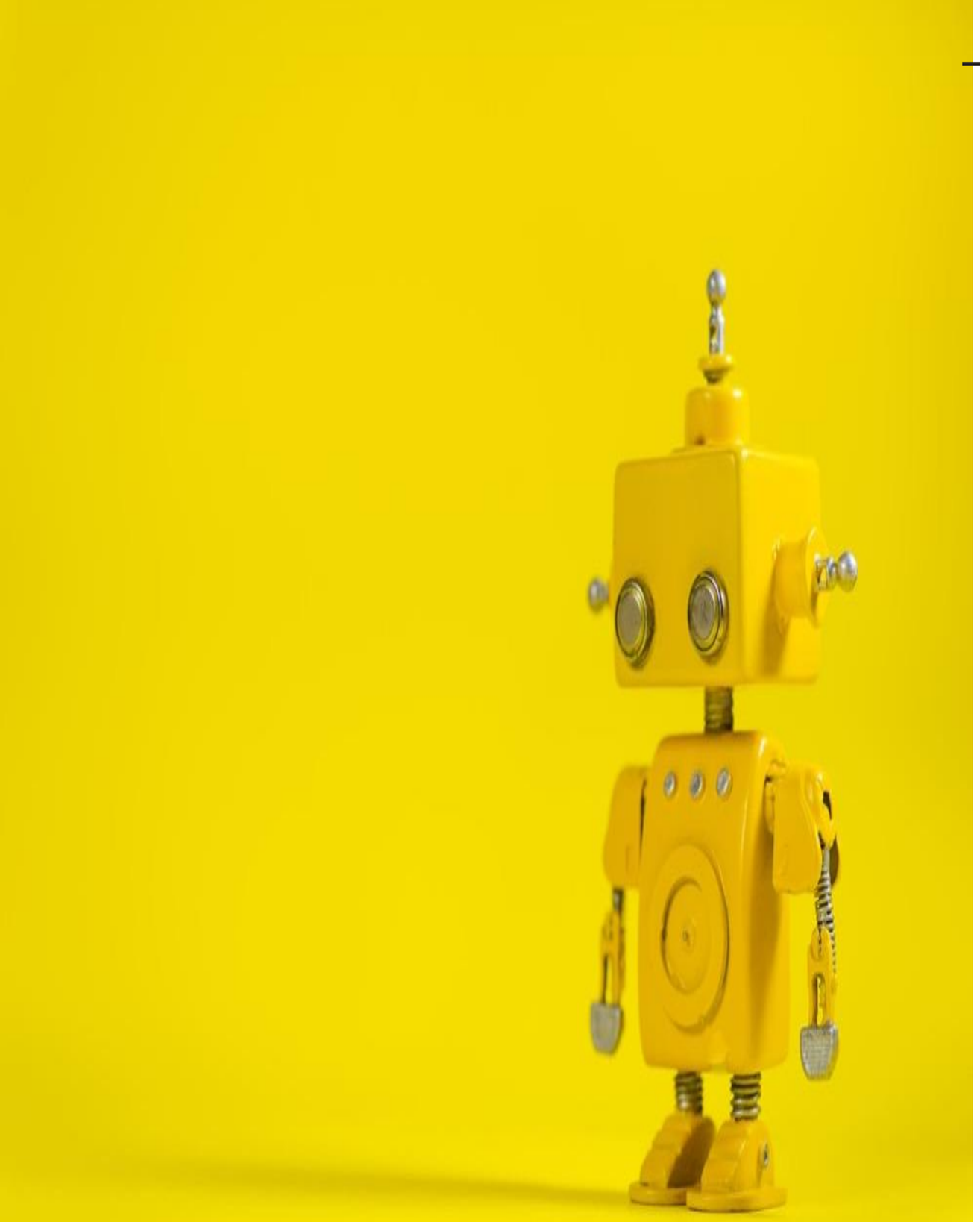
The micro enterprise category in Eurostat data includes two subcategories: enterprises of 0-1 employees and 2-9 employees. Even amongst the micro size class, it is the smallest size class, (i.e., 0-1 employee), that make up the vast majority of enterprises. These single employee businesses account for a minimum of 75 percent of all enterprises between 2011-2015. Large companies (i.e., those with 250 or more employees) make up a very tiny proportion of all enterprises in the RMC sector, less than 0.2 percent of total enterprises in any given year. At most, 74 large enterprises are part of the 47,000-53,000 total enterprises reporting data between 2011-2015.

There is geographic variation across the EU28 in the location of RMC enterprises based on enterprise size. Large enterprises locate in only roughly one-third of all EU28 countries (Figure 5) whereas medium- (Figure 6), small- (Figure 7) and micro-sized enterprises (Figure 8) exhibit a broader distribution within the region.

An obvious characteristic of the RMC sector in the EU28 is the dominance of sole proprietor micro-enterprises. In many cases, sole proprietor micro-enterprises are one or even two orders of magnitude more numerous than larger sized enterprises. These data thus suggest how important the RMC industry is for self-employment across the EU28.

Unfortunately, the available Eurostat data do not allow for an examination of important demographic characteristics of the RMC sector such as gender, age, ethnicity, and citizenship status. Future research could be directed at better understanding relationships between the RMC sector's demography and its socio-economic contributions across the EU28.

Small enterprises, big contributions



Employment

Tens of thousands of people work in the RMC

The number of persons employed in the industry of RMC increased continuously from 2011 to 2016, except for 2015. Despite the dramatic drop in number of RMC enterprises in the EU28 in 2015, the effect on total employment across the region was minimal. In France, however, employment in the industry took a dramatic hit, falling from 36,693 employees in 2014 to 28,668 in 2015.

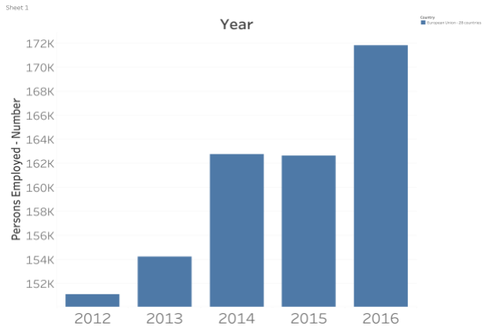


Figure 9

Between 2012 and 2016, the RMC sector added approximately 21.8 thousand jobs (Figure 9). Averaged over this time period, employment in the sector grew at 2.75 percent (Figure 10 and Figure 11). However, the average growth rate for the RMC industry masks the high rates of growth experienced in the sector in 2014 and 2016 of 5.5 percent and 5.6 percent respectively. For comparison, this growth rate is slightly above that for the broader non-financial services sector under which RMC is sub-categorized.

The number of employees across RMC enterprise sizes between 2012 and 2015 also highlight the importance of micro-enterprises (Figure 12). This size class employed over 69 thousand persons, amounting to 44 percent of total employment in the sector. In contrast, large enterprises employed 41 thousand persons, or 26 percent of total employment in the sector, while medium-enterprises employed 25 thousand persons (16 percent

of employment) and small-enterprises employed 22 thousand persons (14 percent of the total). What these data point to, again, is the significance the RMC sector may have for self-employment and, possibly, as a sector to which individuals can turn if other employment options are less available or less desirable.

The total turnover of the RMC industry in the EU increased substantially from 2011 to 2015, but experienced a marked downturn in 2016 (the latest data available, see Figure 13; Figures here report constant dollar value in Euros for 2011, see Appendix for calculation method). In 2011, the turnover of this industry is € 14.5 billion, while in 2015, € 16.5 billion, averaging a growth rate of 3.9% per year (by comparison, the non-financial services sector grew at an average rate of 1.77 percent per year).

Total turnover and turnover per person both vary by enterprise size (Figure 14). For example, in 2015, large-enterprises generated €7.4 billion, and accounted for 45% of the total turnover. The micro-enterprises, small-enterprises, and medium-enterprises generated 3.5, 2.5, and €3 million respectively, which together accounted for 55% of the total.

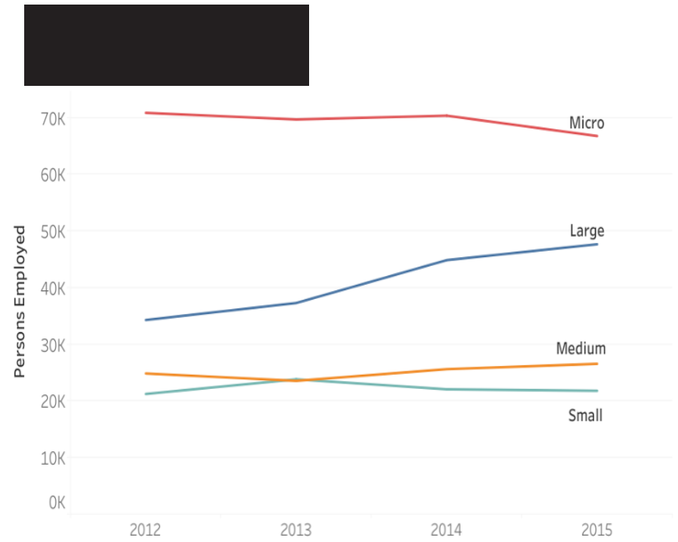


Figure 12

From 2011 to 2016, the turnover per person of the RMC sector in the EU28 increased to a peak in 2015 and then decreased to a very low level. The turnover per person significantly increased from € 91.7 in 2013 to € 101.5 in 2015. The increased rate in 2014 and 2015 was as high as 5.9% and 4.5%, respectively. In 2016, this index decreased dramatically by 13.9%. The value of turnover per person in 2016 was € 87.4, even smaller than the 2011 level (Figure 15).

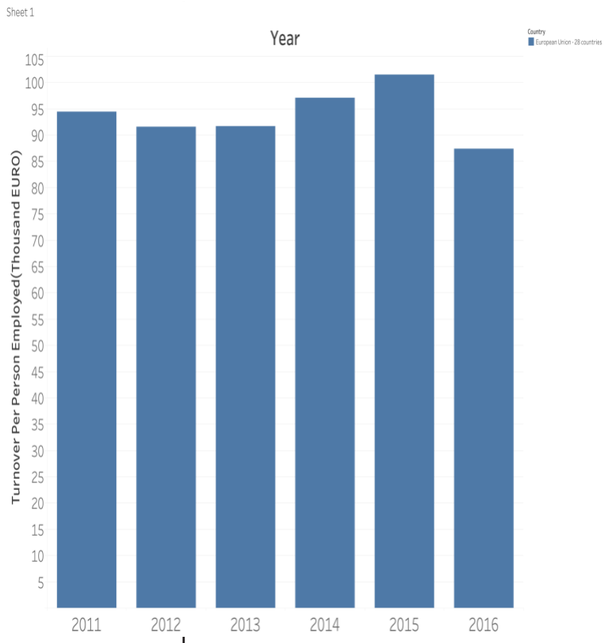
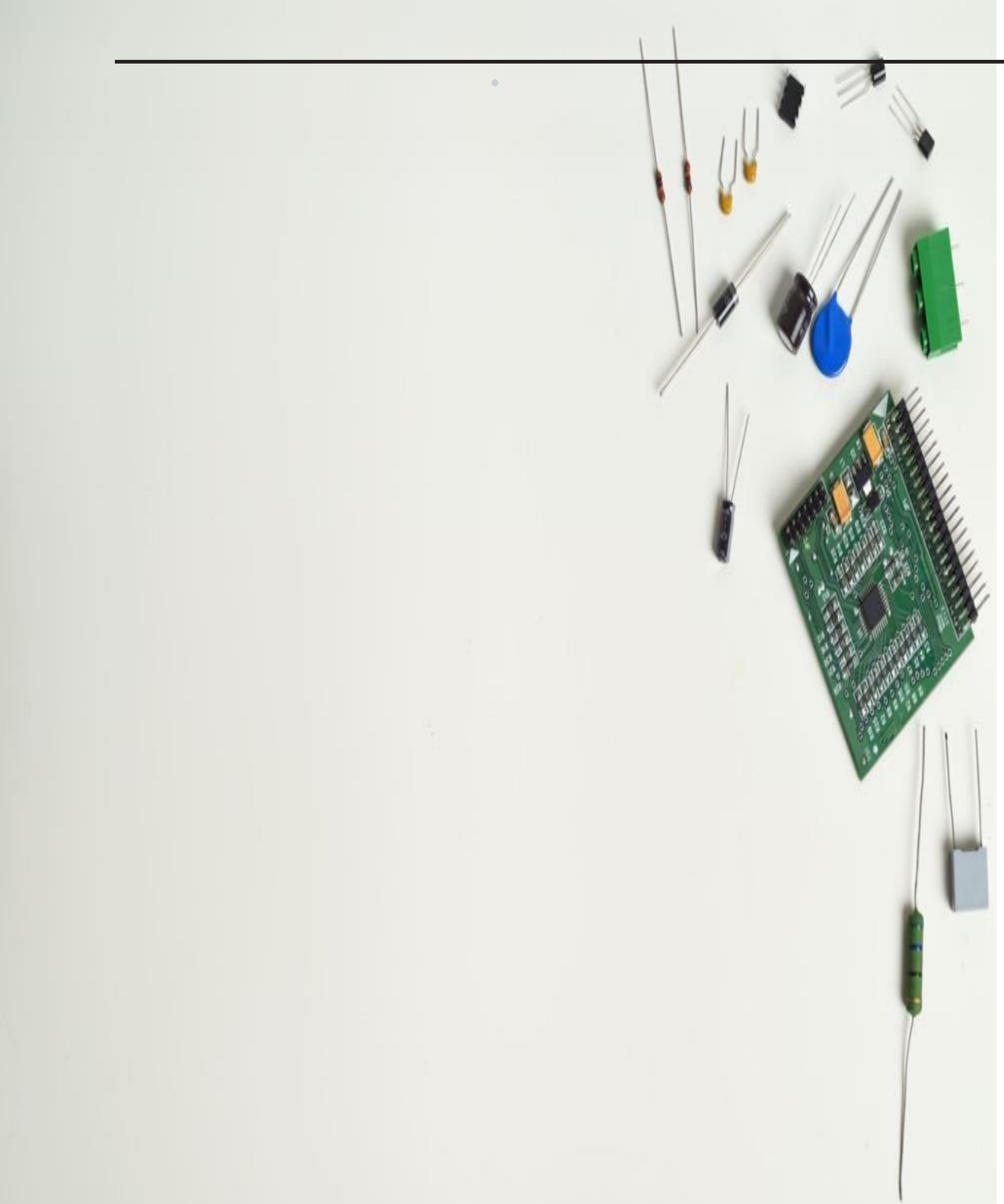


Figure 15

The turnover per person of micro enterprises was much smaller than other enterprise size classes. For example, in 2011, the turnover per person of micro-enterprises was € 56 thousand, less than half of large-enterprises, medium-enterprises, or small-enterprises. Then, the turnover per person of micro-enterprises increased slightly to € 58 thousand in 2013, and then significantly decreased to € 47 thousand in 2014. In 2015, the turnover per person of micro-enterprises was only € 53 thousand, around one third of the large-enterprises and half of the medium-enterprises or small-enterprises.

In the EU 28, most RMC enterprises are concentrated in a few countries. Taking 2016 as an example, only seven of 28 countries account for 85% of the total turnover and 80% of the total employment in the sector. Just two countries, the United Kingdom and France, accounted for more than half



(54.5%) of the total turnover in this sector in the same year. Meanwhile, more than one third (38%) of persons who were employed in the RMC sector, worked in these two countries. In the same year, another third (30.6%) of the turnover and over 40 percent of employment in the sector was attributable to just five other countries: Germany, Italy, Spain, Czech Republic, and Poland.

TURNOVER

Assessing productivity in the sector

Generally speaking, in these top contributing countries, the size of the RMC sector increased from 2011 to 2016, except for France and Italy. The United Kingdom experienced the most significant increase. The turnover of the RMC sector of the United Kingdom increased from 2.5 billion Euros in 2011 to 4.7 billion in 2016, which was almost doubled. The number of persons employed in the RMC sector of the United Kingdom increased from 25.7 thousand to 40 thousand, increased by 150%. Meanwhile, France's size of the RMC sector decreased. The turnover of the RMC sector of France decreased slightly from 5.8 billion in 2011 to 5.48 billion in 2016. The number of persons employed in the RMC sector of France decreased from 34.5 thousand in 2011 to 25.2 thousand in 2016, shrank by 23%. In 2015, The United Kingdom replaced France as the country which has the largest RMC sector.

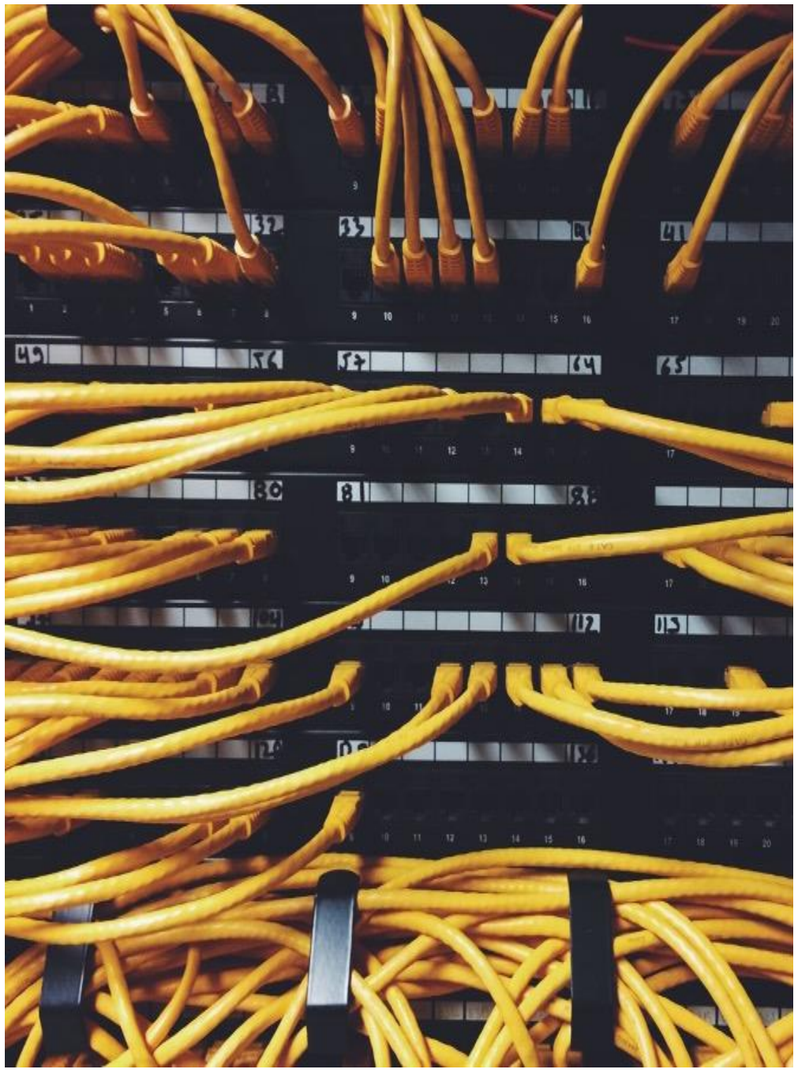
In 2016, median turnover per person among EU 28 was 73 thousand EURO.

Billions of Euros are in play

However, there is considerable variation in productivity in the sector, measured as turnover per person. For example, in Switzerland turnover per person exceeds 161 thousand EURO, more than twice the median. On the other hand, in Bulgaria turnover per person was only 16 thousand EURO, less than one fourth of the median.

think CO_2e

What is the carbon conservation value of the EU RMC sector?

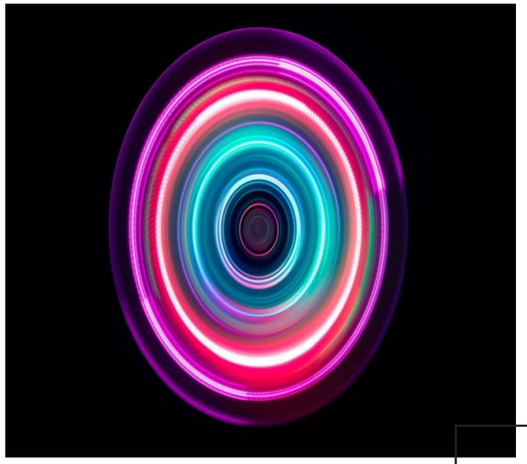


Carbon dioxide is equivalent the measure.

WHERE is Repair?

Previous sections of this report describe the RMC market. This section attempts to estimate the sector's current and future environmental benefits measured in CO_2 equivalent (CO_2e).

CO_2e is also known as 'global warming potential' (GWP) and is one of a range of methods used in the broader practice of carbon accounting. In this approach, carbon dioxide (CO_2) is used as a fixed reference point from which to build a scale of measurement to compare the relative effect of CO_2 and other gases in warming the atmosphere.

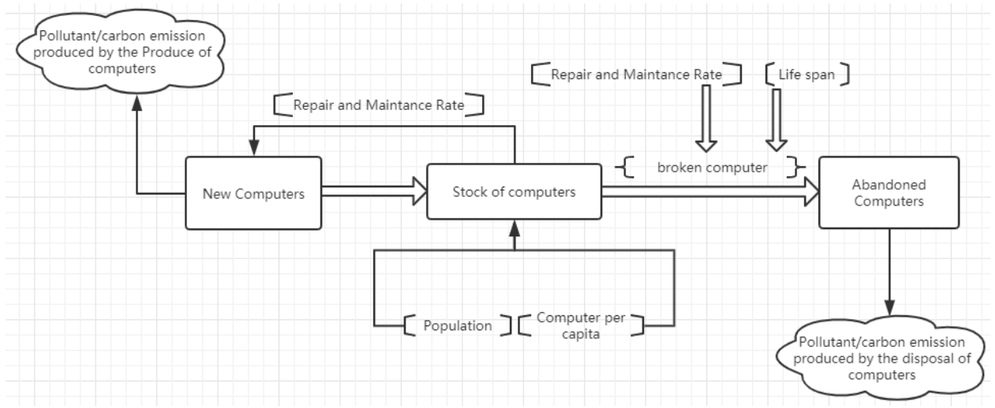


On this scale CO_2 has a global warming potential (GWP) of 1. Other gases can have substantially higher GWPs relative to CO_2 (e.g., methane has a CO_2e, or GWP, 86 times higher than CO_2 over a 20 year lifetime in the atmosphere). CO_2e is an increasingly common way of comparing the environmental impacts of a wide variety of activities, from industrial manufacturing processes to building construction. It is an increasingly standard way for original equipment manufacturers and brands (e.g., Apple) to quantify the environmental impacts of their devices.

We adopt the use of CO_2e in this report so as to remain in keeping with data increasingly made publicly available in the sustainability reports of electronics manufacturers and brands. It should be noted, however, that CO_2e is not the only way that environmental impact can be measured nor is carbon accounting free from criticisms (e.g., see Ajani et al., 2013; Buck, 2020; Liesen et al., 2015; Mata et al., 2018; Perera et al., 2019; Pitrakkos and Maroun, 2019).

"Up to 10 million tonnes of CO_2e are saved."

Figure 18



For example, carbon accounting has nothing to say about other pollutant releases, their chemistry, toxicity, or other impacts. It also tells us little about the geographies of other emissions, their effects, for whom, where and under what conditions. Thus, although CO_2e gives us a comparable measure of impact, it is unavoidably also a partial and situated understanding of the environmental consequences of electronics manufacturing, repair, and maintenance.

Our estimates of the RMC sector's current and future environmental benefits (measured in terms CO_2e) are made using a stock and flow model. The model is also used to explore future scenarios of the EU RMC market. The model used is represented graphically above in Figure 18 (full details of the model can be found in the Appendix).

The model suggests the substantial conservation value of the RMC sector in the EU. Figure 19 presents the range of CO_2e that is projected to be saved when repair leads to between 1 and 4 additional years of useful life of a device. As Figure 20 shows, extending the useful life of devices by 1 to 4 years reduces the demand for new units of devices by between 15 and 50 million units or a savings of 3 million to 10 million tonnes of CO_2e.

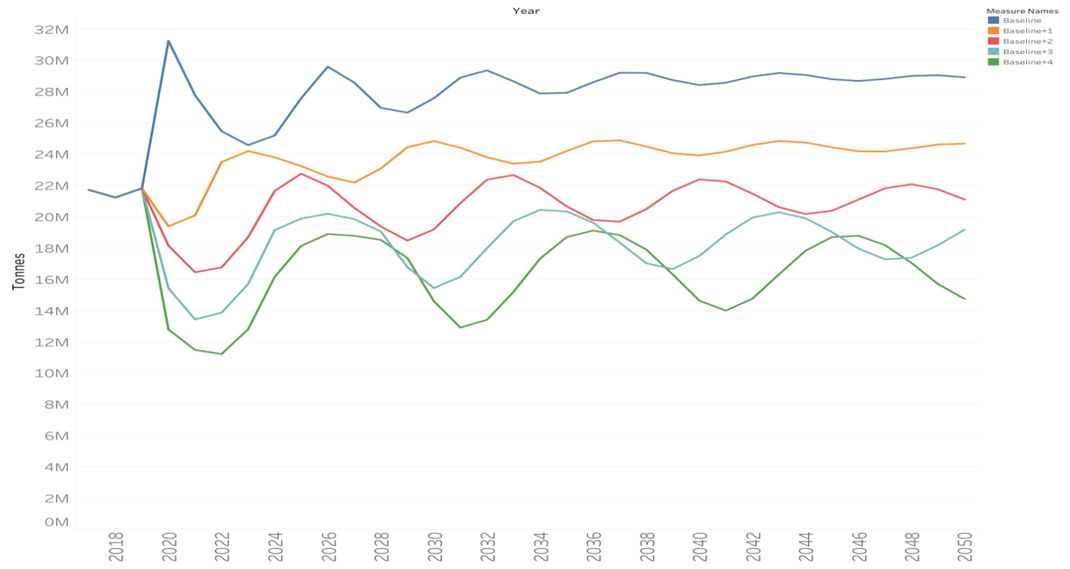


Figure 19. The GHG embodied in the importation of new computers in the EU area under different scenarios.

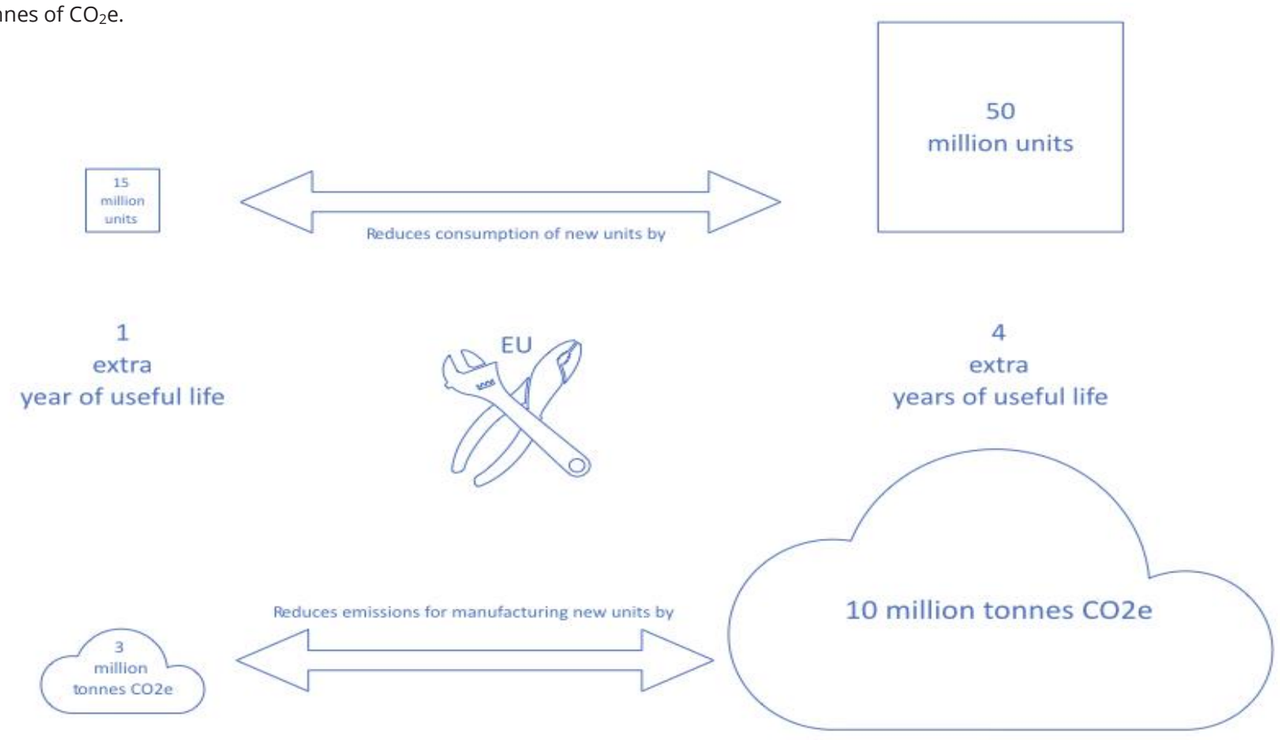
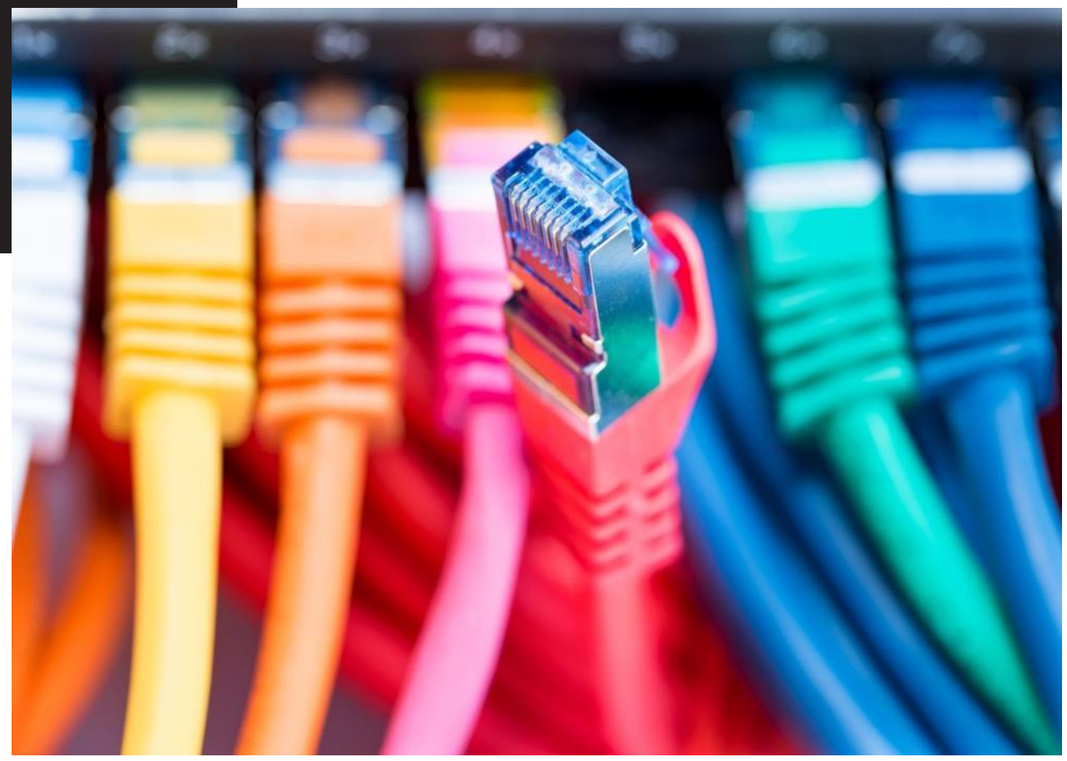
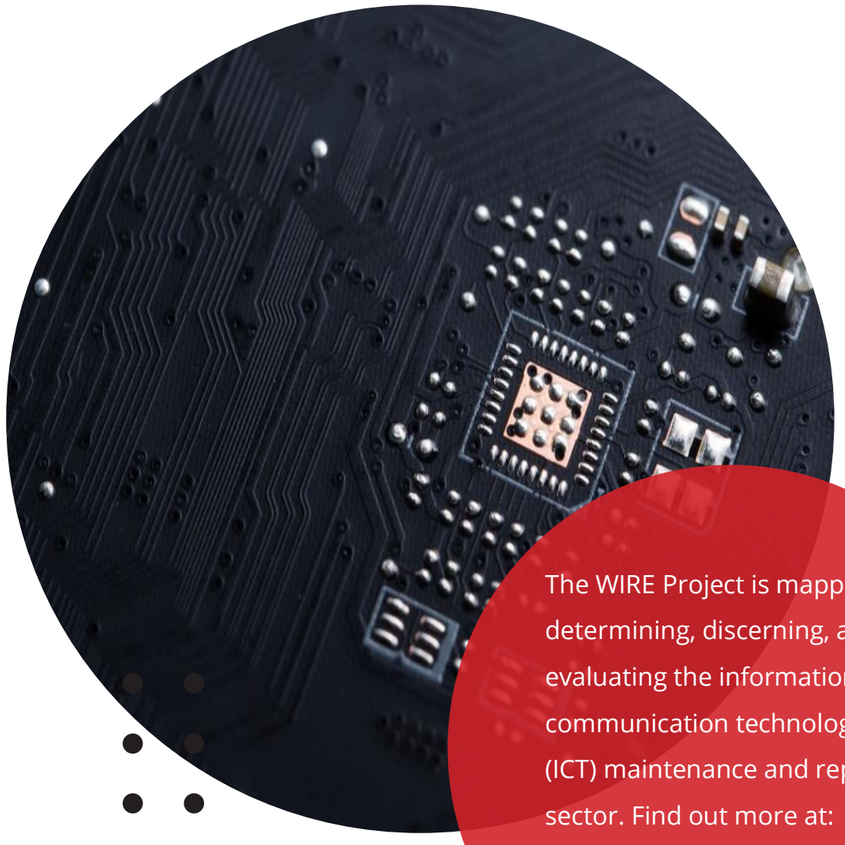


Figure 20. Savings achieved if repair adds between 1 and 4 years of extra useable life to a device in the EU.





The WIRE Project is mapping, determining, discerning, and evaluating the information and communication technology (ICT) maintenance and repair sector. Find out more at:

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