# Environmental labelling of electronic products: mobile phones, laptop and tablet

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**Abstract**

Electronic retailing is continually growing and evolving. New innovations such as 4G LTE network, supersized curved screens, laptops thinner and lighter than ever or connected devices stimulate consumer demand. Most people are unaware of the potential negative impact of the rapidly increasing use of electronic devices, for example, increasing scarcity of natural resources, world air cargo traffic growth, and difficulty of recycling. With the worldwide sales reaching 1.86 billion devices in 2014 only for mobile phone market, the ecological footprint of an electronic device may be small, but the cumulative effect is to be quite significant on a global scale. To reduce these impacts, consumers play a central role in sustainable production by purchasing eco-friendly products.

With this in mind, a major French cultural and electronic device retailer[1], will launch in 2015 the environmental labelling of three product categories: mobile phone, laptop and tablet. This eco-rating scheme is based on a life cycle approach and distinguishes devices according to two indicators: global warming potential (kg $CO_2$ eq.), and raw material depletion (kg Sb eq.). In order not to recreate something that already existed, the use of the "Mobile phone Product Category Rules" developed by the French environmental labelling program as a basis for its labelling scheme was decided. In this context, this project had to meet three challenges: How to participate in the improvement of the "Mobile phone Product Category Rules"? How to implement this methodology for two additional categories: laptop and tablet? And what communication formats are to be adopted to arouse the consumer interest?

This article presents the main results of the environmental labelling scheme developed by Hop-Cube, with the technical support of Bureau Veritas CODDE. First of all, this article addresses various modifications to improve the "Mobile phone Product Category Rules" to take into account the new technological evolutions of mobile phones. Based on the results of an LCA study of 7 mobiles phones, we show that environmental impacts are mainly due to the production of the screen and integrated circuits (processor, wireless broadband network and flash memory). The OLED technology used for the production of screen is a significant environmental aspect in comparison to the LCD technology (+20% on global warming between OLED and LCD mobiles). In addition, the use of chips based on gallium arsenide (GaAs) instead of silicon (Si) for the production of LTE network integrated circuits is a significant environmental aspect on global warming (+50% between 1cm² GaAs chip and 1cm² Si chip mobiles). Therefore, the impacts of the other components are less important and may be simplified. The next improvement area should focus on the impact of data hosting and exchange of data.

Secondly, this article summarizes the methodological transposition for two new product categories: laptop and tablet. Based on the results of an LCA study of 3 laptops and 2 tablets, we show that environmental profiles of these two categories are similar to that of mobile phones: the production of screen is the main contributor. From this, the energy consumption for the production of the screen should be a primary data.

Finally, this article details the challenges regarding the choice of communication formats. Three communication formats have been retained for the environmental labeling: paper labels in stores, digital labels in stores using the screen of devices, and online posting on the website.

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[1] The name of the retailer is confidential for now, but will be disclosed in the final presentation