

## Sustainability research on Dell and Dell Latitude 5285 2-in-1

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*Abstract: With the development of science and technology, nowadays people are surrounded by more and more varieties of electronic products, and as new versions of smart devices come out more often and more affordable, people are more likely to throw their smart devices away and replace them with new devices once their old devices break down. Consequently, people might generate more and more e-waste to the world. It is predicted that the amount of e-waste is going to increase to 52.2 million Mt, which means each inhabitant will generate 6.8 kg e-waste a year by 2021. This report describes what effort Dell made to deal with e-waste problem, for instance its Latitude 5285 2-in-1, in order to make recommendations that Dell can use to reduce e-waste and stimulate sustainability in other IT business in a more efficient way.*

*Keywords: e-waste, sustainability, affordable, surface methodology.*

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### 1. INTRODUCTION

Latitude 5285 2-in-1 is a 12.5" Convertible Ultraportable 2-in-1 with Intel 7<sup>th</sup> generation Core, which can be chosen from i3, i5 and i7, and a separate detachable keyboard, launched on 2017. It uses Microsoft Windows 10 Pro (64-bit) operating system, and can be customized with 4GB, 8GB, or 16GB of RAM and up to 1TB of storage. It is the first notebook Dell made by recycled gold from e-waste which they collected through its takeback channel. By doing so, Dell became the first PC manufacturer to build its motherboards with recycled gold from e-waste and won the 2018 ISRI Design for Recycling (DFR) Award. It is designed with at least 97 percent recyclable materials with Energy Star 6.1, EPEAT Gold registered, BFR/PVC Free, Hg-Free/Arsenic-Free and TAA compliant. However, power supply unit of this product still has BFR/PVC.

In fact, the reason that Dell designed this product was that they wish to reduce their products' environmental and social footprint to support a wider shift to the circular economy. Dell explained that most electronics are made of gold and other precious metals inside, moreover, the rate that gold contains in motherboards are 800x more than in gold ore. Dell claims that doing so has a 99% lower environmental impact than mining gold in traditional way.

To produce this product, Dell use recycled materials that they collected from customers in more than 2,000 locations. The motherboard this product used is manufactured by Dell's suppliers in Taiwan. Other parts are manufactured by other suppliers in America, China, Malaysia, India and other countries.

By January 2017, Dell has completed its first goal of using 50 million pounds of recycled materials in its products in '2020 Legacy of Good Plan'.

## **2. PURPOSE**

The reason that Latitude 5285 2-in-1 is chosen as an example in this report is simply because it is the first notebook Dell made by recycled gold from e-waste which they collected through its takeback channel. According to Cardinia Shire Council in Australia, they purchased Latitude 5285 2-in-1 for their employees since they decided to change themselves to an agile working environment without fixed desks and more agile staff. They said Dell latitude series ultralight notebook perfectly satisfied their needs. John Septimus Roe Anglican Community School in Australia love it since they found Dell Latitude Ultrabook are much more robust than other competitor laptops in their test. They expect that Dell Latitude Ultrabook can support them for next 4 years.

These companies save money from choosing this product for the convenience of combining laptop and tablet into one thing. Furthermore, the strong brand image that Dell has is also an important reason these companies to chose Dell's computers or laptops from the market.

## **3. ASSIMILATION**

There are many products which made with same design concepts as Latitude 5285 2-in-1. For instance, Dell OptiPlex 3030 All-in-one desktop uses UL-environment closed-loop recycled plastics in its stand and backing. Fairphone uses recycled copper and tungsten to make their phone. Apple uses recycled aluminum collected from iPhone 6 devices that returned to factory to reuse in Mac minis. Compared with Dell, Apple claims that their products are completely free of BFR and PVC across their product lines and they began to recycle tin and aluminum for their closed loop. Apple also work with its partner to generate renewable energy .

This product might suffer from keyboard malfunction, power adapter malfunction, flat battery, distortion, system breakdown, might be broken by accident and even might infected by virus. Customers can repair their devices through Dell service or private repairing stores if they cannot .

## **4. SUSTAINABILITY**

As all other brand's laptop, Latitude 5285 2-in-1 has a free one-year warranty. What makes Dell different is that Dell has different support plans for people who have special needs. For instance, people can choose in-home/onsite service after remote diagnosis for 3 years, or up to 5 years pro support with next business day onsite service. There are some additional services like accidental damage service and extended battery service, which would make proper disposal of the returned battery and do repair or replacement on returned laptop.

If customer bought this product for too long to use these services, they can repair this product in private repairing stores or Dell since this product uses standard parts and avoid adhesives which makes it easy to be repaired and updated. If their products are beyond repair, Dell has a couple of services for recycling. For companies, Dell help them recycle their old equipment's system by optimizing the cycle over again or replacing with a new one in 44 countries. Dell will ship equipment that companies which to resale to facilities to determine their value and recycle those cannot be reused. For people throughout North America, Dell has built a partnership with Goodwill Industries to collect local people's old computers. To make life easier, Dell cooperate with FedEx to allow people send unwanted equipment through mail. For people who want to earn payment by recycling,

Dell has a trade-in and recycling program to allow people evaluate how much they can earn by selecting options for their device’s details and get payment after mailing them to Dell.

To deal with collected old devices, Dell created a closed-loop supply chain to stimulate the process of closing the circle in manufacturing. In this chain, plastics are shredded and melted into pellets by Dell’s partner Wistron, and then mixed with virgin plastics to make new parts, such as the stand and backing for OptiPlex 3030 All-in-one, after shipped to Asia. Metals like tin, gold and tungsten are resold in the commodities market or reused in new computers, for instance, motherboard for Latitude 5285 2-in-1 and other Latitude laptops, or even designed as jewelry.

**5. SUITABILITY**

Overall, it is a suitable purpose for Dell Latitude 5285 2-in-1 to be part of its closed-loop recycling process. This loop is an innovative step for IT companies to rethink what they can do from now. Dell not only saves money on producing products, but also delivers a less expensive energy-efficient product to customers, which is a win-win situation. Like other brands, Dell also offers a wide range of refurbished products in mature markets, which somehow extends the lifecycle of their products. Moreover, Dell has a long-term plan called ‘2020 Legacy of Good Plan’, they update their process once a year on website. According to this plan, Dell promised 12 goals on environment aspect as picture 1 below. To fulfill their ideal, they made their best to enhance products’ lifecycle and reduce what they have to send to landfill, their waste hierarchy are shown as picture 2.

However, there are still some space for Dell to make improvement. Even though Dell is making great efforts to gather and use reusable materials from e-waste into products, it may be not easy for factories to extract recyclable parts from them and even might cost more energy. Another challenge is it seems difficult for Dell to provide 100 percent transparency of their supply chain. Since Dell do not own its factories as old days, how to manage its suppliers all over the world and force them to keep Dell’s social and environmental responsibility standards might be hazard, evidence can be found in picture 3.

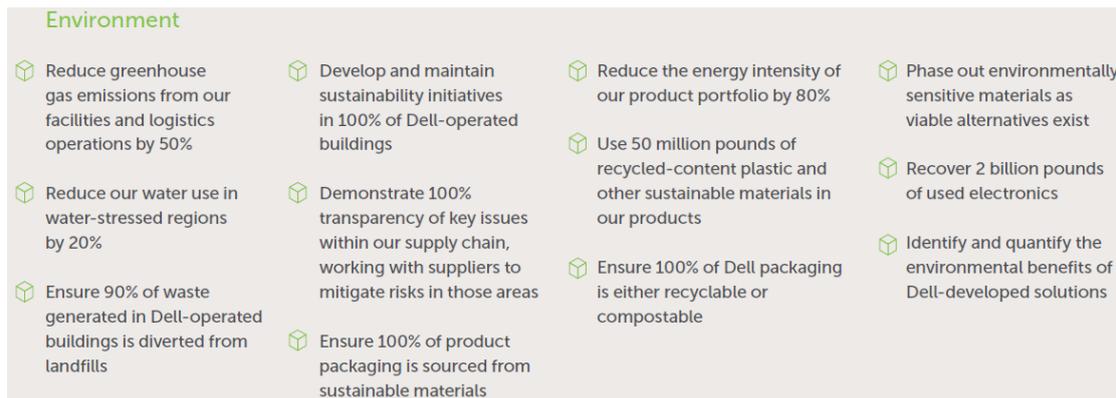


Fig 1. Dell’s 2020 Goals on environment aspect

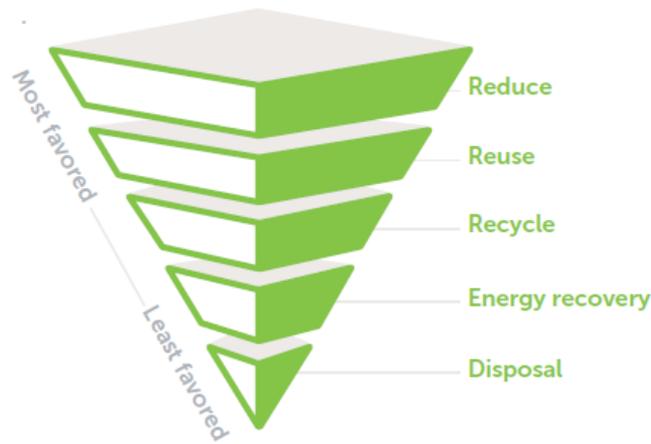


Fig 2. Dell's waste hierarchy

| Program                                   | Objective  | ODMs           | First-tier Suppliers | Sub-tier Vendors Assigned by Dell |
|---|--|----------------|----------------------|-----------------------------------|
| GHG and Energy Reduction                  | Propel suppliers to inventory and reduce greenhouse gas emissions and promote energy savings in our supply chain                         | Orange         | Diagonal lines       |                                   |
| Public Reporting of Toxic Releases (PRTR) | Assess suppliers' environmental performance and increase their capabilities to prevent the release of potentially harmful substances     | Diagonal lines | Diagonal lines       |                                   |
| Supplier Sustainability Reporting         | Promote transparency among our suppliers and ensure they have strong sustainability and risk management programs                         | Orange         | Diagonal lines       |                                   |
| Environmental Risk Mitigation Tool        | Proactively increase environmentally responsible business practices among suppliers producing commodities with known environmental risks |                | Diagonal lines       | Diagonal lines                    |
| Responsible Minerals                      | Promote responsible sourcing and address risks associated with mining operations in high-risk and conflict-affected areas                | Orange         | Orange               | Orange                            |
| Supplier Resilience                       | Create a secure and resilient supply chain through supplier risk mitigation and disruption management                                    | Orange         | Orange               | Diagonal lines                    |
| Supplier Diversity                        | Drive inclusion for qualified minority, women, and small businesses to create strategic relationships that support Dell's business       | Orange         | Orange               |                                   |

Fig 3. Performance of Dell's own factories, first-tier suppliers and second-tier suppliers 2018

## 6. RECOMMENDATION

### 6.1 As individual

Individual should choose those long lasting and repairable smart devices when purchasing.

Individual should repair smart devices rather than replace them.

Individual should recycle old devices when replacement is the only solution.

Individuals should raise environmental awareness in all aspects.

### 6.2 As company

Dell should make longer lifespans smart devices rather than short lifespans smart devices.

Dell should develop and use clean energy.

Dell should offer takeback service with rewards for people no matter if they are their brand consumers and extend free warranty of their products.

Dell should ask suppliers to produce recyclable products at the first place.

Dell should cooperate with local communities to invite citizens to free open course which aimed to let citizens know more about importance of sustainability.

Dell should document and track recycled electronics collected from people and inform them if their unwanted electronics become any part of new product, this can make people feel involved

Dell can also set some rewards or coupons to invite more people to take part in this process actively.

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