

# MICROSOFT'S XBOX CONTROLLER PACKAGING

## SPHERE CASE STUDY



**Organization Name:**  
Microsoft Corporation

**Industry:**  
Software development

**Number of employees:**  
163,000

**Annual revenue (2021):**  
USD \$168,088 million

**Website:**  
<https://www.microsoft.com>



In our sustainability journey, we understand the limitations around current measurement systems. We are continually looking for new tools that enable more accurate and holistic evaluation of packaging options. As a workstream member, it's been a pleasure to partner on the development of the SPHERE framework. We see high potential and are excited to leverage the SPHERE framework for improved decision-making on sustainable packaging solutions.



**Jeffrey Loth,**  
Global Packaging Manager, Microsoft Corporation

### Assessing packaging sustainability

Microsoft currently assesses packaging sustainability against a range of KPIs and packaging goals. In addition to other factors, these measures are part of the design process and used to select final packaging. Sustainability KPIs are typically viewed in silos and prioritization can be challenging as impacts cross several areas. The SPHERE method can ensure that the picture is holistic and balanced to enable the right decisions. Microsoft is looking to further test, refine and integrate the [SPHERE framework](#) as part of its packaging development process.

This case study is just a start for Microsoft. Further projects and packaging options will be run through the SPHERE framework and the results assessed. The team is also considering how current tools can integrate this framework as well as the systems and data requirements to support ongoing studies.

This initial case study was used to test the [SPHERE framework](#) on a real-world packaging application. It allowed Microsoft to take a more holistic view of packaging sustainability in comparison to current methods and KPIs. Results showed that the packaging option with a high recycled content ratio scored best while the e-commerce option had the biggest environmental impact across all sustainability principles (due to increased use of secondary packaging). More direct correlation of KPIs to impacts on climate change, circularity and biodiversity were viewed as helpful in driving decision-making. Overall results were as expected based on inputs, but the SPHERE outcomes enable direct comparison of environmental trade-offs in a more intuitive manner.

### Goal and scope

Microsoft performed an eco-design assessment to compare the sustainability of three packaging options for the delivery of an Xbox controller:

1. Classic retail carton structure
2. Classic retail carton structure with a higher recycled content ratio
3. E-commerce single package, not palletized

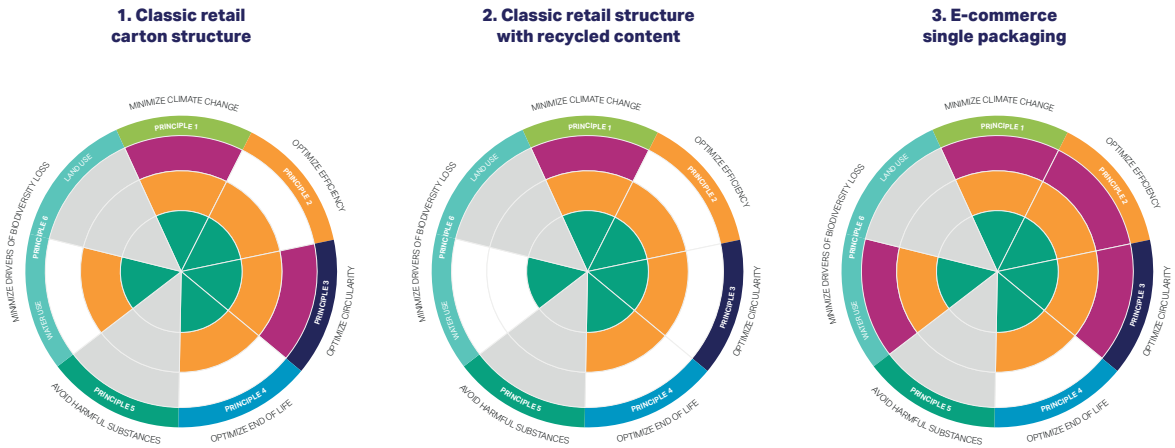
Note that the three options do not have the same function (retail versus e-commerce), and that we conducted this case study to test the framework methodology.



## Results

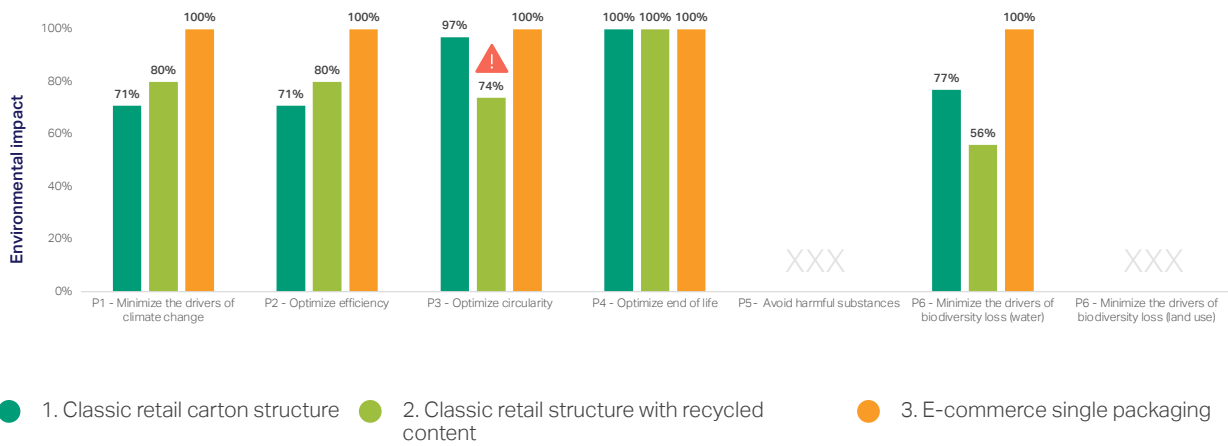
We use different visualizations that complement each other, and the section "Interpreting the results" helps you understand how to read the graphs.

**Figure 1:** Assessment results, wheel view



Here, the results showed that the packaging with the highest recycled content better meets the threshold targets across all metrics, and therefore is the most sustainable packaging of the three options compared in this case study.

**Figure 2:** Assessment results, bar view



To allow comparability despite different units, results across different packaging alternatives have been normalised within each principle by matching 100% with the worst result (for P1, the alternative with the highest CO<sub>2</sub>-eq value would be set at 100%). Results are thus dimensionless.

For homogeneity reason, the logic behind the circularity score (usually the higher the better) has been reversed to match the way other principles read (the higher the worse).

The bar chart gives more granularity and nuance about the results per packaging option for each principle.

- The retail carton structure (2.) with a higher recycled content ratio scores best, even though it has a higher climate impact and a lower packaging efficiency than the classic retail option. This packaging option uses less water and has an increased circularity score, due to higher post-consumer recycled content in the packaging.
- The assessment shows a correlation between the business model and performance: the e-commerce packaging (3.) has the lowest sustainability performance due to increased use of secondary packaging. It mainly impacts the principles 1, 2 and 6, respectively on the drivers of climate change, the packaging efficiency, and the drivers of biodiversity loss.
- Overall, the analysis shows that the most sustainable option is to implement the retail packaging with a higher recycled content, while optimizing the climate change impact (i.e. reducing the amount of CO<sub>2</sub>-eq<sup>1</sup> produced) and ensuring current circularity, end-of-life management, and water use remain at the same level. Optimizing the climate change impact will simultaneously improve packaging efficiency, as the latter assesses the ratio of carbon footprint of the product versus the packaging.

## Methodology

### Collecting the data

Microsoft provided primary data, and we used public data to complement data gaps. Data about chemicals of concern for principle 5 and land-use data for principle 6 was unavailable.

### Setting the thresholds

Microsoft provided self-declared targets for principle 3 on circularity, and principle 4 on end-of-life. Thresholds for principle 1 on climate change are based on publicly available life-cycle assessment of packaging.<sup>2</sup> For principle 2 on packaging efficiency and principle 6 on biodiversity, we set the market threshold at the average across the three options, and the performance threshold at 25% better than the average.

**Figure 3:** Assessment results against set thresholds

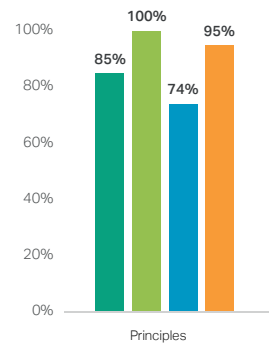
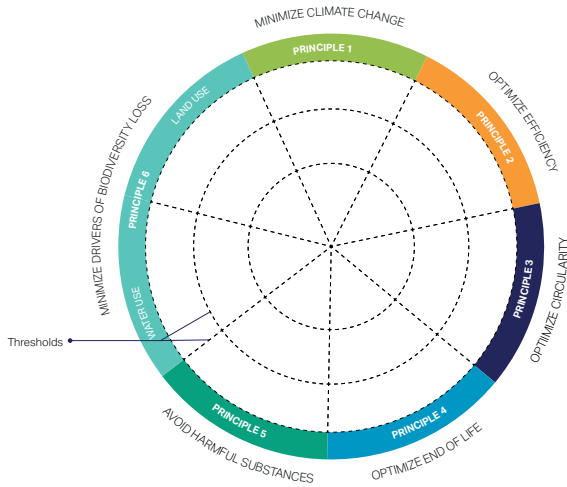
Principles of Packaging Sustainability	Units	1. classic retail carton structure	2. classic retail structure with rec. content	3. e-commerce single packaging
<b>P1: Minimize the drivers of climate change</b>	kg CO2 eq	0.5329	0.6039	0.7519
<b>P2: Optimize efficiency</b>	%	5.73	6.494	8.08
<b>P3: Optimize circularity</b>	MCI/ CTI score	16	36	13
<b>P4: Optimize end of life</b>	MWI score	8	8	8
<b>P5: Avoid harmful substances</b>	yes/ no	N/A	N/A	N/A
<b>P6: Minimize the drivers of biodiversity loss</b>	Water: m3 deprv.	255.85	184.37	331.48

## Interpreting the results

**Wheel representation (figure 4):** Each wheel represents one packaging option. They are separated in 7 segments: the first 5 correspond to the principles 1 on climate change, the principle 2 on packaging efficiency, the principle 3 on circularity, the principle 4 on end-of-life, and the principle 5 on harmful substances. The last two wedges correspond to the principle 6 on biodiversity loss, and two different ways to assess it: water use or land use.

The dotted lines represent the performance and market thresholds set for each principle, with three levels: performance (green), average (orange), unsatisfactory (red) overshooting the boundary. We used a similar representation as the planetary boundaries: the least impact, the smallest the segment.

**Figure 4:** Wheel representation for assessment results      **Figure 5:** Bar representation for assessment results



**Bar representation (figure 5):** Each bar represents a packaging option. To allow comparability despite different units, results across different packaging alternatives have been normalized within each principle by matching 100% with the worst result (for Principle 1, the alternative with the highest CO<sub>2</sub>-eq value would be set at 100%). Results are thus dimensionless. Note that for homogeneity reason, the logic behind the circularity score (usually the higher the better) has been reversed to match the way other principles read (the higher the worse).

<sup>1</sup> carbon dioxide equivalent

<sup>2</sup> Molina-Besch, K., Wikström, F., & Williams, H. (2019). The environmental impact of packaging in food supply chains—does life cycle assessment of food provide the full picture?. *The International Journal of Life Cycle Assessment*, 24(1), 37-50

## ABOUT SPHERE

SPHERE allows companies to choose the most sustainable packaging based on the assessment of six sustainability principles:

1. Minimize the drivers of climate change
2. Optimize efficiency
3. Optimize circularity
4. Optimize end-of-life
5. Avoid harmful substances
6. Minimize the drivers of biodiversity loss

To better inform companies, two scenarios can be performed:

1. a **portfolio** assessment to identify potential hotspots across a range of packaging from a company-level perspective,
2. an **eco-design** approach to evaluate different packaging options for a specific product.

You can find more details about the packaging sustainability principles and how to assess them in the [SPHERE report](#)

## ABOUT WBCSD

WBCSD is the premier global, CEO-led community of over 200 of the world's leading sustainable businesses working collectively to accelerate the system transformations needed for a net zero, nature positive, and more equitable future.

We do this by engaging executives and sustainability leaders from business and elsewhere to share practical insights on the obstacles and opportunities we currently face in tackling the integrated climate, nature and inequality sustainability challenge; by co-developing "how-to" CEO-guides from these insights; by providing science-based target guidance including standards and protocols; and by developing tools and platforms to help leading businesses in sustainability drive integrated actions to tackle climate, nature and inequality challenges across sectors and geographical regions.

Our member companies come from all business sectors and all major economies, representing a combined revenue of more than USD \$8.5 trillion and 19 million employees. Our global network of almost 70 national business councils gives our members unparalleled reach across the globe. Since 1995, WBCSD has been uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues.

Together, we are the leading voice of business for sustainability, united by our vision of a world in which 9+ billion people are living well, within planetary boundaries, by mid-century.

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