

# B2B CHEMICAL PRODUCT PACKAGING

## SPHERE CASE STUDY



**Corteve, Givaudan and Greif** are the co-chairs of the "Transition roadmap for B2B chemical products" workstream within WBCSD's [Sustainable & Plastics & Packaging Value Chains](#) project. They have joined efforts to develop this case study to assess some of the most used packaging in their industry.



The work carried out in 2021 by the "Transition roadmaps for B2B chemical products" workstream to lay the foundations for the development of the circular economy in packaging, allowed us to conclude that it is necessary to use tools capable of making a precise and sufficiently broad multi-criteria analysis of commonly used packaging solutions to better frame decisions on packaging system options. As a co-chair of the aforementioned workstream, and member of the workstream that developed SPHERE, I felt it was essential to make our contribution by leading the way through this case study.



**Laurent Sebire,**  
Global Packaging Discipline Technology Lead at Corteve Agriscience and co-chair of the B2B chemical products workstream

### Assessing packaging sustainability

The "Transition roadmap for B2B chemical products" workstream members were interested in piloting SPHERE because of its holistic approach and ability to have a scoring on criteria, which fit their needs to evaluate circularity of future packaging solutions. Members of this workstream will need to evaluate further resources required to leverage the SPHERE framework and make it a recommendation in the name of their coalition of companies.

Members of the "Transition roadmap for B2B chemical products" workstream are convinced that [SPHERE](#) could potentially enable them to better analyze different types of packaging systems with more granularity and within a broader spectrum of sustainability criteria. The ability to compare and evaluate different delivery system as shown in this example is key to provide guidance in their packaging sustainability decision process. This business case is a first step and members of this workstream will need to evaluate how they can make SPHERE a recommended practice.

### Goal and scope

We performed an eco-design assessment to compare the sustainability of four different packaging solutions for 1000L of chemical product, covering both rigid and multi-layer packaging solutions:

1. IBC<sup>1</sup> with a wooden base
2. IBC with a recycled plastic base
3. IBC with a wooden base and 100% PCR<sup>2</sup> vessel
4. 5x200L drum, virgin plastic



Bulk chemical packaging (IBC and drum)

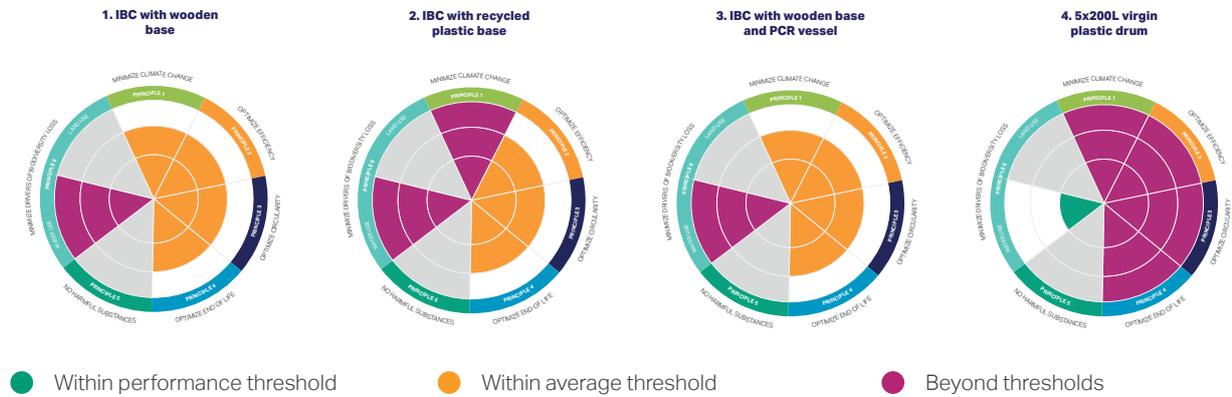
<sup>1</sup> Intermediate Bulk Container

<sup>2</sup> PCR: Post Consumer Resin. This packaging vessel contains 100% recycled high density polyethylene (HDPE).

## Results

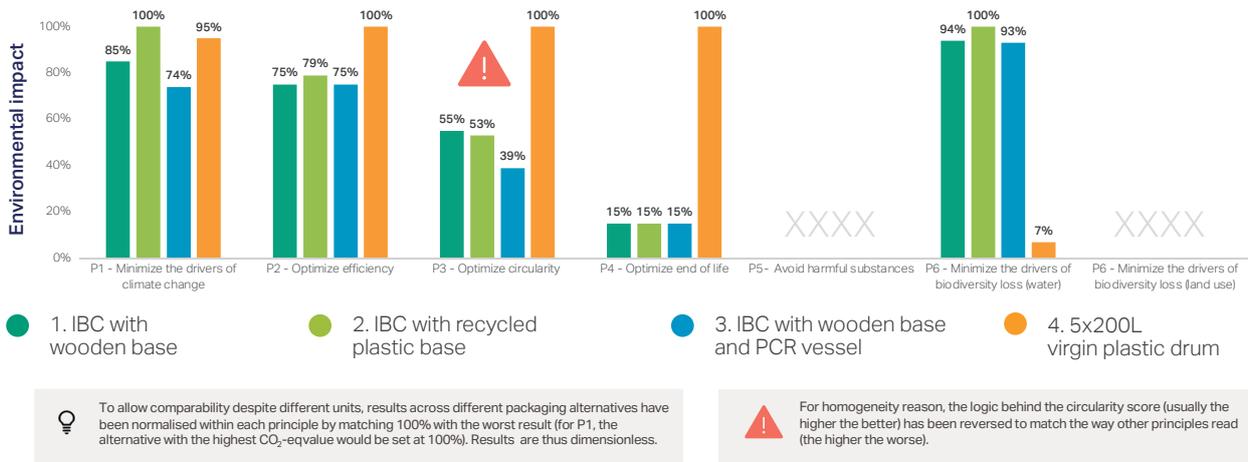
We use different visualizations that complement each other, and the section "Interpreting the results" helps you understand how to read the graphs.

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



With this visual, the results showed that the two IBCs with the wooden base better meet the threshold targets across all metrics. Figure 2 gives more granularity and nuance about the results per packaging option for each principle.

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



This bar chart allows us to know more about the difference of performance between the packaging 1. and 3.

Overall, packaging 3 outperformed the other options, having the lowest impact on climate change and a better circularity score due to its vessel made of post-consumer recycled resin.

However, none of the packaging solutions perform within all thresholds, there is always a trade-off. When considering biodiversity as a strategic indicator, the drums would be the preferred packaging solution due to lower water use. It is therefore up to the company to choose the packaging according to their sustainability strategy.

## Methodology

### Collecting the data

The companies 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

For all principles, the best-in-class approach has been used. The market threshold was set at the average across the three options, and the performance threshold at 25% better than the average.

**Table 1:** Assessment results against set thresholds

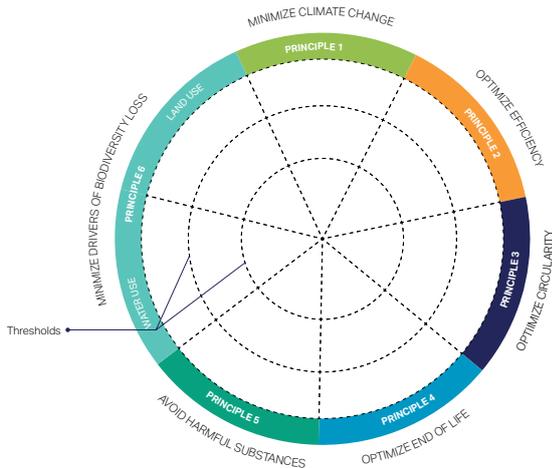
Principles of Packaging Sustainability	Units	1. IBC with wooden base	2. IBC with recycled plastic base	3. IBC with wooden base and PCR plastic	4. Virgin plastic drum
<b>P1: Minimize the drivers of climate change</b>	kg CO2 eq	93.54	110.09	81.64	104.70
<b>P2: Optimize efficiency</b>	%	17.7	18.59	17.7	23.53
<b>P3: Optimize circularity</b>	MCI/ CTI score	75.61	76.74	83.06	56.00
<b>P4: Optimize end of life</b>	MWI score	5	5	5	33.50
<b>P5: Avoid harmful substances</b>	yes/ no	0	0	0	0.00
<b>P6: Minimize the drivers of biodiversity loss</b>	Water: m3 deprv.	9.65	10.24	9.57	0.70

## Interpreting the results

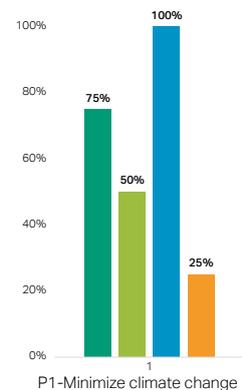
**Wheel representation (figure 3):** Each wheel represents one packaging option. They are separated in seven segments: the first five correspond to the principles 1 on climate change, the principle 2 on packaging efficiency, the principle 3 on circularity, the principle 4 on end-of-life, and the principle 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 circles 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 3:** Wheel representation for assessment results



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



**Bar representation (figure 4):** 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).

## 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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