



PART 2

Read the text below and answer questions 14–26.

THE CHALLENGE OF ZERO-WASTE IN THE FOOD AND PACKAGING INDUSTRY

“Zero-waste” has become a flagship slogan for food brands and packaging designers, yet it can mislead when interpreted as a literal destination. Even the most efficient food systems generate unavoidable residues, from inedible peels and bones to processing fractions that cannot be eliminated without changing what counts as food. Packaging introduces a second constraint: it must reduce litter and material loss while still ensuring hygiene, preventing contamination, and protecting shelf life. The realistic objective is therefore system optimisation—minimising both food loss and packaging waste—rather than promising a perfect endpoint that may shift harms elsewhere.

Waste occurs at multiple points in food supply chains, and each stage has its own drivers. On farms, produce may be left unharvested after weather events or rejected by grading standards that prioritise uniform appearance. In processing, edible fractions can be discarded when product specifications demand uniformity, while other by-products are treated as low-value residues rather than potential feedstock. Retailers may dispose of items approaching date labels, and households routinely discard food because of over-buying, poor storage, confusion about expiry information, or simply disposing of leftovers. Because the causes are distributed, a “zero-waste” strategy must address behaviours and infrastructure across the entire chain, not only at the point where consumers see a bin.

Many interventions begin with information and coordination. Improved supply chain visibility can reduce mismatches between production and demand by showing where inventories are building and where shortages are emerging. More accurate forecasting helps firms order and produce closer to real consumption patterns, while portioning strategies in food service can reduce plate waste without compromising nutrition. Donation networks and secondary markets can redirect edible food, but they depend on cold-chain logistics, liability clarity, and rapid matching. When prevention and redistribution fail, organic recovery options such as anaerobic digestion can convert food waste into biogas and digestate, though these processes still sit below prevention in most circularity hierarchies.

Packaging sits at the centre of the hardest trade-offs because it can simultaneously reduce and increase environmental burdens. A heavier package may raise material throughput, yet it can prevent bruising, slow microbial growth, and extend freshness, thereby reducing food waste. From a climate perspective, wasting high-impact foods can be worse than using additional packaging, especially for items with large upstream



emissions. For this reason, researchers often argue that focusing only on packaging weight misses the bigger environmental picture. Lifecycle assessment (LCA) is used to compare scenarios because it can account for production impacts, transport, refrigeration, and the emissions embedded in food that is never eaten.

Material substitution complicates the public narrative further. “Compostable” packaging may sound like an easy win, but many compostable polymers require controlled industrial conditions—heat, moisture, and oxygen levels—to break down properly. In landfills, where oxygen is limited and conditions vary, such materials often do not decompose as intended and can persist or fragment rather than compost. Meanwhile, bioplastics can contaminate recycling streams when consumers cannot distinguish them from conventional plastics, reducing recycling quality and increasing sorting costs. Paper-based packaging is not automatically benign either: it can drive land-use pressures through forestry demand and may require chemical coatings to resist moisture and grease, which can complicate recovery pathways. As a result, material choices must be evaluated against local infrastructure and realistic end-of-life routes, not marketing labels.

Reuse models are often promoted as the strongest path toward waste reduction, but they face operational constraints. Refillable containers require collection, washing, quality control, and reverse logistics that are not trivial at scale. They can perform well in relatively closed systems—such as cafeterias, campuses, or local delivery networks—where return rates are high and transport routes are short. When customers are widely dispersed and returns are inconsistent, additional transport and washing can offset benefits, particularly if containers are heavy or if cleaning is energy-intensive. In practice, reuse is most credible when it is designed as a service system with clear incentives for returns and a reliable infrastructure backbone.

Measuring progress is therefore difficult, and weak measurement encourages greenwashing. Companies may report “diversion rates” that include incineration, downcycling, or exporting waste, creating an impression of success without reducing total burdens. More meaningful indicators track total material throughput, contamination levels, and the relationship between packaging changes and food spoilage. They also assess whether interventions reduce absolute waste rather than merely shifting it across categories or jurisdictions. Transparent metrics are essential because they allow stakeholders to distinguish genuine performance improvements from selective reporting that optimises a headline figure.

Policy and infrastructure shape what is feasible at every step. Deposit-return schemes can increase collection rates and make both recycling and reuse systems more viable by improving material quality and reducing litter. Standardised labelling can reduce



consumer confusion and lower contamination, while investment in sorting and composting facilities expands the set of materials that can realistically be recovered. However, fragmentation across regions matters: packaging designed for one system may become waste in another if facilities are absent or rules differ. In this sense, “zero-waste” is not a single corporate choice but a coordination problem involving regulation, infrastructure investment, and consistent incentives across markets.

Ultimately, the challenge is to reduce waste without creating new harms. The most robust approaches treat food and packaging as a coupled system: packaging should be designed to minimise spoilage while remaining compatible with available recovery routes, and food operations should reduce losses through better planning, redistribution, and targeted recovery. Because unavoidable residues will remain, success should be defined by measurable reductions in total burdens, not by slogans. In the long run, credible progress depends on aligning technology, reverse logistics, and governance so that circularity becomes a practical outcome rather than a marketing claim.

Questions 14–18

Select the correct answer.

14 According to the passage, the term “zero-waste” is potentially misleading because it

- A** assumes packaging can be removed without affecting food safety
- B** ignores unavoidable residues and the trade-offs involved
- C** is only used by household consumers rather than industry
- D** refers exclusively to recycling rather than prevention

15 Which of the following is mentioned as a cause of household food waste?

- A** crops being damaged by weather
- B** by-products being removed during processing
- C** shops rejecting items that look imperfect
- D** disposing of leftovers

16 What does the writer suggest about packaging from a climate perspective?

- A** Using more packaging may be justified if it prevents wasting high-impact food
- B** Reducing packaging weight is always the most effective strategy
- C** Shelf life is unaffected by the type or amount of packaging
- D** Heavier packaging inevitably increases overall emissions

17 One difficulty with “compostable” packaging is that it



- A** breaks down effectively in landfills and the ocean
- B** can never be made from plant-based materials
- C** may depend on industrial composting facilities
- D** is always clearly identifiable to consumers

18 Reuse systems are described as most effective when

- A** customers are spread across wide areas
- B** they operate in relatively closed networks with strong returns
- C** reverse logistics can be avoided entirely
- D** transport and washing have no environmental cost

Questions 19–22

Choose **YES** if the statement agrees with the claims of the writer, choose **NO** if the statement contradicts the claims of the writer, or choose **NOT GIVEN** if it is impossible to say what the writer thinks about this.

19 The passage argues that concentrating only on packaging weight may ignore wider environmental impacts.

20 The writer suggests that compostable packaging will usually break down properly in landfill conditions.

21 The passage states that bioplastics can cause contamination when consumers are unable to tell them apart from standard plastics.

22 The writer claims that paper-based packaging is more expensive to produce than plastic packaging.

Questions 23–26

Complete the sentences below. Choose **ONE WORD ONLY** from the text for each answer.

23 Producing food in quantities that better reflect actual demand can be supported by more accurate

24 Paper-based packaging may require chemical to resist moisture.

25 Better measures of progress should include total material rather than relying only on headline figures.

26 Deposit-return schemes can make both recycling and systems more viable.

Answer Key



14. B

15. D

16. A

17. C

18. B

19. YES

20. NO

21. YES

22. NOT GIVEN

23. forecasting

24. coatings

25. throughput

26. reuse