

Sustainable Inventory Management-

The hidden environmental cost of overstocking and warehousing.

Overstocking and dead stock represent a significant, often hidden, environmental and financial burden across supply chains.

Industry studies show that roughly 8% of inventory is lost or discarded annually due to spoilage, damage, and overproduction amounting to over **US\$160 billion** in value globally.

In Australia alone, estimates suggest more than **A\$4.5 billion** of new, unsold goods are discarded each year.

This paper summarizes key statistics, visualizes the scale of the problem, and provides practical recommendations for industrial operators to reduce waste through smarter forecasting, digital tools, and clearance/circular strategies.

THE SCALE OF THE PROBLEM

Recent industry research highlights the magnitude of inventory waste:

- Avery Dennison's global analysis estimates that around 8% of stock perishes or is discarded annually, representing approximately **US\$163 billion in lost goods**.
- In Australia, Good360 reports that more than **A\$4.5 billion of new, unsold goods are thrown away each year**.

These figures illustrate that unsold and obsolete inventory is a material issue for both commercial performance and sustainability.

CAUSES OF DEAD STOCK AND ENVIRONMENTAL IMPACTS

Major drivers of inventory waste include:

- Damage and spoilage in transit and storage (~4.3% of inventory annually).
- Overproduction and excess ordering (~3.4% of inventory annually).

Obsolescence from changing specifications, product lifecycles, and poor forecasting. Some manufacturing studies suggest 20–30% of SKUs age into obsolescence over time.

ENVIRONMENTAL IMPACTS:

- Energy used to store goods (lighting, HVAC).
- Materials sent to landfill.
- Emissions from disposal and additional handling.

Warehouses can consume tens of thousands of kWh of electricity per month, magnifying the carbon footprint tied to holding excess stock.

HOW DIGITAL TOOLS AND FORECASTING REDUCE WASTE

- **Machine Learning & AI forecasting:** Studies show forecast error reductions up to **50%** when adopting ML/AI methods. Improved accuracy means leaner safety stocks and fewer surprise surpluses.
- **Warehouse Management Systems (WMS) & Inventory Management Systems (IMS):** Provide visibility over stock levels and flag slow-moving SKUs early.
- **Integrated supply chain data:** Aligning supplier lead times, transport variability, and demand signals reduces the need for inflated buffers.
- **Clearance and resale platforms:** platforms like Industrial Clearance, offer a sustainable solution for surplus stock, promoting redistribution into secondary markets and reducing waste while recapturing financial value.

Recommendations for Industrial Operators

- Adopt granular, ML-powered demand forecasting (by region, product family, and channel).
- Implement integrated WMS/IMS and run weekly obsolescence checks.
- Use clearance platforms and partner with redistribution/charity organizations.
- Integrate carbon and disposal risk into inventory valuations.
- Optimize warehouse energy efficiency and storage density to reduce per-unit storage emissions.

CONCLUSION

Unsold and obsolete inventory is both a financial drain and an environmental problem.

Practical, data-driven steps, smarter forecasting, better digital visibility, and active clearance/circular strategies reduce waste, lower emissions, and recover value.



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