

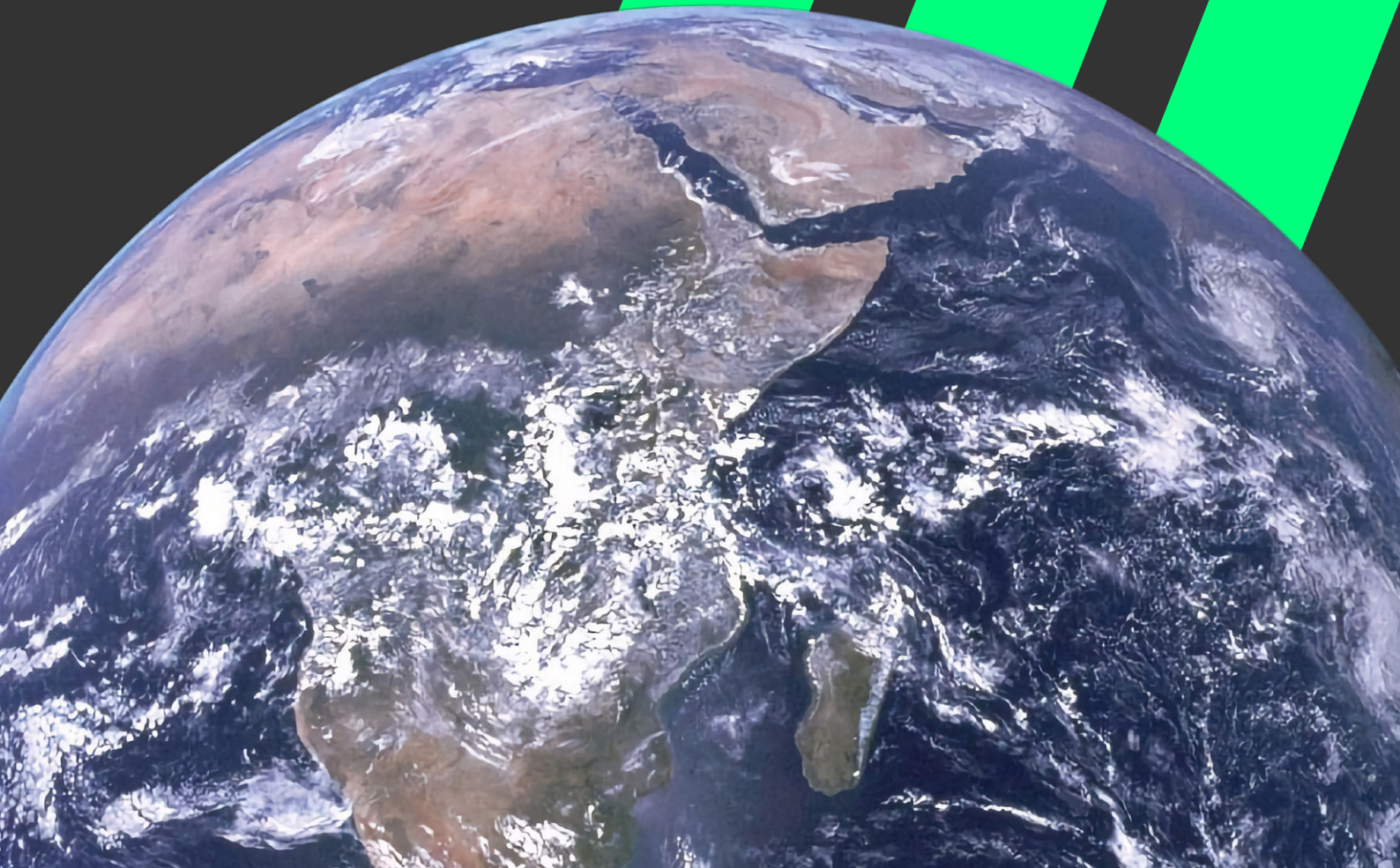


A PALLETEARTH WHITE PAPER

SUPPLY CHAIN WASTE: THE PREVENTABLE BILLION-DOLLAR PROBLEM.

APRIL 2023

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INTRODUCTION

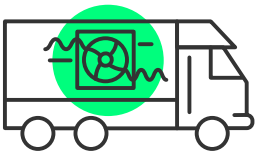
SUPPLY CHAIN LOSSES DRAG ON THE GLOBAL ECONOMY

The modern global supply chain is an incredible feat of ingenuity and problem-solving. It is a major reason for the high standard of living enjoyed by billions of people across the planet, and it's an astonishing tool for economic growth.

But we all know that it's far from perfect. At every link in the chain, products are destroyed, lost or otherwise devalued. Some of that waste is inevitable; extreme weather, unexpected events and simple bad luck will always lead to glitches in supply.

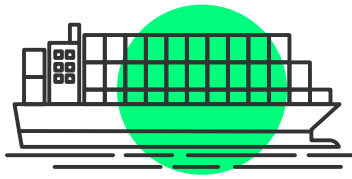
However, a lot of the waste in the supply chain is preventable – and that waste is costing the global economy billions of dollars every year. Delays, spoilage, damage and loss are expensive at a macro level, and for individual organisations, and the cost to your business can be cumulative. Rejected goods are financially painful and consumer returns are immensely time consuming – depleting your brand's profitability, reputation and customer loyalty.

SEVEN PREVENTABLE CAUSES OF PRODUCT LOSS IN THE SUPPLY CHAIN



TEMPERATURE DEVIATION

Leads to loss of temperature-sensitive items, particularly fresh foods and pharmaceuticals.



LONG DWELL TIMES

Port inefficiencies in both physical and digital infrastructure and systems.



DAMAGE

Improper handling, particularly forklift impact, leads to loss of all types of packaged products.



THEFT

High-value cargo is most at risk; electronics, cold foods and medical supplies are among the most commonly stolen goods¹.



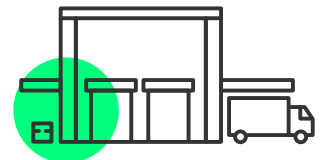
INADEQUATE PACKAGING

Leads to product arriving damaged, being rejected by receiver/consumer.



HUMIDITY DEVIATION

Excess humidity or poor handling can result in moisture ingress, which leads to spoilage and damaged packaging.



POORLY MANAGED INVENTORY

Leads to preventable waste of product – perhaps due to lack of data, poor communication or slow response.

¹ Liang, Fan, Lucy, Yang, Risk analysis of cargo theft from freight supply chains using a data-driven Bayesian network, 2022.

THE MASSIVE SCOPE OF GLOBAL SUPPLY CHAIN WASTE

Almost 8% of stock ends up wasted annually due to perishing or being discarded, with a total value estimated to be around USD\$163 billion². It might seem too large a number to comprehend, but that value is being chipped out of the profit margins of businesses and the pockets of consumers.

The products with the shortest shelf-life are the most affected, and food losses are among the largest. It's estimated that one-third of all produced food products is lost between farm and table³. If that number is accurate, it means if we reduced total waste by just 25%, we would see an 8% increase in the world's food supply.

PREVENTABLE SUPPLY CHAIN PROBLEMS ARE A MAJOR CONTRIBUTOR

A "significant share" of the food losses is due to inadequate transport conditions, particularly 'temperature abuse' where perishables are not kept at the optimal temperature and humidity⁴. For the pharmaceutical industry, failures in temperature-controlled logistics – almost all preventable – lead to an estimated USD\$35 billion in losses annually⁵.

While the cost is highest for perishables, it's not limited to items with a short shelf-life. From medical supplies, to personal care, to automotive and apparel, any product that is improperly stored and handled can be damaged beyond the point of sale.

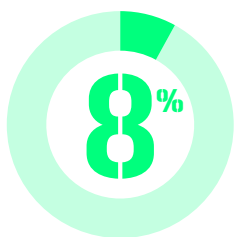
Across the retail sector in North America, it's estimated that around USD\$285 billion in losses is attributable to 'bad processes', including inadequate refrigeration, poor communication between parties and lack of training⁶.

SEARCHING FOR THE UNDERLYING CAUSES

Modern supply chains are so complex that eliminating waste is impossible and even reducing presents a significant challenge. Seventy per cent of firms say their supply chain is either very complex or extremely complex, and 74% use four or five different modes of transport in their supply chain⁷.

Despite the huge variations in supply chains, some major underlying causes for waste have been identified, including:

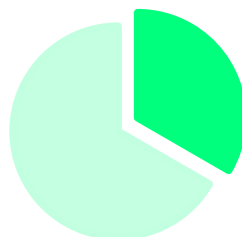
- **SHORT-TERM COST-CUTTING**
Organisations often select the cheapest packaging options and supply chain partners. This may immediately keep costs low, but in the long run it can result in avoidable waste. For example, packaging that allows in too much moisture if dwell times increase unexpectedly. Or goods are mishandled due to undertrained staff.
- **POOR MANAGEMENT**
For highly perishable products such as fruit, fresh fish and fresh meat, waste can be cut by up to 14% by using intelligent stock management: "Products with shorter shelf life are immediately sold in nearby stores; products with longer shelf life can be used for export with longer transport duration, or kept for later delivery."⁴
- **LEGACY PROCESSES**
Bad processes in the supply chain sometimes stem from the past, explained one report: "The vast majority of these issues are processes that made sense at one time, but either the business outgrew it or changed making the process a bottleneck."⁶



8% of stock is wasted each year



The value of the wasted stock (USD)



One third of food is lost between farm and table



In retailer losses due to 'bad processes' (USD)



In annual pharmaceutical losses due to failures in temperature-controlled logistics (USD)

² Avery Dennison, The Missing Billions: The Real Cost of Supply Chain Waste, 2022.
³ Gustavsson, Cederberg, Sonesson, Otterdijk, & Meybeck, Global food losses and food waste, 2011.
⁴ Jedermann, Praeger & Lang, Challenges and opportunities in remote monitoring of perishable products, 2017.
⁵ Veerina, Mahesh, Pharma Supply Chain Failure Is a \$35 Billion Problem, Supply Chain Brain Think Tank, 2022.
⁶ Ryan, Tom, Retailers suffer the high cost of overstocks and out-of-stocks, 2015.
⁷ GEODIS, Supply Chain Worldwide Survey, 2017.

HOW TO TACKLE PREVENTABLE WASTE IN YOUR SUPPLY CHAIN

WORK ON VISIBILITY FIRST

A more efficient supply chain starts with a visible supply chain. This means gathering data, then using it to track, measure and forecast. Your business needs up-to-the-minute awareness when it comes to the location and condition of your freight. If the product is temperature- and/or moisture-sensitive, you need to know how it's being stored and whether optimal conditions are being maintained.

START WITH WELL-ESTABLISHED TECH TOOLS

A 2019 Deloitte survey of supply chain and technology leaders found that organisations were most successful when they started by adopting lower-complexity tech. Respondents were most pleased with their return on investment in tech like:

- inventory visibility and optimisation
- real-time product intelligence
- strategic sourcing and optimisation

Researchers recommended that organisations “should start small in the relatively mature areas, bring those areas to scale, and then advance to more cutting-edge initiatives.”⁸

THINK ABOUT THE BEST TRACKING SOLUTION FOR YOUR FREIGHT

Tracking is an obvious answer, but it's not a one-size fits all solution. Asset tracking using algorithms and ELD can help, and trackers can be attached at shipment, container, pallet or even item level. The risk and value of your product will help you determine the best approach.

Real-time trackers provide outstanding visibility and can help answer questions during or after freight. These can provide information about freight location, temperature, humidity, vibration and more.

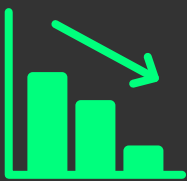
THINK ABOUT THE BIG PICTURE, NOT JUST THE SHORT-TERM COST

Building profitability means keeping a lid on costs, but short-term savings can come with long-term costs. Cheap packaging and inexperienced freight partners could result in levels of preventable waste that wipe out any potential savings.

Have a sustainable, big-picture vision for your supply chain and use that to guide your decision-making when it comes to logistics and investment.

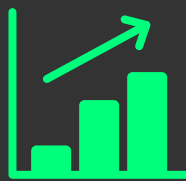
CUTTING WASTE IMPROVES SUSTAINABILITY AND PROFIT MARGINS

Tackling waste in your organisation's supply chain pays dividends in five ways:



LOWER OVERALL COSTS

as a higher proportion of your goods make it to your customers.



HIGHER PROFITABILITY

as your organisation becomes more efficient, overproduction is reduced, and fewer items are discarded.



BETTER DATA

with an enhanced ability to predict demand and prevent overproduction.



IMPROVED SUSTAINABILITY

as your organisation's environmental footprint reduces.



HAPPIER CUSTOMERS

because they're more likely to receive your products on time and in excellent condition.

⁸ Deloitte, Supply chain digital and analytics survey, 2019.

PALLETEARTH'S MATERIAL INTELLIGENCE: A SUITE OF TOOLS TO IMPROVE EFFICIENCY IN YOUR SUPPLY LINE

PalletEarth is on a mission to change the way businesses move product from **A to B and beyond**. With technology and data at the heart of our Pallet Systems, we provide corporations with sustainable supply chain solutions that drive down costs, consumption and carbon.

IMMEDIATE GAINS IN SUPPLY-LINE EFFICIENCY

Our pallets provide real-time global tracking, giving you a wealth of information about your freight.

They immediately prevent supply chain waste in six ways:

1. AFFORDABLE INTELLIGENCE

For just €0.025c a day, track every pallet in your supply chain, across the globe, in real time. It no longer needs to be cost-prohibitive to track all your freight, all the time. At this rate, the return on investment means you don't need to compromise – you can track every shipment, no matter what you're moving.

2. IMPROVED VISIBILITY

Inbuilt tracking and Material Intelligence mean round-the-clock data on exactly where and what your stock is doing. This reduces losses from theft, and allows for quick location of pallet issues in your supply line.

3. REDUCED DAMAGE

Light but strong, PalletEarth's pallets have an internal Steelite™ patented frame. Corner Shock absorbers and specially designed feet to minimise structural damage caused by forklifts – and impact alerts keep you informed.

4. TEMPERATURE MAINTENANCE

Suitable for temperatures between -20°C (-4°F) and +45°C (113°F), with temperature alerts so you know when pallets are outside their optimal zone.

5. MOISTURE MINIMISATION

Zero moisture absorption into pallets, or moisture wicking into packaging.

6. FRESHNESS

Air holes are specifically designed to improve ventilation, supporting the highest possible fruit and produce quality.

**FOR JUST €0.025c
A DAY, TRACK EVERY
PALLET IN YOUR SUPPLY
CHAIN, ACROSS THE
GLOBE, IN REAL TIME.**

LONG-TERM EFFICIENCY GAINS WITH MATERIAL INTELLIGENCE

Our suite of Material Intelligence software tools can also boost long-term waste minimisation by unlocking the data gathered from your pallet movements. Each tool shines a light on the effectiveness of your supply chain, helping you make operating decisions that will not only improve efficiencies but also save time and money.

- **Improve pallet utilisation** – smarter inventory management can help you make rapid decisions to minimise waste on perishables.
- **Improve customer service** – keep them up-to-date with their order and boost your ability to deliver on time.
- **Reduce pallet administration costs** – our pallets are reusable, repairable and 100% recyclable at end of life. They can reduce your return journey costs and storage footprint by up to 75%, and reduce fork time movement of empty pallets by up to 75%.
- **Identify major supply chain events** - that impact supply chain efficiency, so you can quickly move to manage the problem.
- **Enhanced dispute resolution** – if your freight is damaged or spoiled, you may be able to pinpoint where this occurred and which party is responsible.

Working with your team, we can provide long-term freighting solutions that will drive down costs whilst reducing your organisation's carbon footprint.

Talk to us today to change your tomorrow.

✉ solutions@palletearth.com

🌐 palletearth.com