
THE PUBLIC GOOD CASE FOR GOVERNMENTAL LEADERSHIP AND ACTION ON THE COMMERCIAL USE OF CORRUGATED CARDBOARD PALLETS

NOTE: Adapted from a White Paper submitted to Oregon's Department of Environmental Quality in January 2015

Public Good

A national shift from wood to corrugated pallets would result in the following important benefits to the Public Good¹:

- (i) high-dollar cost reductions for states and taxpayers;
- (ii) massive CO₂e reductions;
- (iii) far fewer trucks on the road (i.e., less accidents, wear and tear to highways, etc.); and
- (iv) reduced traffic (i.e., less stressed commuters, more time with families, etc.)

Tens of millions of pallet deliveries are made to State of Oregon agencies, facilities, universities and businesses each year. **The financial and environmental costs of making these deliveries on wood rather than corrugated pallets are staggering. These costs are borne by taxpayers, and our planet.**

This public toll is compounded by millions of trucks transporting billions of wood pallets in the U.S. each year.

The national savings opportunities merit the attention of state officials and other policy practitioners:

- **CO₂e can be reduced by 25 million metric tons (or more) by replacing wood pallets with corrugated²**
- **Savings of tens of billions of dollars (or more) in systemic leakage tied to using too many trucks to transport too little product**
- **The number of trucks required for domestic shipments can be reduced by 20% or more**

¹ The Public Good pool runs deep. For example, what is the aggregate cost to the state of receiving wood pallets (disposal, man-hours, lost recycling revenue, worker injuries, etc.)? What human and economic benefits would result if Oregon's highways had 20% fewer trucks? How are wood pallets affecting Zero Waste goals? What value is placed on reducing CO₂e in Oregon by millions of metric tons per year? Etc.

² Estimated reductions referenced in all three bullets are annual and national (U.S.)

Importantly, Public Good at this scale is feasible: IKEA® has achieved a 15% increase in “transport efficiency” since changing its entire supply chain from wood to corrugated pallets in 2012.³

³ IKEA® is the largest furniture retailer in the world.

Translation: IKEA® transports the same amount of product on fewer trucks, thereby realizing a ~15% decrease in CO₂e per cubic meter of product shipped—all while saving an estimated \$1 billion or more since inception 3 years ago.

The measurable benefit achieved by IKEA® sets up a math problem to determine the scale of this Public Good opportunity: how many metric tons of product are shipped in the U.S. annually, and what benefits would be realized if the number of trucks decreased by 20 percent vs. baseline.⁴

The State of Oregon has the chance to do tremendous Public Good (financial, environmental and human)—and ensure that taxpayers no longer foot the multi-billion dollar financial and environmental bills for wood pallets.

Would Oregon’s leadership drive national change? We submit that it is reasonable to expect that policy leadership by states, municipalities and other public entities (e.g., the Port of Portland, University of Oregon, etc.) can and will trigger the type of national systemic change that leads to measurable Public Good.

⁴ IKEA® is a registered trademark of IKEA® Systems B.V. which is not affiliated with Change the Pallet. Nothing herein shall be viewed as an endorsement of Change the Pallet by IKEA®.

Why Hasn’t the IKEA® Precedent Triggered U.S. Adoption?

In 2012, IKEA® launched its “Handling Material No Wood” campaign to replace wood pallets with corrugated cardboard pallets throughout its worldwide supply chain.⁵ The global precedent set by IKEA® demonstrates conclusively:

- (i) vast CO₂e reductions via fewer truck shipments;
- (ii) systemic viability of corrugated cardboard pallets at Fortune 500 scale; and
- (iii) hundreds of millions of dollars saved annually.

Indeed, CO₂e reductions and cost savings were sufficiently high for IKEA® to **mandate use of corrugated pallets by more than 1,000 global suppliers.**⁶

The fact that IKEA® has saved an estimated **one billion dollars** since implementing its corrugated pallet program **and reduced global CO₂e by ~300,000 metric tons** invites two critical questions:

- 1. Why haven’t U.S. companies copied the model?; and**
- 2. Can—and should—federal, state and local officials encourage or compel U.S. companies to act?**

⁵ Please see Exhibit A: Case Study of IKEA® System-Wide Adoption.

⁶ According to IKEA®’s Sustainability Chief: “We don’t know if the paper pallet will be the ultimate solution, but it’s better than wood.”

Systemic Barrier to U.S. Market Entry

Based on the proven financial and environmental benefits available to U.S. companies—and the public—why isn't the U.S. market self-adopting?

We submit that the biggest roadblock to this Public Good initiative is that **roughly ninety percent (90%) of America's Top-100 retailers do not allow shipments to their distribution centers on corrugated pallets as a matter of corporate policy.**⁷

For example, Walmart's® 2015 "Labeling and Packaging Logistics Distribution Center Guide" explicitly states on p. 28 that: "Corrugate pallets are not acceptable to ship into the Walmart® DCs."⁸ [sic]

Translation: U.S. suppliers to Walmart (and other major retailers and grocers) must choose more costly and less sustainable wood pallets over corrugated ones.

How does this work in practice? In late 2014, an Oregon food manufacturer sought to ship to its retailer on corrugated pallets. Had permission been granted, the shipment could have fit on one truck; instead two were required.⁹

The multi-billion-dollar—and multi-million (metric tons) CO₂e—question is: why do retailers have such policies? There is no clear answer, just as many found it curious when U.S. car manufacturers blocked market entry to air bags in the 1980's to the significant harm of Public Good.

Given the stakes, we submit that leveling the playing field for corrugated pallets is a critical Public Good requirement. Certainly Congress and state legislatures can hold hearings inviting U.S. retailers to address the reasons behind these policies if such information supports the objective of opening the U.S. market to this game-changing technology.¹⁰

The Sustainability Case for Corrugated Pallets

Life Cycle Analyses (LCA's) that evaluate the cradle-to-grave environmental benefits of wood, corrugated and other types of pallets apply assumptions and unique (and arbitrary) system modeling that make apples-to-apples comparisons challenging.

⁷ Based on research conducted by Change The Pallet—2014.

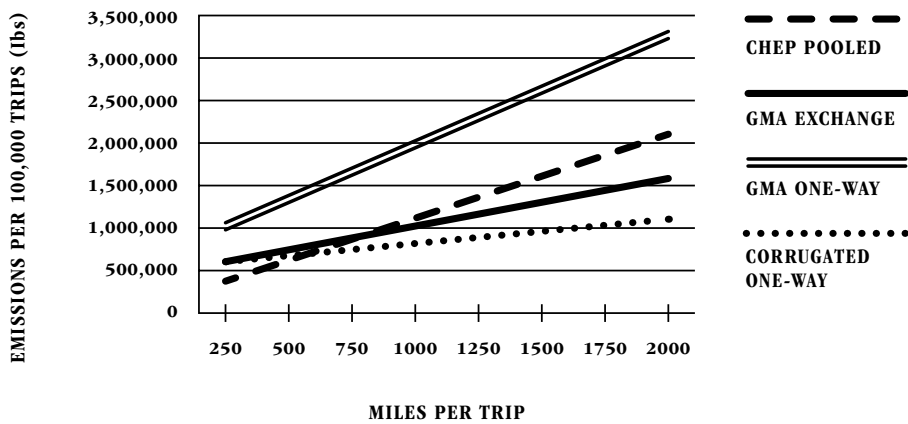
⁸ Walmart® is a registered trademark of Walmart Stores Inc.

⁹ To gain a sense of the Public Good scale nationally, apply the core elements of this example to one Fortune 500 food producer: how many truckloads do they ship to U.S. retailers each year, and how would a 20% reduction in trucks affect Public Good.

¹⁰ A possible explanation is that open racks are widely employed by U.S. retailers. IKEA® circumvents this issue by placing corrugated pallets on top of wood ones for racking after realizing the transport savings. A better option is for racks to be closed, which can be done at minimal cost and creates safer work environments. Other possible reasons include: inertia, resistance to change, internal retailer politics, failure to rise to the attention of C-Level executives, supply chain disruption concerns, impact on Logistics P&L's, etc.

Our best efforts yielded the following:

LCA GHG Emission Comparison per Pallet Type¹¹



¹¹ This graph conservatively accepts the re-use & recycling data for wood pallets, but assumes no reuse of corrugated pallets. Re-use rates ranging from 15-60%, and 90%(+) recycling rates, are expected for most systems—thereby multiplying further the environmental benefits. Source documents available upon request.

Change The Pallet Analysis

The overall difference in impact on the environment between wood and corrugated cardboard pallets is de minimis—with the exception of the transport phases. Both types of pallets require raw material extraction and production processes that, at scale, create roughly the same amount of GHG emissions per new pallet produced.

The environmental benefit of corrugated versus wood pallets stems from reducing the number of trucks required to transport the same amount of product.¹²

¹² This does not take into account secondary CO₂e reductions such as cars not idling as long in traffic.

Benefit is derived in all transport stages: (i) from point-of-manufacturing to the client; (ii) product transit; and (iii) end-of-life.

Put another way, there is no statistically-relevant difference in the environmental effects of producing 1,700 corrugated versus 1,700 wood pallets.

- However, it only requires one truck to transport 1,700 corrugated pallets to point of use vs. four trucks to transport the same number of wood pallets¹³
- Thereafter, modeling denotes that, on average, two out of every ten trucks can be taken off the road by increasing the amount of product that can be transported per truckload

¹³ Benefits referenced in these three bullets may or may not apply to all corrugated pallets available in the U.S. market.

- Finally, corrugated cardboard pallets require minimal transport to be recycled; conversely, wood pallets must be sorted, stored, and ultimately transported to the landfill or refurbishing center by truck

Via a similar formulation, **IKEA® reports CO₂e reductions of ~300,000 metric tons** since the inception of its corrugated pallet initiative in 2012.

How many millions of metric tons of CO₂e would be taken out of the atmosphere if, for example, suppliers to a major grocer shipped to its distribution centers—and the grocery chain then shipped to its stores—on corrugated pallets?¹⁴

¹⁴ How many trucks would be Taken Off the Road™ if the grocery chain then recycled the corrugated pallets at individual stores vs. hauling wood pallets away?

Policy Case and Options

The pallet policies of U.S. retailers effectively close the U.S. market to corrugated pallets—to the significant determinant of the Public Good.¹⁵ In the most straightforward of terms: retailers and their stakeholders gain at the expense of the public. **By definition, policy action is required when commercial systems negatively affect the Public Good.**

¹⁵ Retailer policies also run counter to a central free market principle, namely that manufacturers should be free to choose the most cost-effective and sustainable shipping option.

Public agencies, universities and other facilities funded by taxpayers—and overseen by public officials—absorb the costs (financial, environmental and human) of wood pallets. **They are also consumers free to encourage their suppliers to ship on corrugated pallets.** This unique position as both key customers and prospective change agents is striking: it allows governmental entities to drive large-scale Public Good change.¹⁶

¹⁶ Portland set a national precedent for modifying retailer behavior that harmed Public Good when it outlawed use of plastic bags at retail stores.

Several non-disruptive policy options are available to elected officials, public agencies, hospitals and universities, prisons, school systems and other public sector end-recipients of wood pallets. The following assume that the Public Good objective is to achieve a level playing field for corrugated pallets.

1. The most straightforward option is to require suppliers to remove wood pallets after delivery. Doing so ensures that end-of-life costs are not borne by the public. This approach would also trigger assessment of other pallet options by suppliers to public entities, many of which are also large retailers that currently do not allow corrugated pallets into their facilities.

2. A better option is to require suppliers to public entities (e.g., a university) to pay a \$15 handling fee for each wood pallet delivered, but likewise ensure that suppliers leave pallets at drop-off.¹⁷ This would economically incent suppliers to switch to corrugated pallets and, unlike Option 1, ensure that the public is not incurring the harm of—and paying for—trucks that are hauling away empty wood pallets (i.e., unnecessarily clogging up highways and emitting CO₂e).

¹⁷A corollary benefit for this option is that wood pallet disposal could be more readily controlled and monitored to ensure maximum recycling, reuse and upcycling—and minimal landfill usage.

3. Policy practitioners can also look to Materials Management Bills and RFP's for state contracts as vehicles for change.

4. When faced with a similar Public Good challenge involving air bags for cars, public officials took the more aggressive line in 1993 of mandating inclusion in all new cars. A similar approach in this instance would be for state officials to mandate that all distribution centers in the state close racking systems that are currently open, or pass laws that restrict retailers from denying shipments on corrugated pallets.¹⁸

¹⁸ State Insurance Commissioners can confirm the significant public costs associated with open rack risks, stockpiling wood pallets, and the impact on citizens of unnecessary CO₂ emissions.

5. At minimum, public discourse can—and should—be fostered via a letter from elected leaders to retailers and companies that supply the states' agencies and other public entities to the effect that policy options are being considered. It is a reasonable first step that would send a clear message to the market.

Conclusion

Corrugated cardboard pallets allow for substantially fewer truck movements (and trucks), measurable economic and environmental benefit, and a more efficient U.S. economy (i.e., advancement of the Public Good).

At scale, the U.S. has the opportunity to reduce CO₂e by tens of millions of metric tons per year, and liberate tens of billions of dollars currently squandered in connection with having ~20% more trucks on the road than necessary.

Utilizing the most cost effective—and sustainable—pallet should be a matter of choice. Regrettably, when retailers refuse deliveries on corrugated pallets, such a choice does not exist—to the significant detriment of Public Good. Moreover, IKEA® proved the savings, feasibility and environmental models three years ago and yet U.S. manufactures stand pat. Such inaction is a strong indication that change will not take place without public leadership and action.

Exhibit A: Case Study of IKEA® System-Wide Adoption

IKEA® Project Name:	Handling Material No Wood (HM NOW) ⁵
Project Description:	Switch from wood to paper pallets throughout the global supply chain—including all suppliers to IKEA® ⁵
Project Launch Date:	January 2012 ³
Project Objectives:	<ul style="list-style-type: none"> ▪ Reduce transport costs by \$193 million per year (10% of total)² ▪ Reduce 20% of CO₂ emissions per cubic meter of products transported by 2016 (base: 2011)¹
Preliminary Project Results:	<ul style="list-style-type: none"> ▪ [By October 2012], “approximately 90% of our transport of products between factories and distribution centers already use paper pallets. This has enabled us to avoid between 50,000 and 100,000 transport movements a year.” Jerome Jansen, Packaging Requirements & Compliance Specialist at IKEA®⁴ ▪ In one year (FY 2012) CO₂ emissions per cubic meter of products transported was reduced by 7.3%¹ and by the end of 2013 the reduction reached 10.5%⁸, putting IKEA® well on its way to reach the 2016 target of 20% reduction (see Project Objectives above)
Operational Objectives:	<ul style="list-style-type: none"> ▪ Cube efficiency in transport⁵; optimal loading of trucks to avoid empty spaces and reduce the number of transports between factories and stores⁴ ▪ Increase operational efficiency by avoiding the need to transport wood pallets to and from production sites⁴ ▪ Reduce product damage⁴
Key Drivers to Attain the Objectives:	<ul style="list-style-type: none"> ▪ Corrugated pallet size flexibility (customization)¹ ▪ Corrugated pallet weight (90% lighter) and size (1/3 the height of wood pallets)⁶ ▪ More than 1,000 suppliers in 50+ countries required to deliver to IKEA® on corrugated pallets² ▪ Usage of bigger trucks and containers¹
Key Metrics:	<ul style="list-style-type: none"> ▪ Filling rates for transport of product (transport from suppliers to distribution centers)¹ ▪ Cubic meters of products per shipment¹ ▪ Reduction of truck trips³ ▪ Reduction in CO₂e per cubic meter of product transported¹
Quotes:	<ul style="list-style-type: none"> ▪ “We hope this will be the start in making transportation systems smarter and freight as compact as possible.” Jeannette Skjelmoose, Sustainability Chief at IKEA®’s supply-chain unit.² ▪ “We don’t know if the paper pallet will be the ultimate solution, but it’s better than wood.” Jeannette Skjelmoose, Sustainability Chief at IKEA®’s supply-chain unit.²

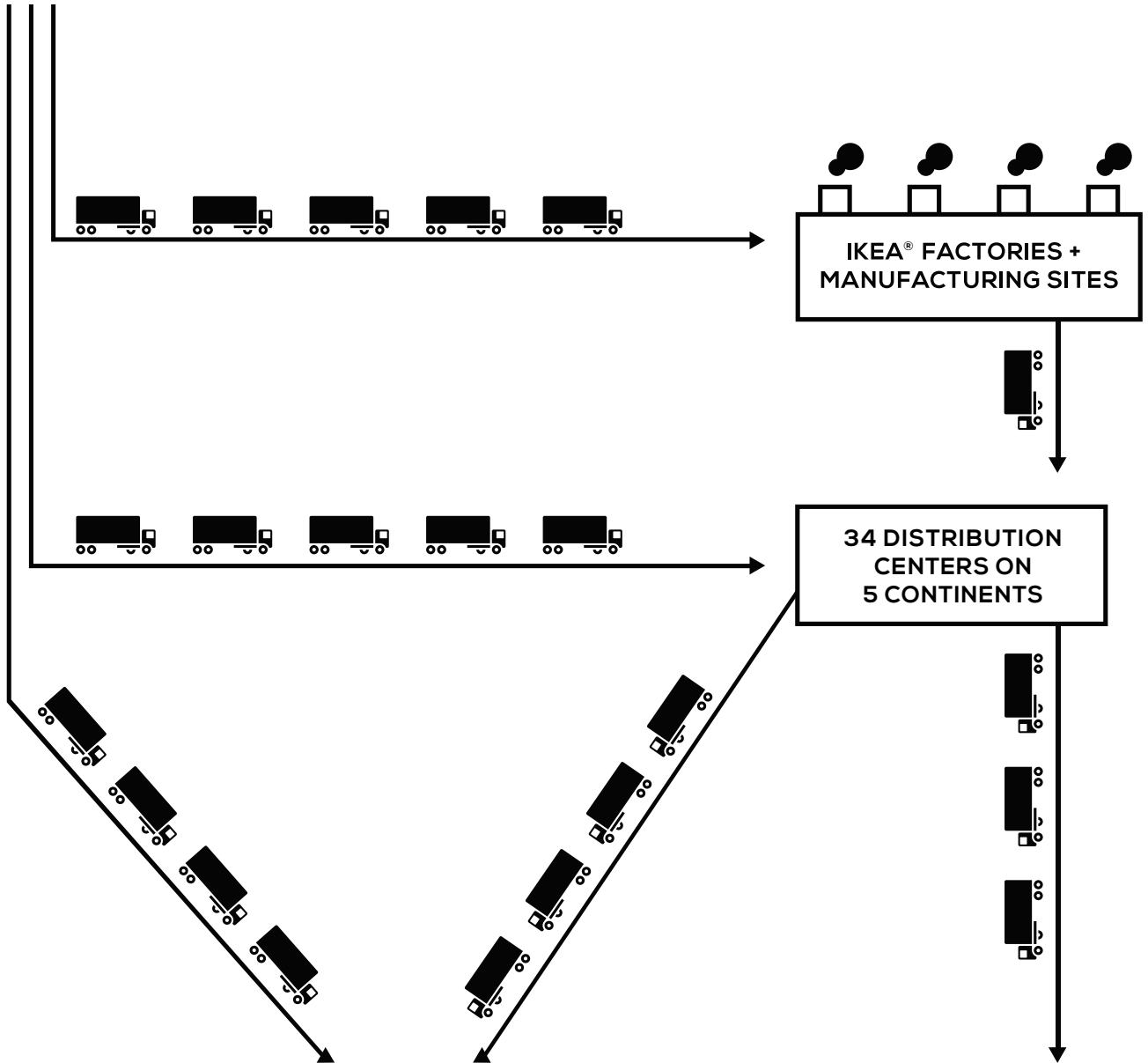
Corrugated Pallet Characteristics:	<ul style="list-style-type: none"> ▪ Load weight: 1,650 lbs² ▪ Pallet weight: 5.5 lbs (90% lighter than wood)² ▪ Assembled onsite by IKEA®'s suppliers² ▪ Fully recyclable⁴ ▪ Three basic formats: 80x120 cm, 80x60 cm and 80x200 cm⁴ ▪ Customized sizes to fit specific dimensions of a product⁴
End of Life:	<ul style="list-style-type: none"> ▪ Corrugated pallets only used once² ▪ Corrugate is recycled²
Costs:	<ul style="list-style-type: none"> ▪ Adaptations to infrastructure: pallet shelves, forklift trucks in manufacturing plants, logistic centers, and stores⁴ ▪ New handling and storage solutions for store racking⁷ ▪ Supplier plants rebuild or adapt packaging lines⁷ ▪ Training personnel to correctly handle the new pallet⁴
IKEA® Key Stats:	<ul style="list-style-type: none"> ▪ 10 million shipping pallets per year² ▪ 315 stores in 27 countries including 40 stores in North America ▪ More than 1,000 suppliers in 51 countries ▪ 34 distribution centers and 13 customer distribution centers

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Exhibit B: Diagram of IKEA® Supply Chain

UPSTREAM 1,000+ SUPPLIERS IN 51 COUNTRIES



DOWNSTREAM 315 STORES IN 27 COUNTRIES ON 5 CONTINENTS

