The New Reuse Economy

the future of food service is reusable

Upstream

Today, much of institutional, fast food, and fast casual dining – and virtually all takeout and delivery – uses disposable food-serviceware. And all those takeout containers, bags, boxes, condiment packets, plastic utensils, cold and hot cups and lids, and napkins add up. **Nearly one trillion disposable food service products are used each year** in the United States.[1]

Unfortunately all these disposables come with costs – costs to the environment from natural resource extraction to climate impacts to plastic pollution; costs to food-service businesses from the ongoing procurement and on-site waste management of disposables; and costs to governments and taxpayers from solid waste costs and litter cleanup. These costs also represent lost opportunities to create better systems for getting consumers what they want without all the waste.

But the good news is that there's a new reuse economy emerging for food service that has the potential to completely disrupt our current disposable food-service paradigm and replace it with something better.

Reusable foodware has been (and still is) the norm most of the time

Today, the majority of meals consumed in the US are served on reusable ("real") plates, cups and cutlery. Americans might bring out paper plates and plastic cups for parties, but we usually eat off of reusable rather than disposable foodware at home.

But with restaurants, the picture changes. There are approximately one million restaurants in operation in the US, with an estimated 205,000 of those being Quick-Service Restaurants (QSRs – or fast food). Roughly 41% of people in North America eat at or from QSRs each week.[2] **And disposables reign at QSR chains, as well as for take-out and meal delivery.**

The big disposable idea

All this eating out on disposables didn't used to be the case. The history of food service is rich with providers offering prepared food to the public without the hassle of making it or cleaning up. Take-out food was a small part of the overall industry until the post World War II era. During the war, the extraction, mining and manufacturing industries ramped up production levels to serve the war effort. Business was good – but once the war was over, these industries asked, "What should we do now?"

Their answer: Keep churning all these materials through the economy. One of the big ideas was to sell materials like aluminum, paper, and plastic in the form of disposable products. There's a famous 1955 Life Magazine article titled Throw-Away Living. It includes a black and white photo of a man, woman and child with their hands throwing dozens of disposable paper and plastic cups, and plates, trays, forks and knives in the air.

This was not intended to be a cautionary tale. It was meant to be a celebration: humans had entered a golden age and would never have to wash a plate again. These new disposable products were originally marketed to American families as a way to liberate them from the time and labor of doing dishes. The paper and plastics industries had a plan to make throw-away eating the new normal in every home in America.

But it didn't work. The Amercians of the 1950s – who had survived the great depression, grown victory gardens, and donated unwanted metals to be melted into guns for the war effort – didn't wholeheartedly embrace disposable products at home.

The birth of the Throw-Away Economy

However, business leaders in the restaurant industry saw an opportunity. This was the 1950s. America had won World War II, and we were entering the era of American power and economic supremacy. There were lots of good paying jobs, and more people had extra income to spend on things like going out for a cheeseburger or ordering a pizza for delivery.

Fast food proliferated, and the drive-in restaurant became a national cultural obsession. And instead of being served on real plates with real cutlery – which had been the norm – diners were served on disposables. Eventually, the drive-in restaurant gave way to the drive-through restaurant, with McDonald's opening the first drive-through in 1975.[3] Needless to say, more disposables followed.

Additionally, evening programming and the rise of televisions in every home also coincided with the post-war economic boom – and frozen TV dinners became a household staple.[4]

Then, in 1960, Dart Container Corp developed and started shipping expanded polystyrene (Styrofoam) coffee cups. Companies like 7-11 helped popularize to-go coffee in the 1970s, and Starbucks would go on to make the disposable coffee cup king from the late 1980s onward.

Pushback on Disposability

Not surprisingly, a lot of these new disposable products started showing up in the environment as litter. During the 1960s, the explosion of litter provoked the ire of concerned citizens and policymakers. Leading up to the first Earth Day in 1970, environmental demonstrations across the country focused on the issue of disposable products. These protests held the industry — not consumers — responsible for the proliferation of disposable items that depleted natural resources and created massive amounts of litter.

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Over time, and with much policy work and legislative effort in between, these concerns over waste and environmental degradation have led food service companies to question their heavy reliance on disposable products – in turn helping to bring back reuse and pave the way for new reuse services.

Reuse for on-site dining

Whether you're dining in at McDonald's or at a trendy new fast-casual eatery, disposables for on-site fast-food dining are the norm. This is because a prevailing misconception is that disposables are cheaper than reusables.

But this argument doesn't hold up in practice. Data from hundreds of case studies shows that making the switch from single-use to reuse for on-site dining always ends up saving money – 100% of the time.[5] And that's after accounting for any capital costs for purchasing or leasing additional dishwasher capacity and any added labor costs.

Reuse for take-out and delivery

With take-out and delivery, it might seem like the only options are between disposable paper or plastic – but scores of new businesses are emerging to offer reuse B to B (to C) services and solutions to hack all this take-out packaging waste. Their services are easy to use, accessible, affordable, fun and convenient, and are revolutionizing how businesses do take-out by offering a circular system for collection, washing and sanitizing, and restocking reusable food-serviceware. Food-service businesses can contract with these "reuse service-providers" for the amount and types of reusable to-go ware they desire.

Image courtesy of Dispatch Goods

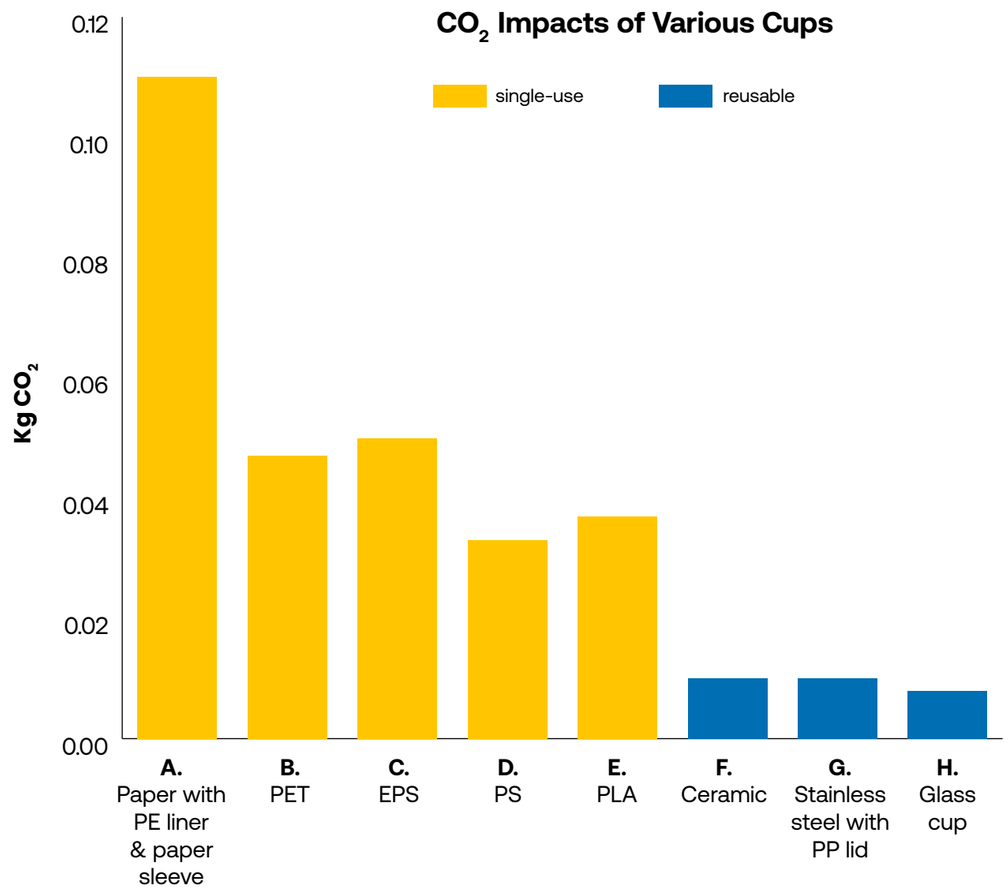
Environmental benefits: Reusable food serviceware beats single-use alternatives by every environmental measure

A review of LCAs for Upstream's 2021 Reuse Wins report[6] show that reusable food serviceware achieves environmental benefits over the disposables they replace. For cups, it's between two and 122 uses, for plates and clamshells, it's between three and 50 uses, and for utensils, only two uses of a reusable are required. Since most reusable products last upward of 200 uses – and generally with steel, glass, and ceramic, over 1,000 uses – reusables out-perform disposables on every metric, and the benefits to the environment accrue with each use past the break-even point.

Reusable cups and plates are better in almost every one of the 14 standard LCA environmental measures. All reusable cups (ceramic, stainless steel, glass) have lower CO2 footprints than the single-use options (paper, PET, EPS, PP, PLA, laminated cardboard) when reused.

Reuse protects the climate. Over their lifecycle, reusable food serviceware has lower greenhouse gas (GHG) emissions compared to disposable alternatives.

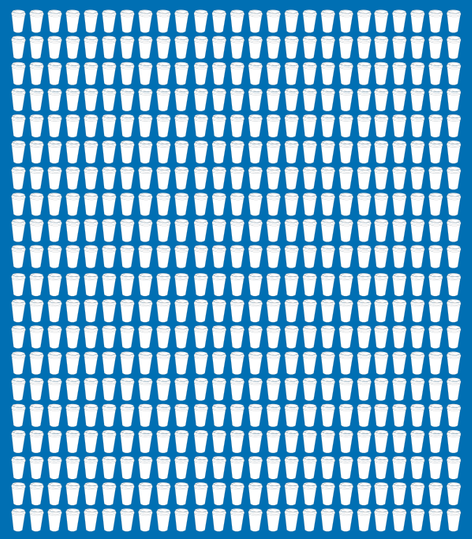
- With disposables, the largest greenhouse gas impacts occur in the resource extraction and manufacturing phases – mostly plastics from fossil fuels, paper from trees, bioplastics/biomaterials from crops, and aluminum from mining.
- The GHGs from single-use-disposables dwarf those from reusables, once the reusables have been used a certain number of times (the break-even point). This varies according to different types of reusable products, the materials they're made from, the efficiency of the dishwashers used, and the sources of energy for the regional electricity grid.
- The main energy impacts of reusables come during washing. With the increasing efficiency of dishwashers, the benefits have increased over time and continue to do so.



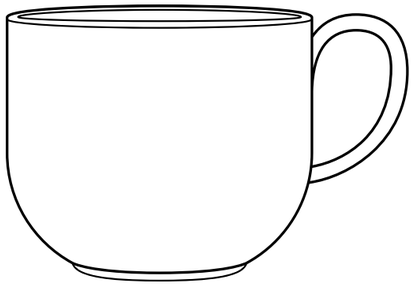
Reuse saves water. Over their lifecycle, reusable products, food serviceware, and packaging generally use less water than using disposable alternatives.

- Similar to GHG emissions, the largest water use occurs in the resource extraction and manufacturing phases for the different types of disposable materials.
- The water use from single-use-disposables during the production phases is generally greater than that from reusables.
- The main water impacts of reusables come during washing. But these impacts can be greatly reduced with highly-efficient commercial dishwashing systems. Even with washing, reuse systems still use less water throughout their lifecycle than single-use.
- The water used in the growing phase of bio-based plastics make them a less favorable choice among single-use food serviceware options.
- Single-use cups require significantly more water over their life cycle than ceramic mugs and almost as much water as stainless steel travel mugs. In a study for Starbucks, ceramic reusables reduced water consumption by 64% over the entire life cycle compared to disposable paper cups.

Using 500 paper cups consumes nearly 370 gallons water



Using and washing one ceramic cup 500 times consumes only 53 gallons of water.



Eight of the top 10 most-commonly found plastic pollution items during International Coastal Cleanup come from food and beverage packaging

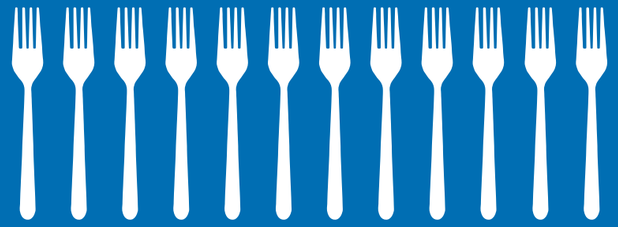
Reuse prevents the unnecessary exploitation of our natural world. Every time we use and throw away a single-use item, we also throw away all the natural resources – the trees, oil, water and energy – used to make and get that product into our hands.

Reuse stops waste before it starts and reduces costs for businesses and local governments to manage all the waste. Every time a reusable product is used, the number of single-use items in the waste management system is reduced. Businesses save money by not having to buy single-use products and pay for waste hauling, while local governments (and therefore ratepayers and taxpayers) save money because they have less waste to manage.

Reuse prevents litter and saves communities money. Litter cleanup costs more than $11.5 billion each year in the U.S., and a significant portion – roughly 20 billion pieces – is comprised of disposable food serviceware. Policies aimed at driving consumers to use reusables, such as plastic bag bans and fees, can dramatically reduce litter.

After only two washes stainless steel cutlery breaks even with disposable cutlery for environmental impacts.

After that, every use increases the environmental benefits.



Reuse protects our oceans and helps curb plastic pollution. Eight of the top 10 most-commonly found plastic pollution items during International Coastal Cleanup come from food and beverage packaging. Many of the most-commonly found plastic pollution items can be eliminated with reusables.

Reuse protects our most vulnerable communities located near extraction, processing, and waste disposal sites. Communities adjacent to oil and gas drilling, mining, manufacturing, and waste incineration facilities are subject to significant health and economic harm.

Business benefits:

Transitioning from single use to reusable food serviceware can save businesses significant amounts of money.

The economic benefits of reusables work the same way as their environmental benefits. The upfront costs may be higher, but after just a few uses, the reusable breaks even and then starts to save businesses money.

Reuse saves businesses money for on-site dining 100% of the time (including schools, food courts, college and corporate campuses, and large-scale venues). Clean Water Fund's ReThink Disposable program[7] has demonstrated the short-term payback of switching to reusables in over 166 cases of providing technical assistance to businesses and gathering cost impact data. In 100% of restaurant case studies and eleven institutional dining programs, the program documented cost savings. The average savings for a small business are between $3,000 and $22,000, with environmental benefits that include eliminating 110,000 to 225,000 packaging items per business and 1,300-2,200 lbs. of waste, all on an annual ongoing basis.

Generally, concerns about added dishwashing and labor costs don't add up in practice. Fine dining and many casual restaurants already serve all their food on reusable food serviceware. Most fast casual businesses already use some mix of reusables in their operations (for preparing food). Numerous case studies demonstrate that these businesses can transition to reuse without increased labor or need to expand dishwashing capacity. The majority of fast casual restaurants already have either three-sink or commercial dishwashers.

Reuse saves businesses money for on-site dining 100% of the time.

Average savings for a small business:

$3000 - $22,000 cost savings

1,300-2,200 lbs. of waste eliminated

110,000 to 225,000 packaging items eliminated

Meanwhile, food service operators usually don't consider the costs of disposing of significant amounts of disposable food serviceware; the ongoing costs for disposables versus one-time purchases for on-site reusable food serviceware; or the labor costs in managing single-use packaging. Dishwashing is a serious challenge in the typical fast food restaurant, where all packaging is disposable, no commercial dishwasher is installed, and high volumes of customers are served. But retrofits or external dishwashing services can help solve the problem. Future fast food businesses should not be designed for the throw-away model. Such change can be driven by policy and innovation.

Transitioning to reuse increases both customer satisfaction with the dining experience and operator satisfaction with the presentation of their food. It can build brand loyalty and provide community benefits, such as decreased litter cleanup costs.

A new reuse service economy for take-out and delivery is emerging with significant opportunities for entrepreneurs, investors, and customers

Companies across the globe are providing restaurants and cafes with reuse services for take-out drinks in reusable cups. From lending libraries and deposit systems that are free to the customer to customer-subscription services, these options are growing all across the globe.

Similarly, new services are emerging to provide meals for take-out or delivery in reusables – including dishwashing and logistics services – which can replace a restaurant's existing inventory management for disposables.

Reusable cup systems are being innovated at large venues like arenas and stadiums with a number of companies offering services in U.S. markets – including mobile dishwashing at events.

Innovators are also changing home delivery for groceries, personal care products and sundries with reusable container systems and services. In addition, new companies are innovating touch-free bulk shopping at grocery stores with standardized containers on-site to simplify the process for consumers.

Reuse creates jobs. A new reuse economy is springing into action in response to the backlash against single-use plastics. Innovative new businesses are providing jobs in the collection, cleaning, and distribution of reusable products and changing the way products are delivered to consumers.

As these services grow and iterate, we will learn what drives success. But the benefits are clear. Reuse eliminates waste before it starts. It is better for the planet by almost every measure. Eliminating waste saves government and businesses money and makes the dining experience more enjoyable.

We should accelerate the change away from our current throw-away culture by enacting policies, investing in solutions, and supporting businesses that recognize our planet and its inhabitants are not disposable.

Image courtesy of Loop

Food service by the numbers

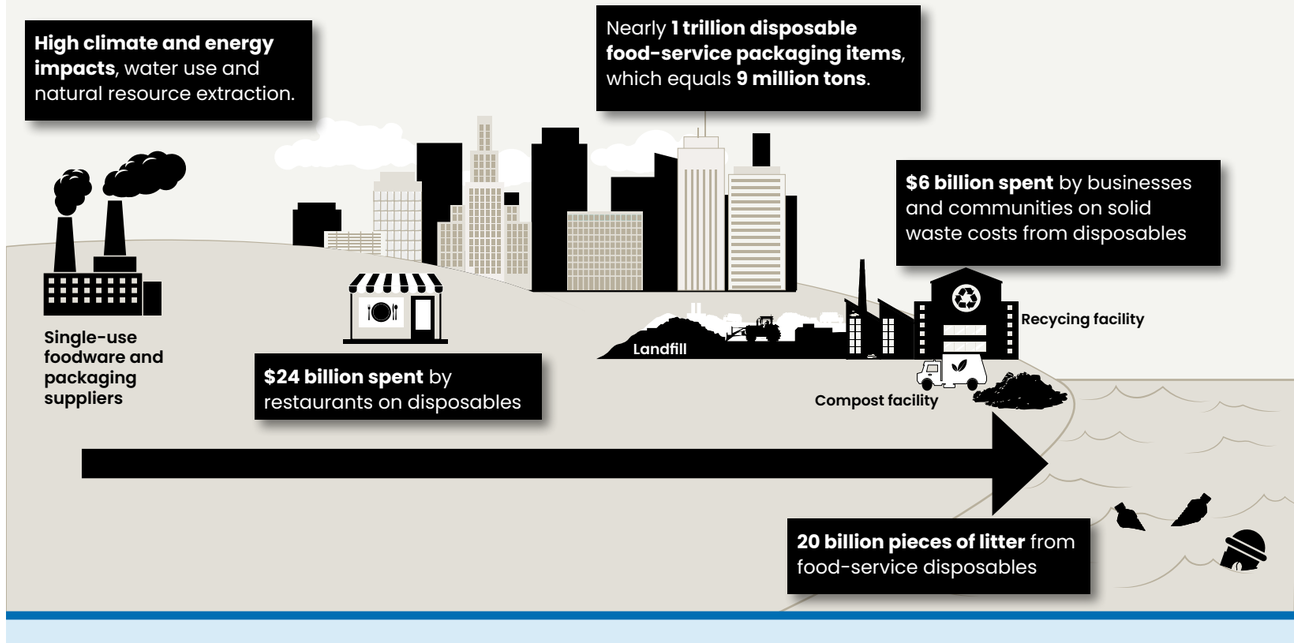
TODAY'S "ONE-WAY, THROW-AWAY" ECONOMY:

- Nearly 1 trillion individual pieces of disposable foodware and packaging used by US restaurants and food service businesses. This breaks down as 21% for on-site dining and 79% for take-out and delivery.[8]
- $24 billion spent by restaurants and food-service businesses on disposables each year.[9]
- Nearly 9 million tons equals the total weight of all the disposables used - equivalent to the weight of 25 Empire State Buildings.[10]
- $6 billion spent by businesses and city governments on solid waste management costs attributable to disposable food packaging.[11]
- Roughly 20 billion pieces of litter come from disposable food-service packaging.[12]

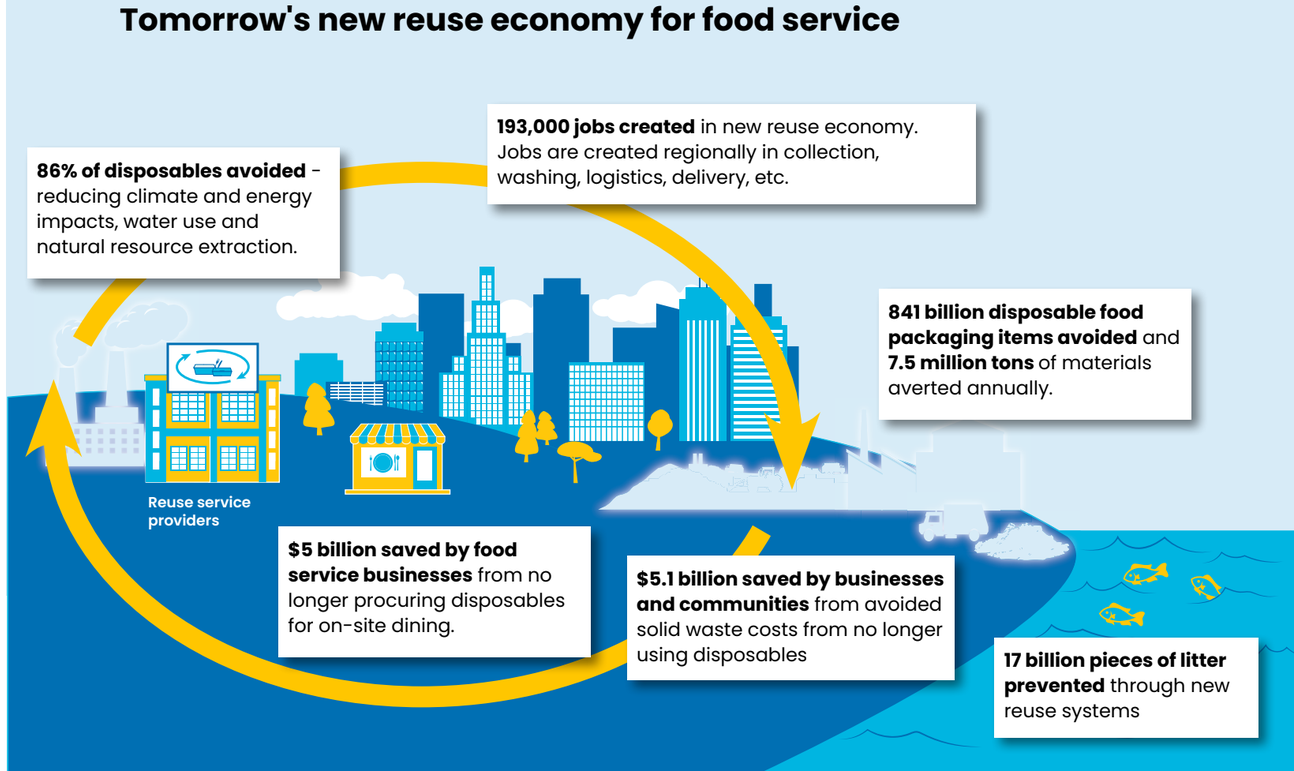
TOMORROW'S NEW REUSE ECONOMY:

- 86% of disposables avoided through 100% of on-site dining being disposable-free and new reuse services for take-out and delivery expanded to all US cities and urban areas.[13]
- 841 billion disposable food packaging items avoided, meaning that 7.5 million tons of materials would be averted annually.
- $5 billion saved by food service businesses from no longer procuring disposables for on-site dining.
- $5.1 billion saved by businesses and city governments on solid waste management costs attributable to disposable food packaging.
- 17 billion pieces of litter prevented through new reuse systems. The reusable products (cups, containers, cutlery, bags, etc) have value - like a deposit, or a charge if not returned - that ensures these products make their way back into the system.
- 193,000 jobs created in the new reuse economy for food service. These are community-based systems. They create infrastructure and jobs in the community that cannot be outsourced. And they keep money in the community instead of shipping it out to where the disposable packaging gets manufactured or where the materials to make disposables get mined from the planet.[14]

Today's "one-way throw-away" food service model



Tomorrow's new reuse economy for food service



Conclusion

The bottom line is that reusable food serviceware helps reduce the plastic and climate impacts of serving prepared food to customers and saves businesses money. It's a win-win.

And it's not just a hypothetical vision for the future. All over the world, people are working to

change the throw-away system by innovating new ways to bring durable, reusable, and refillable products into food service.

This is a growing industry that is building a new economy around reusables in food service. The number of jobs available as these businesses expand will grow. There is much to be learned from observing how these various models and systems perform. As they iterate, we will see which models are the most successful. Key questions will be answered over time.

But one question is already answered. Does reuse make sense? The answer is absolutely YES. Reuse is better for the planet, better for the business bottom line, and a more enjoyable way to enjoy prepared meals and beverages.

Recommendations for the Food Service Industry

The Food Service Industry (QSRs, Concessionaires, and Full Service Restaurants) - and their value chains - should embrace reusable foodware as the future, and should:

1. For large companies - set "rates and dates" targets to transition from single-use to reuse, similar to what Coca-Cola has done with their pledge to serve 25% of their beverages in refillable formats by 2030.
2. Eliminate disposables for on-site dining as much as possible.
3. Begin developing or participating in reusable take-out and delivery systems either a) individually, or b) through using 3rd party reuse services.

Endnotes

1 Upstream, Reuse Wins Report.
2 GWI, The Fast Food Industry.
3 Wikipedia, "Drive-through."
4 History.com, TV Dinner's Disputed Origins
5 Upstream, Reuse Wins Report.
6 id.
7 www.rethinkdisposable.org
8 Rich Grousset, Senior Vice President, Re:Dish- based on calculations using data from "Overbrook Foundation: The Dirty Truth About Disposable Foodware" and The Freedonia Group (https://www.freedoniagroup.com/Food-Service-Single-Use.html)
9 Rich Grousset, Senior Vice President, Re:Dish – based on the Freedonia Group (https://www.freedoniagroup.com/Food-Service-Single-Use.html)
10 Rich Grousset, Senior Vice President, Re:Dish – updated calculations used in "Overbrook Foundation: The Dirty Truth About Disposable Foodware," but updated to reflect increased product pricing (based on growth rates provided by the Freedonia Group report) and and the $24 billion in sales projected by Freedonia Group
11 Rich Grousset, Senior Vice President, Re:Dish – Based on the following: "In the U.S., about $200 billion a year is spent on solid waste management and lost energy resources from disposing trash, according to Dancy." https://www.latimes.com/world/global-development/la-fg-global-trash-20160422-20160421-snap-htmlstory.html. Used mass of total waste in U.S. from EPA and total mass of single-use products (nearly 9 million tons) to calculate fraction of total waste represented by disposables. Then applied that fraction to $200 billion
12 2% of waste generated in high-income countries such as the United States estimated to end up as litter, according to Law, K.L., Star, S., Siegler, T.R., Jambeck, J.R., Nicholas (2020) "The United States' contribution of plastic waste to land and ocean," Science Advances, 6/44
13 Rich Grousset, Senior Vice President, Re:Dish. Assumption is that take-out and delivery in urban areas switches to reusable. Urban population is 82.46% of total. Combined 100% of onsite and 82.46% of take-out results in 86% conversion to reuse.
14 Rich Grousset, Senior Vice President, Re:Dish

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