metroSTOR® webinar
Waste & Recycling Infrastructure

metroSTOR Webinar Summary and Transcript

Circular Cities in Action: Reimaging Waste Management:
05.21.25

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Circular Cities in Action: Reimaging Waste Management:
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The webinar explored how urban design and infrastructure must evolve to support circular economies, reduce waste, and improve quality of life in cities. Clare Miflin structured her presentation into four sections:

1. **From Linear to Circular Urban Systems**
2. **Circular Infrastructure**
3. **Urban Composting**
4. **Waste Containerization**

Key Themes and Insights

From Linear to Circular:

Modern cities are built on linear systems—materials flow in, waste flows out. Clare emphasized the need to rezone and restructure cities to enable localized reuse, repair, and recycling. She highlighted the role of distributed infrastructure and model zoning ordinances (e.g., for composting) in supporting these changes.

Circular Infrastructure Design:

The Center's "Put Waste to Work" campaign outlines design strategies to integrate circularity into the built environment—supporting reuse, regenerating soils, and reducing reliance on trash bags through effective waste containment.

Composting at Urban Scale:

Clare advocated for small-scale, decentralized composting facilities in parks, school gardens, and housing complexes. Compost improves soil health, supports green infrastructure, and fosters community engagement. Examples included food scrap drop-off points at NYCHA sites and pilot projects in Seoul and Philadelphia.

Waste Containerization:

Cities like New York must move away from bag-based waste collection. Clare critiqued the city's current focus on containerizing only trash, urging a system-wide approach that supports all waste streams (recycling, compost, etc.). She cited metroSTOR's container housings as an example and encouraged shared on-street waste containers to reclaim public space.

Discussion Highlights

- **Microplastics:** Concerns were raised about high-temperature washing of reusable plastic cups and the potential for microplastic generation.
- **Reuse of Containers:** Attendees discussed repurposing surplus large bins for recycling use in residential buildings.
- **Public Recycling and the Informal Economy:** Clare discussed the balance between secure waste containment and continued access for canners.
- **Bio Bags vs. Plastic Bags:** Clare noted their use depends on composting facility processes, with pros and cons for each.
- **C&D Waste Engagement:** Deconstruction ordinances, auctions, and reuse infrastructure were highlighted as tools to reduce demolition waste.
- **Bin Design and Behavior:** Clear signage, ease of use, and foot pedals are crucial for effective public participation.
- **Education for High-Turnover Housing:** Visual instructions and design-led solutions are most effective.
- **Circular Strategies for Smaller Cities:** Community-led solutions and Zero Waste Europe case studies were recommended.

Clare closed with the idea that waste is a design flaw. To achieve circularity, systems must be designed so that doing the right thing is the easy option—minimizing reliance on personal motivation.

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Nigel Deacon:

Thank you for joining our Circular Cities webinar with Clare Miflin. Most of you already know Clare. If you don't, you will very soon. Clare, thank you for giving us your time today. Please take it away.

Clare Miflin:

Thanks, Nigel. Great to be here. I think everyone can see my screen, right?

Yes. So, by way of background, I'm an architect and I run the nonprofit Center for Zero Waste Design. We believe waste is a design flaw, and we work on circular strategies for buildings and cities—integrating urban systems with ecosystems as much as we can. I've structured today's presentation in four parts: a general overview of moving from linear to circular, then circular infrastructure, city-scale composting, and waste containerization. I'll stop for questions after each section, so feel free to drop them in the chat and we'll pause at those points.

Looking at linear versus circular: Our cities have been developed around linear infrastructure. Goods come in, often manufactured on the outskirts, then sent to central wholesale distribution, and finally into the urban core. Similarly, waste exits to the city edges, going to landfills or incinerators, with only a small portion being recycled.

Zoning reflects this. On the slide I'm showing, purple indicates infrastructure zones on the periphery, while yellow and red represent commercial and residential areas. If we want cities to become truly circular, we have to rethink land use. Historically, it made sense—manufacturing is noisy or polluting, and waste facilities are undesirable neighbors. But in a circular city, incoming goods and outgoing materials are part of the same continuous cycle—items are reused multiple times.

We need more local repair, remanufacturing, and recycling hubs, integrated closer to where people live and work. A distributed patchwork of uses across the city. That means changing zoning laws is critical.

Here's a comparison: the traditional linear system with production and disposal on the outskirts, and the circular model, where materials stay in motion within the city. Composting and reuse become everyday practices. For example, the NRDC created a model zoning ordinance to support community composting, which is currently absent from most municipal codes.

New York City recently revised its zoning resolution to allow composting in all districts, either as a primary or accessory use. On the slide, you'll see a community composting site that once operated under the Queensboro Bridge. It's now gone—the Parks Department reclaimed the space for vehicle parking.

But underused spaces like that exist across our cities and can be repurposed for composting. The resulting compost supports street trees and green spaces citywide. Land use policy is key to circularity. Achieving zero waste also requires reducing consumption.

One slide shows a scenario where 90 percent of materials are diverted through recycling and composting. That's nearly zero waste—but reuse reduces material volumes even more. Recycling and composting still generate residuals. Reuse keeps things out of the waste stream altogether. So we always start with consumption reduction.

Separating and recirculating food scraps is a great way to get people involved. It supports green infrastructure and cuts down on odors, pests, and trash impacts, as we'll see in the composting section.

Most of what I'm sharing today comes from our "Put Waste to Work" campaign, which we developed in 2021 for the incoming administration. It outlines a roadmap for a circular New York City, with three main focus areas: designing for reuse, regenerating soils with compost, and collecting waste in containers instead of bags. Back then, NYC still used trash bags.

We'll cover all three with real-world examples. I'll pause here—any questions?

Nigel Deacon:

Nothing in the chat yet. Anyone can raise a hand if you like.

Clare Miflin:

Great, I'll move on to infrastructure then. That was mostly overview.

Nigel Deacon:

Thanks, Clare. One question did come in: with reusable plastic cups going through high-temperature wash cycles, are there concerns about microplastics?

Clare Miflin:

Microplastics? That's a good question. I'm not sure. It likely depends on the type of plastic—polypropylene is common. I know the material was selected carefully. If I find out more, I'll send it to you to share. We're currently looking into reuse options here in New York, including stainless steel, though those come with downsides like watermarks. Most reuse systems use some form of plastic. Upstream is a great nonprofit to check out—they have lots of info on this topic.

Nigel Deacon:

Thanks, Clare. Let's move on to urban composting.

Clare Miflin:

Sure. We strongly support small-scale, distributed composting throughout the city. In a dense place like NYC, we probably can't use all the compost we could produce—but we believe every bit of urban soil should be regenerated with compost. Healthy soils support healthy trees and green spaces, and composting can really bring communities together.

We need city-supported on-site composting guidance—especially for parks and community spaces—with incentives, education, and volunteer opportunities. Mixing food and yard waste boosts temperatures and helps with things like weed seed breakdown, while also engaging more people.

Composting can be done at multiple scales. Backyard and school garden composting is easy to support with education. Medium-scale efforts, like the old Queensboro Bridge site, draw volunteers and show tangible results. It inspires people.

We also support drop-off sites, whether staffed or not—like those at farmers markets or in NYCHA developments. Some locations use metroSTOR drop-offs for food scraps alongside recycling for cardboard, paper, and more. Then there's curbside collection, which NYC is now rolling out. That food waste usually goes to wastewater treatment to become biogas—a much better outcome than landfill. But we still believe in local composting too.

"Community compost makes good soil" is one of our favorite phrases—both literally and metaphorically. With global soil degradation, composting builds healthier urban environments. Composting supports NYC goals like expanding tree canopy, managing stormwater, reducing emissions, and growing the green workforce.

As cities integrate nature-based solutions, compost becomes a valuable tool. Washington State's "Soils for Salmon" initiative, for example, requires compost use in many developments to reduce pollution.

At the ASLA conference, I heard that Circular Philadelphia is trialing soil made from local compost and recycled glass. In Seoul, rooftop gardens use compost from food scraps.

There are also public health benefits. A Finnish study found compost-rich soil boosts immune systems within 28 days. Plus, produce grown in compost has higher nutrient content. And of course, gardening boosts mental health and community resilience.

Cities should increase community-scale composting. Compost can reduce flooding by increasing water retention—holding six times its weight in water. NYC spends billions on rain gardens. Compost works well in them, though it breaks down and needs topping up.

Top-dressing green spaces with compost reduces flooding and improves conditions for street trees—boosting cooling, water retention, and drought resistance. That's it for composting. Questions?

Nigel Deacon:

Yes, Barbara asked about reusing large trash containers made surplus by changes in collection practices. Have you heard of any cities repurposing those for recycling?

Clare Miflin:

I haven't, but that's a great idea. As we divert more recycling and food waste, smaller trash bins make sense. Reusing good-quality containers for other streams is smart—especially in multi-family housing. Color-coding might be a challenge, but the concept is solid.

Nigel Deacon:

Barbara also asked about public recycling bins designed to prevent the unhoused from digging through trash—like racks with holes for bottles and cans. Have you seen those recently?

Clare Miflin:

Yes, this is a big issue. NYC's informal recyclers—called canners—recover a huge share of our bottles and cans. They do vital work. When designing waste systems, we must avoid cutting off their income.

Some cities support canners by allowing them to partner with buildings. In Vancouver, the BINAS project lets people hang bags of recyclables on hooks for canners to collect. Some NYC managers separate recyclables and give them directly to known canners.

Programs that integrate canners can actually reduce waste volumes and collection frequency. Canners often clean up after themselves to keep access. But it's delicate. Racks with ledges often do not work well—people do not use them, and bags still get ripped open.

Smaller openings designed for bottles and cans can help, making collection easier and improving the quality of recovered materials. There is definitely a way to make this work for everyone.

Nigel Deacon:

Very insightful. One more: thoughts on using bio bags instead of plastic bags for food waste?

Clare Miflin:

Bio bags are better. NYC currently allows plastic bags, but many facilities lose food during the bag screening process. In Denmark, only compostable bags are allowed. However, some processors still screen out bioplastics because it's hard to tell them apart. It depends on your system—hard to give a universal answer.

Nigel Deacon:

That's fair. Please continue.

Clare Miflin:

Containerization is critical in NYC, due to density and limited public space. We advocated for it in the Zero Waste Design Guidelines—but only if it supports waste diversion. The city's current plan focuses only on trash, which is disappointing.

Better designs reduce volume—like compaction, on-site food scrap processing, and centralized waste rooms. You need equal convenience for all streams. Bin markings help maintain separation. The system should be designed around how people use it—stream-by-stream, with enough space for storage.

Cities worldwide use four-wheel bins temporarily staged at the curb. metroSTOR's dock containers organize those bins in a screened enclosure. Hoboken is testing these now.

Other options include side-load containers—common in Spain and South America—and hoist containers that are more flexible and space-efficient.

Access controls are also key. Some cities limit who can use bins. NYC requires two-wheel bins for buildings with fewer than nine units, but there's rarely space inside, so sidewalks get cluttered.

We support shared on-street containers for all waste streams—freeing up public space. Under the city's plan, a six-unit building would need so many bins that it could block storefronts. Our proposal lets residents drop waste directly into shared containers anytime.

For large buildings, we suggest chutes connect directly to bins. The city wants staff to bring trash up to street bins. For recycling, our approach collects four-wheel bins separately. The city's once-a-week model for recycling is not equally convenient.

Collection frequency matters too. Low-density areas often get the same trash pickup as high-density zones. That makes no sense. Recycling and compost pickups should increase, and trash pickups decrease.

We also need better drop-off options for specialty items. Right now, recycling well actually creates more hassle. That sends the wrong message.

Bin infrastructure must blend into streetscapes. Below-grade bins are ideal but costly. Shared facilities, like those in Battery Park City or Roanoke's downtown drop-off, are effective alternatives.

We must ask ourselves what kind of city we want: one filled with storage units and delivery vans—or one filled with libraries, green spaces, and community engagement. That vision motivates me, and I hope it motivates you too. We have 10 minutes left. Happy to take more questions.

Nigel Deacon:

Excellent. Thank you, Clare. One question we have is whether you have thoughts on engaging people around construction and demolition (C&D) waste and recycling?

Clare Miflin:

Yes—there's a lot we can do. New York State passed a deconstruction ordinance that requires cities to create space to store salvaged materials or to hold auctions before demolition. That way, contractors can bid on what's inside before it's torn down.

Portland, Oregon, mandates deconstruction for older buildings. Other cities use financial incentives, like bonds tied to demolition permits. There are specific materials—like ceiling tiles and carpets—that can be easily returned to manufacturers, especially here in NYC where there are take-back programs.

The issue is also about infrastructure. Materials like reclaimed wood and bricks are highly desirable—architects love them—but there's little affordable space in dense urban areas for those businesses to operate. Public-private partnerships could help. Education is another key piece, especially for architects and designers.

Another big challenge is ensuring salvaged materials get used. Even when the materials are collected, it's usually DIY homeowners who buy them—not professional projects. Architects rarely specify salvaged materials because they're not always available at the right time and do not come with warranties. That's a huge barrier.

We need systems to standardize and support reuse. A great example is Doors Unhinged—they reclaim and refurbish commercial doors and sell them with warranties. So it's possible—it just has not scaled yet.

Nigel Deacon:

That's helpful. Someone also asked whether bin design can impact participation. Any thoughts?

Clare Miflin:

Absolutely. The usability of a bin makes a huge difference. People do not want to touch lids, especially after COVID, so features like foot pedals are helpful—but they have to be compatible with curbs. If it's hard to open or not clear what goes where, people leave bags next to it. And once one bag is left out, others follow.

Bin cleanliness matters too. Some cities have adopt-a-bin programs, where residents help maintain them and report damage. Business Improvement Districts can also help. But yes, design plays a major role.

Nigel Deacon:

Great. Any examples of training materials for new tenants, especially in high-turnover buildings?

Clare Miflin:

That's tough. Places like Airbnbs or student housing have high turnover. That's why design is so important—clear signage with icons and photos, not just words. Some buildings include waste system info in lease agreements. The goal is to reduce how much instruction is needed by making the design self-explanatory.

Nigel Deacon:

There was also a question about applying circular strategies in small cities. Any models you'd recommend?

Clare Miflin:

Yes—Zero Waste Europe has a lot of great case studies. One that comes to mind is a small city in Italy that came together to oppose a proposed incinerator. They massively improved their diversion rates. Really inspiring.

Nigel Deacon:

Thanks. One more—any creative programs that encourage tenants to break down their delivery boxes?

Clare Miflin:

Mostly we've seen practical solutions, like providing safe cutters. StuyTown here in NYC installed box breakdown stations with mounted knives. People often do not have tools at home.

Some buildings take a behavioral approach. If a tenant leaves a box unbroken with their name on it, they get a warning leaflet. Do it again, and they're fined. Because the package is labeled, enforcement is easy.

Nigel Deacon:

I like the station with the safety knife. That's clever. Any challenges you've faced in car-centric or loosely governed cities?

Clare Miflin:

We haven't worked in too many of those yet. But the key difference is that in those places, you need to lean more on grassroots and community organizations. The strategies themselves are the same—it's just that the implementation needs to be bottom-up.

Nigel Deacon:

Good point. One last question—any thoughts on making Amazon or delivery services use reusable boxes?

Clare Miflin:

I'd love that. I actually spoke with DOT about including packaging take-back in their micro-delivery hub plans. In Denmark and the Netherlands, companies like RePack offer reusable shipping packaging. But for Amazon to get on board, it would probably take federal regulation. I don't see that happening anytime soon...

Nigel Deacon:

We promised we'd steer clear of politics!

Clare Miflin:

Mm hmm.

Nigel Deacon:

Clare, as we wrap up—if attendees do nothing else after this webinar, what's the one thing you'd want them to take away?

Clare Miflin:

Realize that waste is a design issue. We often focus on personal responsibility, but many people aren't motivated to do the right thing. If we design systems that make it easy to do the right thing, we don't have to rely on motivation. The current system makes it really difficult. My takeaway is that better design can change behavior.

Nigel Deacon:

Yes—completely agree. When it comes to waste diversion, knowledge and good intentions aren't enough. People are busy, tired, and distracted. Unless the system is easy, it falls apart. For me, it's all about convenience and ease of use.

Thank you so much, Clare. And thanks to everyone who joined. We'll send out a link to the recording.

Clare Miflin:

If anyone wants to stay in touch with the Center, you can sign up for our mailing list. We don't email often. Thanks again.

Nigel Deacon:

Thanks, everyone. Take care.

Chat Highlights from Participants:

- **Container Reuse:** Attendees suggested repurposing large trash bins made redundant by pay-as-you-throw systems for recycling in apartment buildings and community schools.
- **Bin Design:** Participants emphasized accessibility. Poorly designed bins discourage use. Foot pedals were especially appreciated by shorter users.
- **Wildlife Challenges:** One participant raised the need for bear-resistant bins with exterior can holders in areas where wildlife access is a problem.
- **Small City Circularity:** Participants asked how to scale circular solutions in small cities. Peer support networks and tech like GigabotX were discussed as possible tools.