

Auckland Sustainability Quarterly

Spring 2017



This Edition: Circular Economy

- What's a Circular Economy? Why Does it Matter for Auckland?
- Emerging Local Circularity
- International Practice: Learning from the Best
- Five Guiding Principles for a Circular Economy Transition



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From the Chief Sustainability Officer

Many of us live in a remarkable world of convenience. The lights come on, our favourite coffee is only a few steps away, and when our phone breaks we simply get a new one.

What makes this possible? What's the price of convenience?

The world of convenience is also a world of inefficiency and waste. Processed natural materials go through incredible lengths to end up in our hands, only to be held there for a few weeks (or mere minutes) and then discarded. The social and environmental impacts on far-flung communities – and even our own – are appalling. All these products, all this stuff: we're spoiled for choice.

Or are we? What if the choices are false choices – between *real bad* and *not-quite-as-bad*? Can we choose differently? Could a more intelligent approach allow convenience without the raft of impacts on people and the planet?

It's time for a more circular economy. Yes, it's a buzz word, but one that brings with it the promise of something far better and more prosperous. A circular economy is a reinvention of the economy – the biggest evolution since the industrial revolution – to one that generates lasting value.

This edition provides a quick precis on the circular economy, why Auckland is well-poised and where change is underfoot, a few international examples, a set of broad principles and a few ideas worth backing right now.

The timing couldn't really be better, really.

Government – and the Productivity Commission – is engaging in a nationwide discussion on lagging productivity and the need for a more circular economy. MPs from all major parties recently commissioned research on zero emission pathways. All parties of government have never been more committed to delivering a low carbon, climate resilient and successful New Zealand.

Businesses and investors are also committed to a transition – just last month, NZ Super Fund shifted 40% of passive equities to low carbon investments.

Finally, cities like Auckland are engaging in international networks like C40 Cities to build circular economies and, by doing so, assisting governments to meet the world's collective climate commitment, the Paris Agreement.

Going circular couldn't be more imperative – or more opportune – so let's go.

Ngā mihi,

What Is a Circular Economy and Why Does it Matter for Auckland?

A circular economy reimagines what the economy can do. A circular economy is a next-generation, restorative economy that innovates *out* waste and innovates *in* connectedness and super-efficiency to deliver better outcomes for people, planet and profit. By doing so, a circular economy is regenerative, enhancing value and capital (e.g., natural, social and financial capital) and minimising risks.

Like any economy, a circular economy can exist at any scale, starting locally and expanding into an ever-wider swath of the supply chain and global economy – although true circularity maintains strong local roots to deliver enduring local benefits and value.

A circular economy can also be defined partly by what it is not – it's not an inefficient and wasteful linear economy that simply extracts, consumes, and disposes.

Figures 1 and 2 demonstrate the basic differences.

Note that in a circular economy, resources are harvested far more comprehensively. Maintenance extends the life of products and services.

Reuse and remanufacture keeps resources circulating into product, parts and goods cycles. Recycling cleans up any materials that cannot be reused or repurposed, breaking down components into raw materials for further use.

Circulating creates far less waste – if any – and far more value.



Figure 2: A linear economy misses opportunities for efficiency and value. Courtesy of Desso.

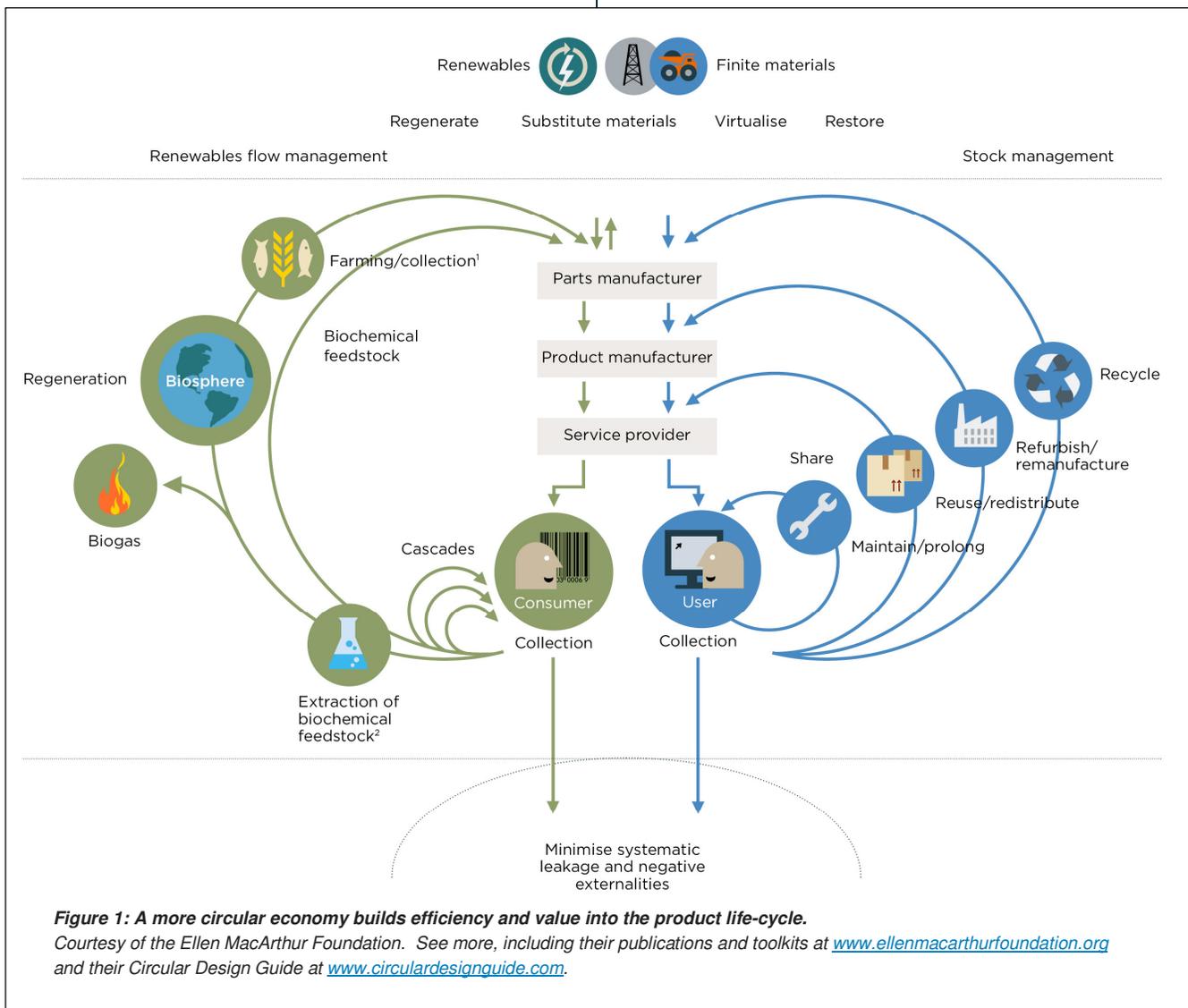


Figure 1: A more circular economy builds efficiency and value into the product life-cycle.

Courtesy of the Ellen MacArthur Foundation. See more, including their publications and toolkits at www.ellenmacarthurfoundation.org and their Circular Design Guide at www.circulardesignguide.com.

Circular Advantage

Is that value tangible? Economic opportunities from going circular are clear and enticing. Research estimates a transition to a circular economy could generate USD\$4.5 trillion of additional economic output by 2030 (“Waste to Wealth,” Accenture 2015).

The Ellen MacArthur Foundation estimates US\$630 billion in net material cost savings from just half of the European Union manufacturing sector. The globally-recognised Club of Rome found that countries from France to Finland can simultaneously grow jobs and reduce carbon emissions.

For instance, Finland could cut up to 70% of its carbon emissions, France could gain half a million jobs, and Sweden could drop emissions by 2/3 while adding jobs at 3% of the labour force.

In short, it puts the *value* back into *value chain*. There’s money to be saved, money to be made, and wider social and environmental benefits to be had.

Auckland Poised

How do those benefits line up for Auckland? Auckland is ideally-placed for a transition to a circular economy for at least five main reasons:

1. Auckland is *amalgamated*. Auckland Council brings together seven previously separate waste services into one, driving better efficiency and scale while leveraging a strong voice to influence a move beyond the reality of waste.

As a city, Auckland is 37% of New Zealand’s GDP (and growing) and a good deal of NZ’s economy passes through Auckland. It’s a desirable place of economic agglomeration, talent attraction and innovation.

2. Auckland is *branded*. Whether fully deserving of it or not, a city and national image for clean and green aligns well with the circular economy, so the scene is already set to drive innovation, sell ideas, and attract investment.

3. Auckland is *committed*. With a zero waste target, ambitious carbon reduction goals and a clear push toward green growth, Auckland has, in effect, already committed to the circular economy transition.

4. Auckland is *isolated*. While clearly connected to the global economy, the relative geographic isolation of Auckland and New Zealand puts an even greater

premium on efficiency, independence and innovation. For instance, a circular economy helps mitigate long-distance transport costs by reducing overseas resource and disposal requirements.

5. Auckland is *resourced*. Certainly there are limits here, but with its physical infrastructure, growing economy and availability of financial capital, Auckland is well-suited to front-foot a circular transition.

Emerging Local Circularity

While the circular economy has taken off in practice in many cities around the world (see next section), let’s face it: it’s still either relatively unknown or simply hasn’t matured too far beyond a buzz-word phrase in Auckland.

That doesn’t mean there aren’t hints of inspiration for our inevitable march toward circularity.

Auckland’s movement to zero waste is underway and has even been recognised recently on the international stage. In addition, local efforts to model product stewardship, reuse and education help light the way to a more circular economy and provide a tangible starting point to circular transformation.



Leading the way for Auckland’s zero waste future, Waitakere Refuse and Recycling Station, Henderson.

Product Stewardship: Resene

The Resene PaintWise programme, managed by the Resene Foundation, is a levy-based product stewardship programme that began in 2004. Over 60 drop-off centres in New Zealand collect unused paint and paint packaging. More than 500,000 litres of paint have been recovered with 250,000 litres donated to community projects and waste paint also used to replace virgin materials in other products.

Bring your unwanted paint into Resene

Take your left-over paint and paint containers into selected Resene ColorShops and let Resene recycle or dispose of them responsibly.

For more information, see www.resene.co.nz/paintwise.htm



In 2014-15, over 700,000kg of paint and packaging were redirected from landfill, an increase of 23% from the previous year. Not only has the programme driven consumer behaviour change and reduced environmental impacts, it has translated into cost avoidance and savings for Resene. Resene was a winner in the first year of the NZI National Sustainable

Business Network (SBN) Awards in 2010. SBN has been stalwart in promoting a circular New Zealand economy for several years; their first “Going Circular” award will be presented later this year.

Reuse: Auckland Community Recycling Centres

Aucklanders generate three tonnes of waste per person each year, with one tonne going directly to landfill. By any stretch, it’s a long way to go on the journey toward zero waste. While there are a number of new initiatives driving progress on that journey – the merging of seven services, pay as you throw, food waste collection – new Community Recycling Centres stand out for their clear focus on empowering local communities, spinning off social enterprises and creating jobs.

The new Community Recycling Centres are emerging throughout the Auckland region, diverting landfill-bound waste, repurposing materials, filling a demand for more

affordable items and creating local employment.

For instance, in its first year, the Waiuku Community Recycling Centre diverted 62% landfill waste, employed ten



staff, provided **Waiuku Community Recycling Centre** pathways to productive employment for the long-term unemployed, and became an important community destination.

Education: Para Kore

Para Kore – *zero waste* in te reo Māori – works with 196 marae to divert waste from landfill. Through presentations, signed commitments, audits overseen by advisors, policy development tailored to each community and ongoing support, Para Kore has engaged over 84,000 people to keep valuable resources circulating and out of landfill. The most successful marae diverts over 75% of waste. The organisation considers their zero waste work “*a call to action... where waste, pollution and resource depletion are designed out – and job creation, economic prosperity and resource abundance are designed in.*”



Para Kore Annual Hui, 2014

International Practice: Learning Circularity from the Best

The concept of a circular economy is far from foreign to many businesses. For many, it simply makes smart business sense to design in efficiencies, reduce costs and waste, and drive and communicate wider benefits to customers. Small and local businesses like Wellington's Wishbone Design Studio increasingly embody a circular approach through the materials they use and the design of products – in Wishbone's case, making sturdy and versatile kids bicycles that grow alongside their users. Large multinationals like Unilever are designing out waste, committing to ever-stringent targets for reuse, educating their consumers, and, in Unilever's case, leading globally in circular economy thinking and influence alongside the Ellen MacArthur Foundation.

There's also a continuous flow of product and business model innovation, like self-healing phone screens, modular green homes, mushroom-based packaging and instantly erasable reusable paper.

But as we know, an economy is greater than an inventive new product, one business or one industry. Where can we look to for a more expanded and integrated approach to the circular economy that's done well?

A Model Circular City: Rotterdam

At the city scale, Rotterdam is a stand-out.

As Europe's largest port and as a city with strong talent attraction to help drive innovation, Rotterdam is leading and well-poised to continue on that track. Central to that trajectory is the city's clear roadmap.

The Rotterdam Circular Economy Roadmap sets the vision, identifies benefits to its citizens and prioritises sectors. Rotterdam has identified and prioritised sector material flows – like construction and development, medical and food – and identified business partners. The



ROTTERDAM. MAKI IT HAPPEN.

Gemeente Rotterdam

city has committed to tangible short-term (2019) and long-term (2030) actions and a framework for assessing circular economy initiatives.

On the ground, ideas are rapidly converted into reality. The city runs a competition (CityLab010)

awarding over 3 million euros to the best and



Rotterdam Mayor Ahmed Aboutaleb and Auckland Councillor Penny Hulse

brightest ideas, like mini-digesters that create on-site biogas from school and bakery bread waste. A range of other programmes encourage, support and fund these promising new ideas. And ideas seem increasingly to be Rotterdam's currency of choice.

May other cities – like Auckland – learn from Rotterdam. As Rotterdam Mayor Ahmed Aboutaleb, a champion for the circular economy, has said: *our know-how is a first class export product.*

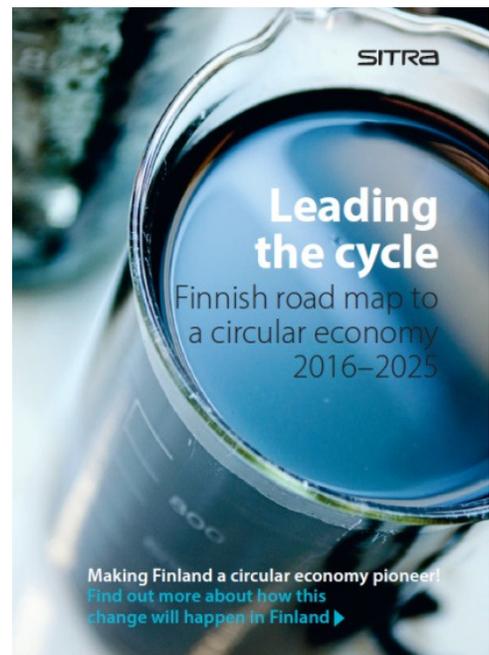
A Model Circular Country: Finland

Beyond a business or even an entire city, the circular economy builds at a national scale as well.

Finland is a global stand-out, where there's an estimated annual value of 2 - 3 billion euros from going circular.

Sitra, the *Finland developed the world's first national circular economy roadmap*

Innovation Fund and an independent public foundation operating under parliament, has been an important catalyst for the country's ambitious approach.



Making Finland a circular economy pioneer!
Find out more about how this change will happen in Finland ▶

In 2015, and driven by Sitra, Finland's government committed to become a global frontrunner in the circular economy. Last year, Finland adopted the world's first national circular economy roadmap.

The vision is ambitious. The actions equally so.

By 2025, Finland wants to lead the world in creating circular solutions for global problems, fuelling socially just, low-carbon outcomes and economic growth.



A high-level overview of Finland's roadmap. More detail available at: <https://media.sitra.fi/2017/02/24032659/Selvityksia121.pdf>

The roadmap focuses on sectors, proposing a set of sector-based pilots and associated policies and projects driven by lead organisations. For instance, one key focus is the development of a regional sustainable food system. This is supported by enabling policies to create markets for recycled organic nutrients and fossil fuel replacement.

A suite of pilots tap into these emerging markets, driven by companies and organisations from the domestic fish industry to public procurement to agriculture-bound thermal sludge processing.

Add to this asset of demonstration plants that test new processing techniques, a metropolitan project creating open-data low carbon transport exports, industrial symbiosis cooperation models, and the World Circular Economy Forum in Helsinki hosting experts and leaders from 90 nations.

Multiply that by a number of industries and dozens of associated pilots, and Finland's circular economy – one that New Zealand ought to emulate – is gaining strength, competitiveness, and longevity.

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Five Guiding Principles for a Circular Economy Transition

If you're a policy-maker or business leader and you're not familiar with the concept of circular economy, congratulations. You've gotten to this point in my overview and may be sizing up the opportunities for your business, sector or community.

To help galvanise your leadership to accelerate change – and to boost ambitions for those of you already in the loop – I propose five guiding principles for a successful circular economy transition. I also take a lens of what it may mean for local governments like Auckland Council.

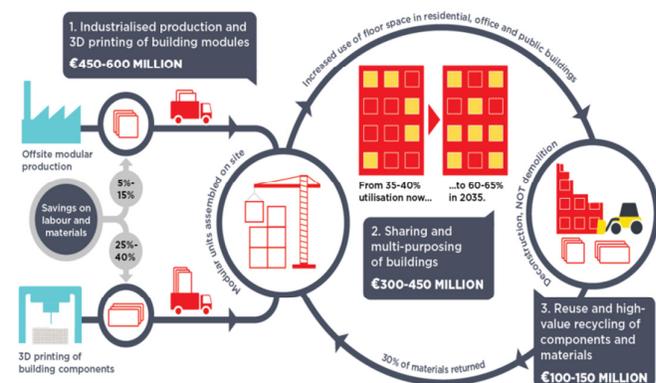
1. Innovation

A key ingredient to any lasting, successful business is innovation, so it should be doubly so when looking at the circular economy transition. But don't just think smarter widgets: innovation goes beyond products into redesigning more innovative business models.

Think business models like Lyft or Airbnb that repurpose existing infrastructure in creative new ways. What also about stretching a product's lifespan? Where in the supply chain can repeated use over consecutive lifecycles be built in, with everything that was once waste something useful? Do products with a planned obsolescence stack up to services that prioritise performance and value to customers?

It's imperative to ask these questions alongside an awareness of new disruptive technologies, too. How do the digital revolution, big data and the Internet of Things enable or disable any given business model? What do bio-based materials and bio-energy mean to a risky reliance on fossil fuels? What do 3D printing, modular design, nanotech and robotics deliver to a business looking to dramatically reduce materials costs?

CONSTRUCTION & REAL ESTATE OPPORTUNITIES IN DENMARK



Circular Economy opportunities in the Danish construction sector. Courtesy of the Ellen MacArthur Foundation.

Upshot: Governments help fuel or foil the innovation required for a circular economy transition.

How: Local governments can open, share and use data more effectively, prioritising pressing issues like transport and growth. Local governments can enable or convene a collaborative multi-sector approach. At the extreme, local governments like Auckland Council can even put self-reinvention on the table. What is local government's purpose, what does it do now, and what should it do?

Right now: Auckland Council should shift toward *Integrated Reporting* to harness innovation and to focus more on the creation of value. In this way, Auckland Council's activities can better generate and regenerate a range of capital stocks – not just financial capital, but also manufactured, intellectual, human and natural capitals.

2. Incentives

Incentives come in many flavours. Tax breaks or subsidies can bolster a promising product or material and any associated benefits to supply chain or consumers. Incentives to do the *right* thing can also be accompanied by disincentives to *not* do the *wrong* thing. Regulation, for instance – or even “stimulating legislation” – shouldn't be a dirty word. Too much of it can kill innovation, but not enough of it can stifle it.

The optimum incentive is a stimulus, providing clear and predictable expectations of what outcomes are desired, like encouraging circularity, emissions reduction and resilience, and an integrated supply chain.

Upshot: Getting incentives right drives desired outcomes like shifting toward a more efficient and circular economy.

How: Local and central governments can build costs into product stewardship programmes, generate demand for circular products and leverage procurement to support a more circular economy, which delivers efficiencies to themselves and their suppliers. Governments can also size up the power of tax shifting, like shifting taxes on labour toward taxes on resource or fossil fuel use or exempting certain reused materials or goods from GST. An effective Emissions Trading Scheme (ETS) or carbon tax is a similarly important tool to leverage desired local and global emissions reduction outcomes.

Right now: Auckland Council should (continue to) advocate for a significant increase in the waste levy. Auckland Council should also step up and leverage the scale and impact of its procurement, committing to more systematically delivering a range of circular and wider

sustainability outcomes, from workforce development to social entrepreneurship, from reducing energy use to using more recycled materials in our developments.

3. Integration

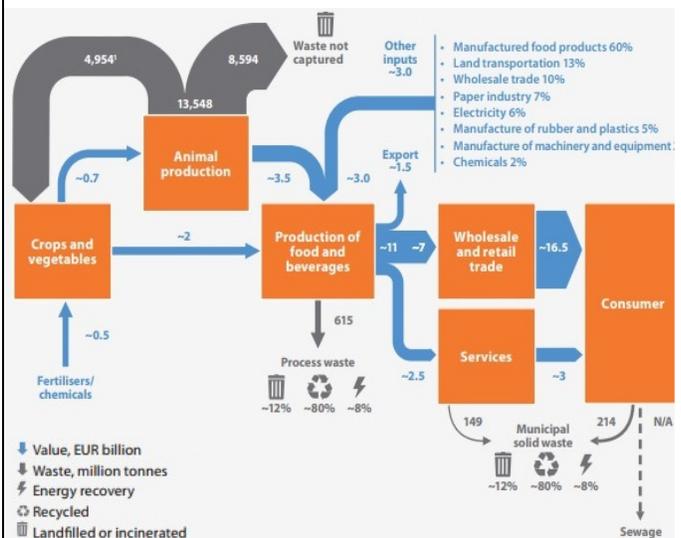
At its core, a circular economy is an integrated system. The supply chain becomes interlinked in complex and clever ways, matching one industry's waste as another's treasure. Driving this is competitive collaboration, forged from a better understanding of the opportunities presented by a broader business ecosystem.

Integration is a form of innovation. Sharing, repurposing existing infrastructure, stretching product or material life spans, building in repetitive use, considering products as services – these are also ways of building a connected, integrated system that delivers efficiency and value. It also supports competitiveness, boosting export advantage and perhaps reducing import dependencies.

Upshot: Connections from integration drive strength, resilience and value into the supply chain and economy.

How: Local governments can demonstrate and drive integration internally and across the wider supply chain by match-making within and among industries, by convening and empowering collaboration, and by communicating successes and distributing best practice. Local governments can also model integration through their procurement practices and supplier requirements.

Right now: Auckland Council should advocate and provide clear thought leadership on the benefits of a circular economy transition. Council should also walk the talk by modelling integration through procurement practices and supplier requirements.



Mapping material flows. Agriculture, Food and Beverage generally lend themselves to circular opportunities. Courtesy of McKinsey.

4. Interrogation

In a way, interrogation is also a form of innovation. Often the best way to forge a breakthrough is to start asking questions. Why do we do things a certain way? How can we improve processes? What else is possible? Likewise, simply identifying potential opportunities (and lost value) requires concerted efforts to interrogate and map them out. Of course, this is rounded out by robust monitoring and evaluation so that past mistakes or missed opportunities inform future successes.

Upshot: Clear interrogation of opportunities helps identify tangible actions to actualise a circular economy vision.

How: Local governments can facilitate a comprehensive interrogation of circular economy opportunities, increase understanding of the benefits of circularity among partners and suppliers, prioritise sector interventions, and help understand transition routes for those prioritised sectors.

Right now: Auckland Council should create a circular economy roadmap for Auckland, assessing opportunities and mapping them by sector and even region-wide.

5. Investment

Interrogation, innovation, incentives or integration lead to the discovery of a new idea or model or process – but some great ideas are limited by lack of capital to get off the ground. Not only is access to finance crucial, but funding for commercialisation of research that accelerates the circular economy is as well.

Upshot: Unlocking financing is key to accelerating a circular economy transition.

How: Local governments can modestly invest in the circular economy, either directly through seed funding or indirectly through advocacy. Local governments can also anticipate and plan for future industries and identify transition tools that will be needed to protect lower-wage workers from inevitable or accelerated change.



Right now: Auckland Council should advocate to central government for circular economy R&D funding to transform the NZ economy and give it a realistic clean innovation edge in line with our national image.

Beyond these five principles, I'll add a sixth: **implementation.** Courage to pilot new ideas – knowing some may fail – then backing the winners and scaling up is a necessary ingredient for success. It means going forward with commitment, focus and gusto as an antidote to the inertia of business as usual.

Likewise, implementation means a fierce focus and dedication to the local. Doing so puts control of the future into local hands, owned by citizens with a stake in the impacts and benefits of local industries. Particularly in today's world, in order to inform and benefit from the circular transition, we must draw the parallels between production and waste, its environmental and social impacts and undemocratic power structures that erode social justice and the fabric of society itself.

Finally, this isn't about economic or quality-of-life regression. Imagine if consumers were participants or shareholders with a true personal investment in a company or industry, its place in the wider business ecosystem and its ability to deliver and champion health, inclusion and equality. It wouldn't mean we need to bag globalism or rein in trade – but it might mean a more sharing economy, more cooperative peer-to-peer networks, and more localised models. Instead of a producer of abstraction, externalisation, or exploitation, the economy becomes more tangible. It becomes a facilitator for the creation of connection and value. It transforms into an economy that provides for people, not simply people that provide for an economy.

