THOUGHT LEADERSHIP
REPORT | 2019

RETHINKING AND RESHAPING THE FUTURE OF WASTE

POWERED BY ACTION PARTNERS, CIRCULAR ECONOMY AND REAL SOLUTIONS

RSI
RETHINK
SUSTAINABILITY INITIATIVES

Worldwide material consumption has expanded rapidly, as has material footprint per capita, seriously jeopardizing the achievement of the United Nations Sustainable Development Goal 12 – Sustainable Consumption and Production – and the Goals more broadly. Urgent action is needed to ensure that current material needs do not lead to the over extraction of resources nor to the degradation of environmental resources. This action should include policies that improve resource efficiency, reduce waste and mainstream sustainability practices across all sectors of the economy[1].

LETTER FROM THE RSI CHAIR

From the RSI Chair

RSI connects with leaders across all sectors and generations to speed up the discovery and use of workable solutions to some of the most critical challenges impacting the future sustainability of our world.

To accelerate the discovery of actionable sustainability solutions, RSI aligns all of its activities with the 17 UN Sustainable Development Goals, with a primary focus on Action Partnerships. This includes our 2019 RSI Leadership Dinner Dialogue Series which gathered leaders together to shape the future. Each event focused on real-world and proven approaches to solving one grand sustainability challenge.

At RSI, we believe that the future depends on knowledge, insight and shared solutions.

ACTIONABLE SOLUTIONS TO WASTE

The World Bank predicts that without urgent action, global waste will increase by 70% by 2050 compared to current levels, and our world will be too polluted to sustain the survival of the natural systems that humanity depends on.

Recognizing this urgent call for action, RSI launched a Rethink Waste initiative which includes a Rethink Waste Action Partners Leadership Dinner Dialogue.

"Without urgent action, global waste will increase 70% by 2050 compared to current levels, and our world will be too polluted to sustain the survival of the natural systems that all humanity depends on." – The World Bank

This report is primarily based on insights from our November 2019 Dinner Dialogue speakers and action partners. These include forward-thinking economists, architects, food systems experts, professors, business executives, entrepreneurs, next gen leaders and influencers. The focus is on workable, scalable solutions to the mounting waste issues related to food, construction, energy and natural resources. Also included are some strategic frameworks and paradigms, such as the circular economy, to help rethink and mobilize solutions that are ready for implementation today.

We thank these leaders for taking the time to explore how we can better prepare for what's ahead. Their bold prescriptions remind us that in today's fast-changing environment, everyone can actively participate in the sustainability agenda and think differently about growth and innovation.

By welcoming change, sharing resources, adopting future readying strategies and solutions, we can create better outcomes for customers, partners and society.

The time for action is now!

I hope you enjoy this report. And we invite you to join RSI in our quest to change the future – for the better.

Troy Wright
Rethink Sustainability Initiatives
(RSI) Chair

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CONNECTING THE DOTS

THE WASTE CHALLENGE. CIRCULAR ECONOMY. SOLUTION ACTION PARTNERS.

We are a wasteful global community. We waste time, money, natural resources, human effort, potential for happiness and wellbeing, and even waste itself. We are geared to be wasteful because the global economy thrives when we continually consume and dispose. Our planet is one of finite resources, yet we treat it as if those resources will never run out. If we don't turn things around, a number of global ecological limits are bound to be surpassed. We could run out of natural resources, run out of space for landfills, run out of human labour due to a lack of wellbeing, or even spoil life entirely on Earth. As the UN reports: "With increasing urban populations and the existence of consumer-oriented economies amid rising income levels and rapid urbanization, it is estimated that the total waste generated in the world will double from nearly 2 billion tons in 2016 to about 4 billion tons by 2050."[2]

The severity of this problem is not lost on society. The need for a radical change in our consumption and disposal patterns has even found its way into popular culture. Marvel's Avengers movies feature a villain whose ultimate motive is to find a solution to the problem of having "too many mouths, not enough to go around". The British spy movie Kingsman features a villain who, similarly, sees humanity's incessant resource consumption as the reason for its inevitable demise. Even animated family movies such as Disney's Wall-E have the entire human population living in outer space because the planet has become one big landfill.

"It is estimated that the total waste generated in the world will double from nearly 2 billion tons in 2016 to about 4 billion tons by 2050."

This is not a pretty picture, but it is avoidable. Business leaders, non-profits, and governments all over the world have vowed to take decisive action to remedy the waste situation. A revolution has begun in the world of production and consumption, and at its core is something quite simple: a circle.

UNLOCKING THE VALUE OF WASTE

While the word 'waste' is used to denote something that no longer has value, the truth is anything but that. What citizens and industries have been discarding as waste, in actuality, is made up of valuable materials. As changemakers scrutinize over supply chains, they uncover opportunities to reduce waste, potential for reusing and repurposing tools and materials, and new ways to recycle those that have reached their end of life. This is the circular economy, and it is being widely adopted for two key reasons among many: it is socially and environmentally beneficial, and it is profitable.

Businesses and entire industries are being built on the premise that traditional waste has value. By reconsidering the flows and borders of traditional value chains, industries are creating value where once there was only garbage, giving new meaning to the old adage 'one person's trash is another person's treasure.' Creating a cyclical flow of resources has the potential to, eventually, render landfills obsolete. This would rid us of their associated carbon footprint and air and water pollution in addition to being a hugely profitable economic model. It is precisely this cross-section of business and sustainability that lies at the heart of the United Nations' Sustainable Development Goals.

SDG 12: SUSTAINABLE CONSUMPTION AND PRODUCTION

RSI has joined countless other organizations in working towards the 17 UN SDGs, with a focus on Action Partnerships. This framework acts as a "blueprint to achieve a better and more sustainable future for all" for organizations to follow. SDG 12 is sustainable consumption and production, and it is this goal that a circular economy seeks to achieve by unlocking the value of waste.

SO, WHAT IS THE CIRCULAR ECONOMY?

Looking beyond the current take-make-waste extractive industrial model, a circular economy aims to redefine growth, focusing on positive society-wide benefits. It entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system.

Underpinned by a transition to renewable energy sources, the circular model builds economic, natural, and social capital.

It is based on three principles: design out waste and pollution; keep products and materials in use; and, regenerate natural systems[2].

This report is a practical resource for business and government leaders, entrepreneurs and everyday citizens who want to take action on the global waste crisis. It includes how a circular economy framework and other forward-thinking strategies are being used to design out waste in the context of food, technology, architecture, construction, and the built environment. Though the primary focus is rethinking waste, the strategic insights can be applied to other sustainability challenges too.

"Pollution is nothing but the resources we are not harvesting. We allow them to be dispersed because we've been ignorant of their value." – R. Buckminster Fuller

CIRCULARITY: THE FIRST BIG STEP TOWARDS A PURPOSEFUL ECONOMY

Dr. Yannick Beaudoin
The David Suzuki Foundation

Waste is profitable. At least, according to the current rules of our global economy, which is based on an unsustainable model that prioritizes growth of GDP over all else.

This system has resulted in and profited from social waste in the form of poverty, rampant food waste, widespread hunger and the accumulation of plastic waste in landfills and our oceans, among other things.

"The modern economy "might as well be based on Mars", as it does not place any value in ecosystem services provided by nature or the happiness and well-being of citizens."
– Dr. David Suzuki

These problems, a consequence of a grotesquely mutated economic paradigm, have happened because we chose them. We have allowed this economic norm to grow, thus encouraging today's 'Take, Make, Waste' system. Our economy is founded on the premise that convenience is paramount, and luxury has replaced biological necessity. We have confused 'need' and 'want' to the point that (over)consumption is believed to be the source of true happiness.

In the current economy, unsustainability is the cheapest option, but only monetarily speaking. This is because we continue to abide by old rules. In the words of David Suzuki, the modern economy "might as well be based on Mars", as it does not place any value in ecosystem services provided by nature or the happiness and wellbeing of citizens. The modern economy seeks only to maximize GDP, which at its core, is a measure of how quickly one can convert nature to money with the cheapest labour available. Everything else in this system is considered an 'externality'. But, undoubtedly, these externalities are valuable!

SO, HOW DO WE SET OURSELVES STRAIGHT?

To set ourselves straight we must reintroduce purpose into our economies to realign economic activity with the people that make them up. Some countries have already begun this work. Scotland, Iceland and New Zealand are already leading the way for developed nations when it comes to embedding wellbeing and other 'true' indicators of success into their measurements for economic prosperity. It is also worth noting that all three countries are currently led by women. This is all in the name of developing a purposeful economy – something that we haven't seen for a long time.

Perhaps the greatest example of a country that has embedded a permanent, wellbeing-focused purpose at the heart of its economy is Bhutan, pictured above. The only reason that Bhutan engages in economic activity is to maximize happiness (however they choose to define it). While their approach is by no means 'copy-paste-able' to the Canadian economy, it represents a profound acknowledgment that is happening throughout the world. People are beginning to understand that the economy, which was initially meant to be a sub-system of society to help understand human interactions and guide future interactions, has become the main operating system by which we judge everything in our lives.

Achieving circularity in the global economy would be a massive leap forward.

Now that we understand the root of the problem and the solution, we must ask: how do we shift to a purposeful economy?

There are many things that need to happen for such a paradigm shift to occur. One of the first big steps is to enable a circular economy. Embracing circularity will get us as close to the end goal as we can get within the current economic rule set. This end goal, as defined by the United Nations in their Sustainable Development Goals framework, is strong ecological and social sustainability. The journey to such a horizon can be challenging, but it is equally characterized by numerous opportunities. Achieving circularity in the global economy would be a massive leap forward.

FOUR PATHS FOR KICKSTARTING A CIRCULAR ECONOMY

There are many paths to establishing circularity. All of them differ based on differing industries and countries. However, we can group these paths into three buckets to help simplify the solutions: citizen education, regulation, and circular design. Each of these buckets tackles one section of the waste stream.

Citizen education. This involves public engagement to increase public awareness of both the problem that waste poses and the solutions that exist. This takes care of the end of the waste stream, as consumers are the final 'hands' to touch a product before it is disposed of. Citizen education has the power to influence the demand for more circular products, and this is especially true for waste from the food and clothing industries.

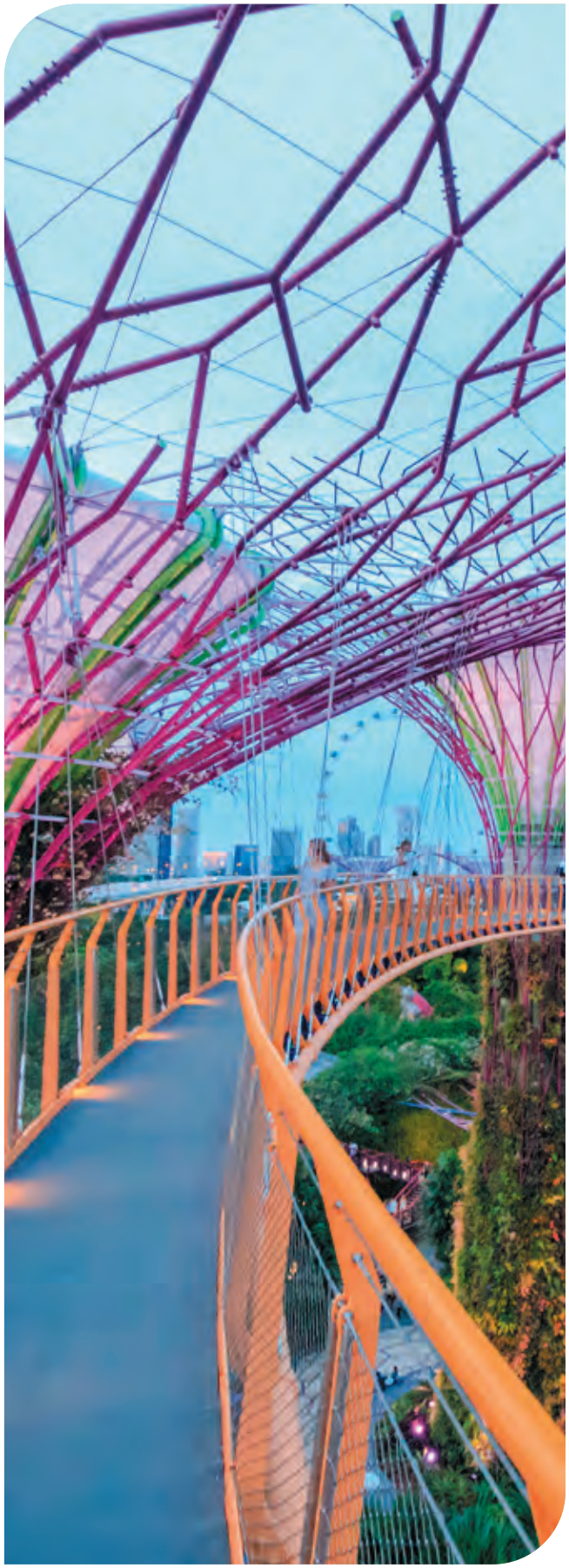
Regulation and policies. They need to come from governments at all levels to enforce and encourage circularity throughout the value chain. Governments have the ability to influence the 'middle' of the waste stream, meaning everyone in between the manufacturers and consumers. Ontario has been making an initial push for 'extended producer responsibility', which will make producers more responsible for the full life cycle of the products they are making. This is merely one example of how regulation can advance circularity.

Circular Design. At the beginning of the production stream, we need products (buildings, technology, clothing, or anything material at all) to be designed with circularity in mind. Recycling should be the last resort only. The reuse, repurpose and repair of products must be made far easier for consumers. Adhering to these paths can help kickstart the transition to a circular economy, which will in-turn manage the growing waste issue that we face. That said, there is one solution that must be implemented before anything else: reducing our consumption.

Reduce Consumption. An economy based on over-consumption will always be wasteful, regardless of any circular measures put in place. Whether that waste be human labour, energy, natural resources, or products themselves, it is an inevitable outcome of mass consumption. But this should not be seen as unavoidable. It should instead be seen as an opportunity to unleash our full creativity and innovation abilities as well as an opportunity to change our own mindsets and behaviours.

In summary, it is within our means to shift to a less wasteful, more sustainable, and purposeful economy by realigning economic activity with the people that make it up. These four simple solutions—educate, regulate, design and reduce—can help initiate the transition.

Dr. Yannick Beaudoin is the Director General of Ontario and Northern Canada, The David Suzuki Foundation and a Board Director of RSI.



MAKING IT REAL: LEADING BUSINESS AS A FORCE FOR GOOD

Tim Coldwell

Chandos

Leaders everywhere are increasingly redefining 'business as usual' by incorporating social and environmental purpose into the way their companies operate. It's good for society, and it is also the right thing to do. However, this is far from the norm.

Traditionally, the role of business leaders was to make profit, and in some cases, they could put some of that profit towards charities. Michael Porter, a highly respected Harvard professor whose work includes theories on economics, business strategy and CSR, challenges this thinking with a simple yet profound concept: businesses should exist for a social purpose. However, some may think that this isn't possible because ingrained in their minds are only two options: you can do good or you can make money. This is a false dichotomy.

The truth of the matter is that there is an overlap between "what the world needs" and "why your business exists". It is here that you can establish how your business model can benefit both your company and society. When companies commit to a defined purpose for the greater good, this not only elevates their status as a socially responsible leader, it also enhances their brand, reputation and future prosperity.

"It involves finding your voice and standing up for the right thing. However tough the challenge ahead may seem, know that business leaders have done it before and have been successful at it."

CASE IN POINT – AND1

AND1 is an American basketball shoe company founded on the principles of profitable business and doing social good.

The brand was known for supporting social initiatives and placing an emphasis on using its corporate power to elevate societal wellbeing.

After a few years of success, the company went public, and its purpose-driven endeavours slowly gave way to profit maximization. However, one of the co-founders of AND1 went on to develop B Labs after leaving the basketball shoe brand and has since given B Corp certifications to companies all over the world that are embedding social and environmental purposes at their core.

As greater numbers of businesses are realizing the financial benefits of being a social and environmental purpose-driven company, governments are also coming on board. Here in Canada, Bill C-344, if passed, will force any federally-funded construction, maintenance or repair project to report on the community benefits it reaps. This type of regulation promises to get more private businesses to commit to leveraging their capital to advance social good.

BUSINESS LEADERS HAVE THE POWER TO CREATE CHANGE.

Private businesses control 17% more cash/resources than charities around the world. This shows us that business leaders have the power to create change. Instead of focusing solely on maximizing profits, businesses should pick an issue and try to solve it. Adidas has chosen to tackle plastic waste and remove it from our oceans by using the material to make its shoes. They have even gone so far as to facilitate the return of their shoes once customers are done with them, helping to close the loop on plastic waste.

MOBILIZING SOCIAL AND ENVIRONMENTAL PURPOSE AT CHANDOS

In construction, Chandos hires at-risk youth and invests in their education to both get hired and move up in the company.

This approach ensures that the Chandos team is made up of qualified workers while also improving their quality of life.

Chandos also has partnerships with several community organizations such as EMBERS in Vancouver and Building Up in Toronto that offer opportunities for economic and employment growth to transitional workers.

We collaborate with Buy Social Canada, a social procurement organization, that helps individuals positively contribute to economic diversity and growth; and, we are above the standard benchmark for the percentage of women and Indigenous Peoples represented in construction.

In 2019, we participated in the B Corp Inclusive Economy Challenge with set goals to improve our diversity, equity and inclusion efforts through strategies such as initiating a Lean In women's affinity group; providing cultural awareness and unconscious bias training to staff; and taking steps to hire and promote women into roles that are traditionally male dominated. We are also members of the Canadian Council for Aboriginal Business and recently entered the commitment phase of becoming certified as a Progressive Aboriginal Business.

These few examples demonstrate the benefits of incorporating social and environmental purpose into business and how this is shaping a more sustainable and prosperous tomorrow. The success of business lies in solving some of the biggest problems facing our world – that is where the opportunities are.

The success of business lies in solving some of the biggest problems facing our world – that is where the opportunities are.

Let's make it real. Become a force for good by embedding social and environmental purpose into your business too. And if you are already on that path, let's help other leaders come on-board too.

Are you ready? We can do this.

Tim Coldwell is President of Chandos, a 100% employee-owned national builder and the first and largest B Corp-certified commercial general contractor in North America.

THE AVOIDABLE CRISIS OF FOOD WASTE, POWERED BY COLLABORATION

John Watts
HotHouse Restaurant

Lori Nikkel
Second Harvest

Michael Van Massow
University of Guelph

The food waste crisis facing our world is getting bigger and more complex every day. The magnitude of this crisis is exacerbated by the tsunami of economic, social and environmental disruptions negatively affecting the reliability, affordability and accessibility of food across the supply chain.

With an estimated global population of 7.7 billion people, and the UN's prediction of 8 billion by 2023, that is a lot of people who rely on access to healthy food as a primary life source. The food crisis is too complex to fix with linear strategies and piecemeal solutions. More circular and holistic strategies and on-the-ground partnerships are needed to discover and implement solutions that work in the realities of our fast-changing climate.

This thesis was briefly illustrated in a fireside conversation moderated by Dr. Michael Van Massow, Associate Professor at University of Guelph with John Watts, President of HotHouse Restaurant and a successful entrepreneur, specializing in food and hospitality related ventures in the GTA and Haliburton; and Lori Nikkel, CEO of Second Harvest.

58% of all food produced for Canadians is lost or wasted – Second Harvest

When asked about the extent of the food waste problem, Lori was quick to point out that there is a significant lack of data, due in large part to there being no standardized measurement system for food waste. Fixing this by establishing measurement practices is crucial to solving the food waste problem. As an experienced entrepreneur, John feels it is important to connect with your staff and educate them to help boost awareness of the problem. Michael thinks this is the best place to start and that it can be taken further. Awareness building is step one,

followed by measurement of the problem and then implementing prevention measures wherever possible. The absolute last step must be to divert waste from landfill, when all other options are exhausted.

Organizations like Second Harvest and HotHouse Restaurant are doing what they can to tackle the problem. Second Harvest was born when a trend was noticed. This trend was people leaving restaurants with takeout food (i.e. excess food) while there are hungry people all over Toronto, let alone the world, who could desperately use that food. People felt a direct and emotional response to a real, immediate problem, and this response led to the creation of Second Harvest.

John decided to take action on food waste at HotHouse Restaurant for a similar reason: because it is the right thing to do. Some of the waste-minimizing initiatives they undertake include making use of food rescue organizations, such as Second Harvest, using cooking oil for soap making, feeding produce scraps to pigs, and using spent grains from his breweries for making pretzels.

HUNGER IS REAL AND IT AFFECTS FAMILIES AND INDIVIDUALS.

The Daily Food Bank, for instance, says that 41% of their clients go without a meal at least once a day due to lack of money. Yet, nearly 60 percent of food produced in Canada is lost and wasted annually. We all need to do what we can to bridge this gap. In John's experience, people want to engage with a business that is thoughtful. Also, this type of positive impact engages the restaurant staff, making them proud of where they work, thereby giving the business a leg up on its competitors by helping to retain talent.

"Can you imagine living on just over $800 a month? After paying rent and utilities, on average, a person who comes to a food bank is left with about $7 a day to pay for food and other expenses. When the choice is to pay rent or buy groceries, many households simply go hungry."– The Daily Food Bank

At the end of the day, we believe it is everyone's responsibility to do what we can to help our community to feel safe, included and seen. That includes access to food and other life basics that every human deserves. Canada is a rich developed country. We need to take care of each other. It couldn't be simpler than that.

ON THE GROUND SOLUTIONS TO FOOD WASTE. WE CAN ALL PLAY A ROLE.

Lori Nikkel
Second Harvest

Here's a not-so-fun fact: If the food wasted around the world were a country, it would be a greenhouse gas emitter rivaling China and the United States.

Where does food waste come from? Households are frequently cited and they're an easy culprit: like those leftovers that linger in the fridge until tossed or the lettuce we buy but never eat. However, the situation is far more complex. Food loss and waste occurs at every stage of the food supply chain – including millions of pounds of surplus healthy food that never reaches the consumer, ending up in a landfill.

Once it's in a landfill, decomposing food creates carbon dioxide as well as methane. Although methane accounts for only 14 percent of emissions worldwide, it traps more heat than carbon dioxide. This means that even though carbon dioxide molecules outnumber methane 5 to 1, this comparatively smaller amount of methane is still 19 times greater a problem for climate change and global warming.

The UN's current assessment[4] reports that "every bit of [global] warming matters" since warming "increases the risk associated with long-lasting or irreversible changes, such as the loss of some ecosystems." To reduce greenhouse gas emissions and limit global warming will require "rapid, far-reaching and unprecedented changes in all aspects of society."

This is what food waste looks like. Surprised?

It might surprise you instead of heading to retail or the processor, the gorgeous ripe tomatoes, shown above were destined for landfill. Unfortunately, this is not unique. Municipalities across the province regularly see this scale of farm-based food loss for several reasons such as inaccurate forecasts, harvest surpluses and changing retail specifications.

And this is all happening while 13% of Canadians struggle with food insecurity and lack of access to healthy food.

This particular story, however, has a happy ending. These tomatoes didn't go to landfill. They were rescued, redistributed to a network of social service agencies and food hubs via Second Harvest's fleet of refrigerated trucks, then eaten and enjoyed.

STEPPING UP THE END TO FOOD WASTE WITH FOODRESCUE.CA

Given the intensely negative environmental and social impact of food waste, Second Harvest is stepping up to end it by launching an online food rescue portal *www.FoodRescue.ca* to connect non-profits across the country with food donors in their own communities.

The goal is to lessen our environmental impact by enabling local recovery of perishable, unsold, surplus food to provide immediate hunger relief.

Thanks to the provisions of Food Donation Acts across Canada, businesses have protection from liability. When offering food donations, *FoodRescue.ca* takes this assurance one step further by asking that food donors and recipient organizations comply with our donation and recovery guidelines. All facilities also need to have up-to-date inspections and food safe handling training.

What *FoodRescue.ca* is showing is that there are countless opportunities to rescue food, whether it's bushels of tomatoes from a commercial grower or unsold sandwiches from a local café. Changes don't need to be earth-shaking to be earth-saving – they just need to be made.

As part of the Food Working Group with the National Zero Waste Council, Second Harvest helped in the development of Guidelines to Minimize Wasted Food and Facilitate Food Donations. This is offered to *FoodRescue.ca* food donors and recipient organizations on the website.

FoodRescue.ca also offers:

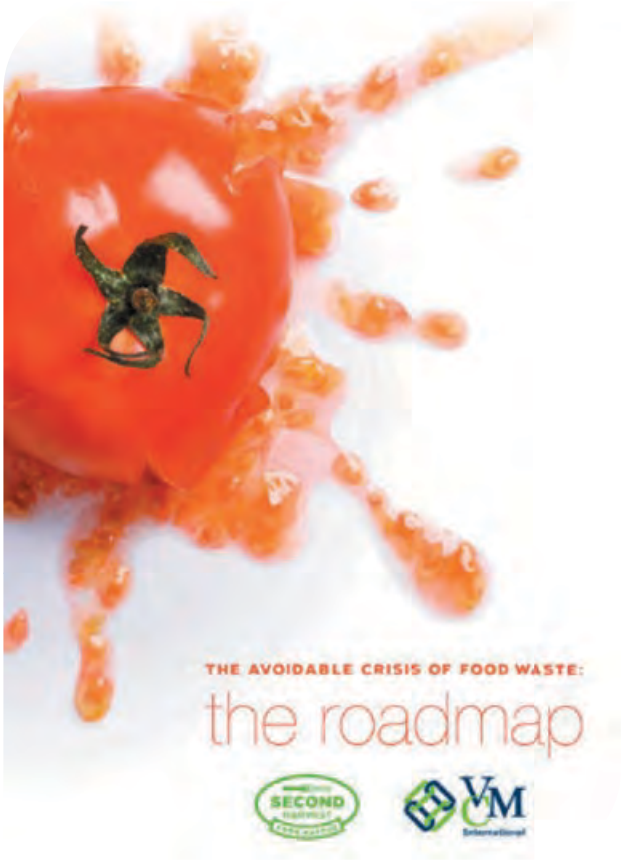
- One-sheets on safe transportation of temperature-sensitive food, as well as thermometer calibration and measurement guides and other capacity-building resources for both food donors and recipient organizations.
- Resources for families about best-before dates, how to revive food, and how to cook for party-sized crowds and avoid waste.

In the food value chain, the cost of waste is often reckoned as simply the cost of landfill or tipping fees. Labour, water, electricity, fuel, fertilizer and other food production costs that went into producing the food aren't measured. That is problematic in even the most efficient food system. On top of that, in Canada only 42% of food produced ever makes it to market, with nearly 60% lost or wasted.

Not All Food Waste is the Same.

Waste also includes bones, animal hides and other inedible by-products. Unfortunately, fresh food also becomes waste. Second Harvest's new research shows that nearly one-third of total food loss and waste is edible and could have been rescued at numerous points along the supply chain, but it isn't.

We are barely touching the total amount of food that can be rescued. The amount of potentially rescuable food available in Canada is 11.2 million metric tonnes.



DISCOVERING ROOT CAUSES AND SOLUTION ACTIONS

Why does this happen? Why do fields of unsold produce get plowed under and surplus milk go into sewers? How does edible food become landfill when 4 million Canadians struggle with food insecurity?

With the goal to finding answers Second Harvest partnered with Value Chain Management International on a research report *The Avoidable Crisis of Food Waste*.

It's the first research study to use primary data sourced directly from industry. Based on responses from more than 700 food industry leaders across Canada, it identifies about 30 root causes of food loss and waste, including:

- Acceptance of waste by the food industry as the cost of doing business, a belief sustained by low tipping and landfill fees;
- Conservative best before dates that lead to industry and consumers throwing away food that is still safe and edible;
- Pressure on producers to provide 100 percent on-shelf availability and aesthetic perfection, particularly with fruits and vegetables, leading to over-production;
- Reluctance in the food industry to donate safe, edible surplus food despite Good Samaritan legislation that already exists to facilitate donation.

The Avoidable Crisis of Food Waste also has more than 100 actions that can be done by food industry, industry organizations and government to reduce food waste and facilitate rescue.

There is no social, environmental or business case for food waste.

Yet it has become standard operating procedure in the food industry, in Canada and globally. With this new research, we all now have the data and the tools to transform this crisis into a triple-bottom-line win across the value chain.

But it's not all up to the big players. Consumers like you and me can reduce the amount of food that ends up in landfill.

WE EACH HAVE A ROLE TO PLAY. HERE ARE TWO RESOURCES TO HELP YOU DISCOVER YOURS.

- The Avoidable Crisis of Food Waste Report at www.SecondHarvest.ca/Research 3, dig into it and share with others.
- How Second Harvest is making food rescue easier for businesses and nonprofits at www.FoodRescue.ca.

Lori Nikkel is the Chief Executive Officer of Second Harvest and a member of the Management Board at the National Zero Waste Council.

CLOSING THE LOOP ON TECHNOLOGY WASTE

Cristian Hurtado and Michael Jones

The modern world has become an increasingly digitized and electrified landscape, filled with unplugged devices and bright LED screens. The boom of 'smart' technology in the past 15 years has led to the development of smartphones, tablets, laptops, smart TVs, electric vehicles (EVs) and more. The demand for smart tech is also being compounded by the growth of new tech markets including AI, blockchain, and cloud computing. All of these devices share the fact that their construction requires both mined metals and several types of plastics. Even solutions for other problems such as clean energy present issues when it comes to such elemental waste. Solar photovoltaic (PV) modules require silicon in their construction, CO_2-oxygen conversion systems require nickel or platinum, and nuclear power depends on radioactive uranium, a rare earth element (REE), to function. The problem with all of these materials is that they are, or are comprised of, finite resources.

As the two graphs on the right show, the consumption of many of the metals used in the 'electrified world' has risen dramatically in the past decade. This is especially relevant in the case of lithium (Figure 2), as Canada is one of the top three sources of lithium in the world . These metals must be extracted through extensive, environmentally destructive, and often socially exploitative mining operations, and they are rarely found in large deposits, rather they are dispersed throughout large areas. On top of this, smart tech often calls for plastic, a fossil fuel-derived material, in its construction to keep products lightweight.

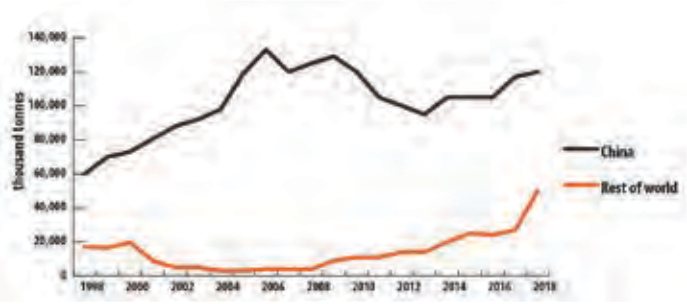


Figure 1: World Rare Earth Elements Production from 1988-2018[5]

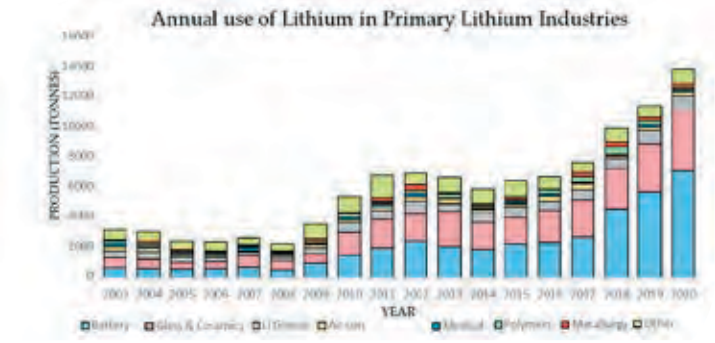


Figure 2: World Lithium Consumption from 2003-2020[6]

Demand for products built with these resources is rising rapidly, and it is attributable to two key factors: constantly 'upgrading' devices with new models, and the growing push for mass electrification in conjunction with clean energy production. The established trend of replacing year-old devices with newer versions often results in 'old' devices being sent either to landfill or to the quintessential 'old phones drawer'. Over 1.5 billion cellphones were purchased in 2018 alone, showing the severity of such over-consumptive behaviour. Many people have experienced technical difficulties with their devices, often times due to planned obsolescence designed into the products themselves, or feel the need to have the latest model. Large manufacturers have stood in the way of cost-effective, simple repairs in order to drive replacement purchases and suppress the "Right to Repair" Movement.

Combined with the trend of replacing smart tech with the latest models, traditionally non-electronic technologies are becoming 'electrified'. This is happening due to an increased push for renewable energy integration as well as due to advancements in technological efficiencies. Consider such tech as the electric vehicle or automated factory machines. As these technologies develop, so too does the demand for the plastics and metals that make them up. Consequently, world-wide demand grows, and e-waste accumulates in landfills. If this problem is not addressed at its outset, it could spiral into a resource shortage situation not unlike the fossil fuel and forestry industries.

So, how do we manage the ever-growing demand for REMs despite their finite nature?

The answer, as is the case with all other waste problems highlighted in this report, is circular. Implementing a circular model into the e-waste stream is challenging. Valuable metals like lithium, cobalt, and titanium are often embedded in components made up of many other metals and plastics. This complex construction makes separating a device into its primary components in order for them to be recycled properly very difficult. That being said, it isn't impossible.

There are several companies that have successfully reused and recycled components from old devices. Staples has integrated printer toner pickup upon delivery into its Staples Business Advantage service to reuse the cartridges. Taking this even further, Hewlett-Packard Canada (HP Canada) has implemented a similar toner cartridge reuse program, alongside its hardware recovery HP Planet Partners Program. This program, which recovers hardware and supplies to divert them from landfill, has recovered over 3.5 billion pounds of materials over the past 30 years, and HP has committed to adding another 1.2 million tonnes to this number between 2016 and 2025[7].

These companies showcase how employing a circular model is not only beneficial for the environment by diverting waste from landfill, but it also represents sound business logic. In fact, this is such a reliable source of value that an entire industry has been formed around it.

Organizations like Terra Cycle, Li-Cycle and Call2Recycle have all built their revenue models on the foundation of turning traditional waste into a valuable resource. Call2Recycle is a Canadian non-profit that works to help companies recycle used batteries when they are mandated to do so[8]. Mississauga-based Li-Cycle, on the other hand, is a company that has developed a process for recovering 80-100% of all materials in a spent lithium-ion battery[9],thereby creating a profitable business model based on waste. This is a crucial service in a world where cellphones and laptops dominate the tech market and EVs are poised to overtake the auto market, accessing the ever-growing source of batteries from discarded products. Extending the concept of accessing the value in waste to beyond batteries, Terra Cycle has built a thriving business based on recycling traditionally hard-to-recycle products, including batteries, TVs, printers, and other household electronic waste[10].

Legislative backing has been used to jumpstart the circular economy. In regions such as Ontario, the Waste Free Ontario Act was passed in 2016, encouraging Extended Producers Responsibility (EPR) to drive innovation in recycling and capture

natural resources before entering the landfill. As an extension to the Waste Free Ontario Act, a private members bill was put forth to amend the Ontario Consumer Protection Act requiring companies to provide lower cost repairs to electronics. This was done to reduce environmental waste, allowing repairs to be made locally and encourage innovation. The same legislation has been put forward in 18 States. This has been a direct result of consumers demanding more of the manufacturers than just providing them consumer goods.

THE BUSINESS CASE FOR TAPPING INTO E-WASTE IS EVIDENT.

The business case for tapping into e-waste is evident – so much so that even big market players are beginning to take notice. Tech market behemoths Samsung and Apple have set goals to extend their producer responsibility by designing their products for repair and reuse once customers want to discard them[11,12]. Apple's recycling robot, Daisy, refurbished 7.8 million devices in 2018, diverting 48,000 tonnes of e-waste from landfill. While this number pales in comparison to the company's over 64 million iPhone unit sales in that same year[13], it shows recognition from the tech goliath that recycled e-waste can be used as a resource as opposed to solely relying on mining for resources, and is a step in the right direction.

Perhaps most encouraging of all is the ambitious plan put in place by the Volkswagen Group. The auto maker has taken steps to advance the transition to a circular economy by setting up a pilot battery recycling plant in Salzgitter. There, a branch of the company dedicated to advancing e-mobility promises to extend its producer responsibility to the recycling of EVs, with a goal of recycling all EV batteries manufactured by the massive auto group and recycling 97% of all raw materials[14].

By reintroducing 'end-of-life' materials into their value chain, companies effectively turn waste into a valuable resource. This lies at the heart of the circular economy. 'Waste' traditionally implies something that no longer has use. In the circular economy, however, everything at every stage of its life has value.

If businesses honour the commitments they've made to close the loop on their waste streams, and others join in embracing the benefits of a circular model, then the tech-laced future that we are headed towards seems bright indeed.

Cristian Hurtado, M.E.S., a sustainable energy professional with a Masters of Environmental Studies, 2019. Michael Jones, M.E.B., a compliance and sustainability professional with over 20 years' experience in environmental and sustainability advancement for corporations and NGOs.

PART V

CIRCULAR ECONOMY FOR BUILDING DESIGN, CONSTRUCTION AND RESOURCE SALVATION

Paul Dowsett
Sustainable.

Tim Coldwell
Chandos

Dr. Mark Gorgolewski
Ryerson University

Dr. Yannick Beaudoin
The David Suzuki Foundation

Great minds really do think alike! Moderated by Paul Dowsett, this diverse group of leaders shared their respective views on why and how they are adopting a circular economy framework and resource salvation strategies to drive us closer to a waste-free future in the context of the built environment. They also discussed key takeaways for translating ideas into action.

The magnitude of the waste crisis created by the construction industry and built environment today is staggering. Waste from the construction industry alone, for instance, accounts for 46% of all waste in landfills today. That is a lot of waste.

"Waste from the construction industry accounts for 46% of all waste in landfills today." – Paul Dowsett

Fortunately, this can be mitigated by breaking the cycle of waste creation with new rules and practices that, by design, support waste reduction on all stages of planning, construction and building management. By applying new rules and a whole systems mindset, Yannick Beaudoin believes we can achieve results by changing the way buildings are designed and built and by reframing waste as a valuable resource.

When asked how architects can address the waste problem in the design of buildings, Mark Gorgolewski offered a few solutions. Focusing on how building design has a significant effect on the lifetime waste that a building generates, solutions included a diversity of practices:

- Modular design of buildings so they can be disassembled and reassembled with minimal effort.
- Pre-fabrication to reduce on-site waste generation.
- Material passports to measure waste and track where it is coming from.

Topping all of these is the need for architect-contractor communication. If the communication between the architect who designs the building and the contractor is broken, the outcome rarely matches intent and the cycle of waste continues.

Tim Coldwell agrees with this need. He also believes architects should involve contractors in the design process from the beginning as they have a lot of practical construction information. Working together with open lines of communication and knowledge sharing supports the end goal of creating beautiful buildings and achieving a zero-waste future.

Another waste challenge in the construction industry is the 'talent waste' problem.

"72% of millennials will not take a job unless the employer has a strong CSR position."
– Tim Coldwell

Embedding social purpose into the business model is part of this solution. One way that Chandos does this is by training youth workers on high demand, marketable construction skills and practices. Not only does this demonstrate Chandos' commitment as a social purpose business, it also helps attract, develop and retain more young talent. And, it directly addresses the talent waste problem that the construction industry faces.

Further insights on how to tackle the construction waste issue are captured by the respective experts in Part II by Beaudoin and Coldwell, and in the following chapters by Dowsett and Gorgolewski.

UNCOVERING VALUE FROM WASTE IN THE BUILT ENVIRONMENT

Paul Dowsett
Sustainable.

BUILDINGS ARE TRADITIONALLY WASTEFUL BY DESIGN, BUT THEY DON'T NEED TO BE

Rather than continuing to build in a wasteful manner, we can consider improving resource efficiency, which is another way of improving cost efficiency. This approach inherently leads to multiple social and environmental benefits.

For an example of this approach put into practice, we can look to the head of Sustainability for Hewlett-Packard, Frances Edmunds. She is looking at resource efficiency along HP's entire supply chain and feeding captured and depleted resources (waste) back into that supply chain. Buildings can, and should, be designed to facilitate the same resource efficiency. To do so, building design norms need to be revamped to tackle three kinds of waste, both visible and invisible: physical material, carbon emissions, and construction labour.

One shining, Canadian example of a construction company tackling the first two forms of waste is certified B Corporation, Chandos. Since their inception, they have aimed to reduce negative impact by creating a more inclusive and sustainable economy; developing diverse supply chains; and protecting the world's land, water and ecosystems. With a 20-year old waste diversion program, they are well-ahead of the industry curve. Their commitment over the past 10 years has been to divert a minimum of 75% of waste from each project – 80% for 2019 – by recycling as many concrete, wood, paper, plastic, metal, and drywall remnants as possible. Over the past four years, they have been largely successful in achieving this goal, having surpassed it in 2016 and 2018, and they recycle on approximately 90% of their projects to boot. Chandos was also one of the early adopters of LEED and has integrated the practice into its projects despite the lack of a regulatory requirement to do so. Recent examples of Chandos' environmental commitment include the Emergency Services Campus and Blatchford projects in Barrie-Simcoe and Edmonton, respectively. Both projects diverted at least 90% of waste from landfill, and the Blatchford project used a mobile solar power unit to provide power during construction, eliminating the need for over 6,500 litres of diesel and offsetting 3.5 tons of CO_2.

Physical material, being the most visible kind of waste, makes up a very significant proportion of the construction industry's landfill-destined waste. In fact, construction, demolition and excavation generated around 61% of total UK waste in 2016[15]. To build on Chandos' example of waste diversion, construction/demolition waste can also be substantially reduced by adopting the 'adaptive reuse of existing structures' mantra. Rather than being demolished, old buildings can be imaginatively repurposed.

Demolishing existing structures not only wastes physical materials, which has financial and environmental impacts, but also can waste heritage, which adds a significant social impact. According to Charles Landry, an international authority on the use of imagination and creativity in urban change, "Creativity is a renewable resource, heritage is not. Heritage can, of course, be reinterpreted – but physical heritage, when it´s gone, it´s gone." More harmonious dynamics would require a set of guiding values and principles, a social ethics, in addition to clarity, incentives, and… heritage. As [revered urbanist] Jane Jacobs – who wrote about The Life and Death of American Cities – puts it, "new ideas need old buildings. Valuing heritage helps to create a sense of anchorage, identity and belonging."[16]

So, how do we reuse demolition construction waste? The answer is designing buildings for disassembly. Such a design requires that building components be joined primarily through mechanical fasteners, like screws and bolts, that can be easily disconnected and reconnected. This is known as a dry process, as opposed to the wet processes used in much of construction. Wet processes combine compounds which dry and harden into their useful state, rendering the compounds inseparable and anything that they contact unfit for reuse. After demolition, wet process building materials are usually only fit for landfill or for down-cycling to lower grade uses like roadbeds. However, hope exists in innovators such as Blue Planet Ltd. of California. They propose economically sustainable carbon capture that produces high-value construction materials like CO_2-sequestered limestone and upcycled aggregate[17].

An example of modular construction. Individual building cells can be removed for repair or replacement, greatly reducing costs and material waste.

Clearly, new construction waste is mostly unnecessary. A clean construction site should mean more worker productivity, which would yield more profit for the construction contractor. Rather than designing such that materials need to be cut and assembled on-site, designing for prefabrication (prefab) or panelized factory-built components would virtually eliminate construction site waste of physical materials. Assemblies would have a much higher degree of quality by being made in a climate-controlled, fully-accessible environment. New buildings, and extensions to old buildings, should be designed so that prefab is the norm rather than the exception. With regards to physical material construction waste, we must move beyond (poor) recycling (or rather down-cycling) to reusing and, better yet, to reducing physical construction waste on all projects, as Chandos has done. Remember: the 3R's of sustainability are Reduce, Reuse, Recycle… in that order.

The second, and most invisible, waste is **Carbon Emissions**. As an industry, as written about in co-author Paul's August 2019 blog post, we must cut carbon out of construction – NOW[18]!

We can, and must, reduce both upfront, embodied and lifelong, operational carbon emissions.

To tackle the latter, adaptive reuse for energy-efficiency is a market-ready solution. In addition to this, every new building can, and must, be designed for energy-efficiency to further reduce these emissions. To do otherwise is simply wasteful. But, can a new building, or an extension to an old building, be designed to reduce upfront, embodied carbon emissions? In other words, is a carbon-sequestering, net-negative carbon structure possible? Yes, it is. Let's look to nature.

Plants are very good at drawing down carbon from the atmosphere and sequestering this carbon in their structure – carbon which is fixed-in-place when that plant is harvested. As Bruce King says in the introduction to his book, The New Carbon Architecture: "We are in technological reach, within a generation, of a global construction industry that is not only 'net zero'…but in its materials pulls more carbon out of the air than it puts up. We can reverse the emissions engine.[19]"

What is old is becoming new again in building materials. Architects are designing with mass timber and hempcrete structure, wood fibre and cellulose insulation, straw bale walls, thatch roofs, etc. Buildings designed with these materials and continuing with a net-zero (or negative) operational carbon will ultimately draw down carbon from the atmosphere.

The third, and least thought of, waste is **Construction Labour**. Much construction labour on a traditional construction site is wasted due to the time spent unnecessarily demolishing and rebuilding structures – when the original structures can be adaptively reused. Further, much time is spent cleaning up new material waste that is unnecessary. As noted previously, prefab components would virtually eliminate construction site waste of physical materials, negating the need for clean-up.

Working in a climate-controlled, factory environment would result in more productive and healthier labour. There would be fewer sick days and injuries due to working out in the elements, and fewer injuries due to working at heights and other physically-awkward places. It seems that construction labour is wasted more out of habit than out of necessity. But habits can change.

The financial, social, and environmental benefits of the systemic, waste-reducing changes (possible and required) within the design and construction industries are self-reinforcing. We have the required materials and methods, the technology — now we just need the social will to change.

Let's stop the waste and become more profitable – financially, socially, and environmentally.

Paul Dowsett, Founding Principal of Sustainable, Architecture for a Healthy Planet, the first BCorp Architectural firm in Canada; and, Vice Chair of RSI.

ARCHITECTURE: DESIGNING BUILDINGS WITH CIRCULARITY IN MIND

BUILDINGS IN A CIRCULAR ECONOMY

Dr. Mark Gorgolewski
Ryerson University

"The way we see it, waste is what you call something when you have no idea what to do with it. The fact that waste exists anywhere is more a testament to our lack of imagination than it is to the inherent value of any material. If you have a purpose for it, it's no longer waste."[20] *– Omar Freilla*

Today buildings are a graveyard for materials – once used they rarely have a further life. We hear that increasing percentages of demolition waste is 'recycled', but what value comes from this? Recycling often means crushing and use as road base or other low value uses. Much of the usefulness and financial value is lost. Yet existing buildings and industrial waste streams are huge reservoirs of materials and components which can potentially be mined to provide much needed construction resources. There is increasing recognition that a building at the end of its life is an asset to be valued and that innovation and imaginative design can offer new opportunities for using discarded materials and components as valuable parts of buildings.

As we face the realities of a low carbon economy, the availability of primary materials is expected to be hampered compared to the past as environmental, economic, and social pressures constrain supply. It is likely that building designers will increasingly be forced to respond and develop alternative material strategies. Future supply of building materials will likely focus much more on what is already in the system and is currently in use (but coming to the end of its useful life).

In a circular system, buildings should be seen as transient borrowers of matter rather than final destinations, and construction should be inherently reversible. It is important that construction materials' usefulness and value is maintained and not destroyed by their use. Our cities, buildings, and infrastructure then become a store and a mine for future uses. This demands a rethink of the nature of material processes in architecture leading to a fundamental revision of both the way we create our built environment, and what the urban environment will be like in the future.

"As we move from the industrial age to the digital age does this provide an opportunity for a new way of thinking about materials. Products should not have a 'life' but should be part of an ongoing technical cycle." [21] *– Jeremy Till*

MOUNTAIN EQUIPMENT COOP

In several stores the MEC has created a new building from the remains of the old on the site. The Winnipeg store used part of an existing building as well as the components of the deconstructed building on site, reducing costs and environmental impact as well as creating local employment.

It has been estimated that embodied carbon emissions from the extraction, processing, manufacturing, transport of construction materials accounts for as much as 10% of total GHG emissions in the developed world.[22] Reducing embodied carbon can complement initiatives being taken to reduce operational carbon. Already today organizations such as Skanska UK PLC and Sainsbury's are actively measuring and reducing the embodied carbon of their construction projects. The Green Building Council Australia state that "buildings need to have zero emissions in their construction, operation and embodied energy to be truly carbon neutral"[23]. Research in the US [24] suggests that embodied carbon emissions can be reduced by around 30% by selecting appropriate existing materials and technologies, by using lower-carbon materials, and by employing more-efficient design and construction processes. But an even more effective way to reduce embodied carbon emissions is to reuse existing buildings, components and materials. Building renovation and component reuse usually generates significantly less emissions than new construction and creates an opportunity to reduce overall carbon emissions from buildings.

CIRCULAR BUILDING

In this project engineering consultants, Arup with partners investigated how the circular economy can benefit the industry and the built environment. This prototype tests the maturity of circular economy thinking in the supply chain and examines what it means for building design. It was found that supplier engagement is critical, with both designers and suppliers challenged to think differently about materials and construction processes.
See *http://circularbuilding.arup.com/*

In future, total lifecycle carbon budgets for buildings are likely to be assessed and regulated, and it may be necessary to evaluate the initial embodied carbon investment against the carbon savings generated in operation.

For example, a UK Green Construction Board[25] report on creating a more sustainable construction industry suggests that all future projects will require analysis of how much carbon was invested and how long it will take the savings from increased efficiency to offset that investment. In such an analysis, circular material choices can make a big difference since studies indicate that emissions are significantly reduced when materials are reclaimed and reused (rather than recycled or discarded).

This new thinking demands innovative solutions and strategies such as:

- Design for flexibility to extend building life and accommodate change.
- Design to allow for easy deconstruction at end of life.
- Lease rather than purchase materials and products.
- Maximize off-site fabrication.
- Select materials that can be re-used, remanufactured or recycled at end of life.
- Choose mechanical connections to allow deconstruction.
- Design fit-out to comprise interchangeable panels leased from suppliers.
- Choose electrical and mechanical systems to facilitate future flexibility and ease-of-maintenance and upgrade.

A circular economy model for the built environment implies significant systemic change that requires innovations in technology, organization, finance methods and policies, and redefines the concepts of value and ownership, making recovery and repurposing the obvious choice. Denmark and the Netherlands have been front-runners in exploring the implications of circular principles, recognizing that products/buildings in such a system can require less energy, produce fewer GHG emissions and reduce the demand for raw materials. In a study for Denmark, the Ellen McArthur Foundation identified the built environment as one of the sectors with the highest potential for applying circular economy ideas, with several major opportunities, including[26]:

- Industrial production processes, modularization and 3D printing.
- Reuse and high-quality recycling of building components and materials by applying design for deconstruction techniques, material passports, etc.
- Sharing, multi-purposing and repurposing of buildings, peer-to-peer renting, better urban planning.
- Substituting complex mixed compounds of materials that are difficult to reuse or recycle.

Other countries are also responding. In 2016 the European Commission adopted a Circular Economy Package [27], which includes revised legislative proposals on waste “which will boost global competitiveness, foster sustainable economic growth and generate new jobs”.

BRUMMEN TOWN HALL

The project shows what design for deconstruction can look like in practice. The design team considered the costs of dismantling, process logistics, storage of components, and who will take care of the future tasks. Without this, costs and practical issues could prevent future reuse. Also, the condition of the components at the end of life was considered to maintain their value. This required that durable products were used. The designers created a system where the building elements including overall shell, cladding, internal partitions, and some HVAC components could be in effect owned by their manufacturers and provided to the building owner under a 20-year service contract.

As we move towards a circular economy, we can expect to see significant shifts in how the built environment is designed, constructed, maintained, owned and deconstructed.

The ReSOLVE framework from the Ellen MacArthur Foundation outlines six actions to guide the transition towards a circular economy: regenerate, share, optimize, loop, virtualise, and exchange.[28] In such a system, buildings become adaptable and durable and can be disassembled into components which can be reused or recycled. The significance of ownership is also challenged, with value arising from service, performance and transformation, and less from owning a physical object. Rather than selling products, manufacturers may become providers of a guaranteed level of service (some manufacturers are already doing this such, as Phillips leasing lighting services, and some carpet suppliers taking back their products at end of life). Underlying financial investment and insurance models will need to change to allow components to be leased rather than owned and buildings to have embed flexibility.

Dr. Mark Gorgolewski is a Professor and Chair, Department of Architectural Science, Ryerson University, and a recognized leader and a champion of issues of circular materials economy, sustainable design, resource use, and building performance in Canada and the UK.

ONE MISSION TOGETHER FOR LEADERS
LEADERS SHAPING A BETTER WORLD

Yasmin Glanville
RSI, Re-Ignite

One unforgettable highlight of the November 19th RSI "Rethink Waste" event was seeing four generations of leaders truly galvanized by the challenge of reducing, upcycling, repurposing and salvaging the waste that threatens to bury us all.

This common mission rose above the traditional barriers of experience, titles and age that often divide people. Everyone participated in the conversation, as peers, together!

This energetic collaboration gave us a glimpse of the more open, positive future that's possible when society fully takes on the sustainability challenges impacting our world. And it reminds us that every voice matters!

THE SUSTAINABILITY MISSION FOR LEADERS

Imagine if we used our positions of influence every day to inspire others to shape a more sustainable, resilient and prosperous future. Imagine that future including equal access to healthy and affordable food, housing, water and energy, in realization of the United Nations' 17 sustainable development goals and a zero-waste world.

SOUND IMPOSSIBLE?

More and more, brave voices are speaking out to show that there's a better world ahead. We're seeing a new generation of globally minded champions driven by **purpose, passion,** and **positivity.** They use their respective platforms to say what they stand for and engage others to accelerate the achievement of one or more of the SDGs and related goals within their organizations and communities.

"In nature there is no such thing as waste. In nature nothing is wasted; everything is recycled." – David Suzuki, PhD

THESE LEADERS DO JUST THAT!

Though they come from different industries, places and areas of expertise, these leaders all use their positions of influence to speak out and inspire others to actively participate in the sustainability challenge too.

Hannah Jones

Founder and President of Valiant Labs, Nike's new-business incubator. For 20 years, Jones was Nike's Chief Sustainability Officer. She actively engages leaders and influencers in the challenges around sustainability and social responsibility, helping them see that shift as an opportunity, not a problem.

"When you don't use your voice for advocating for good and you don't stand up for your values, that silence quickly becomes misinterpreted… We have to stand for what we believe in.

We will continue to use our voice. It's not an easy space. But a brand that doesn't stand for something is no longer a brand worth working for."

Mindy S. Lubber

President and CEO of Ceres, the Boston-based nonprofit that works with influential companies and investors to drive solutions throughout the economy. Lubber is recognized by the UN as one of the World's Top Leaders of Change.

"Capitalism today must benefit society at large as well as shareholders… So let's help create a purpose-driven capitalism wherein all companies act to deliver value to consumers and shareholders, while remaining accountable to the broader range of stakeholders, their communities, and the planet."

Paul Polman

Vice-Chair of the UN Global Compact, and former CEO of Unilever. During his 10 years as CEO, Polman worked to make Unilever a force for good. The consumer-goods giant became a frontrunner in corporate social responsibility and redefined what it means for business to be truly sustainable.

"Being a good leader means taking risks, being accountable for those risks, and putting the greater good above your own needs."

David Suzuki, PhD

Co-founder of the Vancouver-based David Suzuki Foundation, an award-winning scientist, environmentalist and broadcaster. Dr. Suzuki has inspired three generations of leaders and activists to advance the environmental sustainability of our planet.

"There are some things in the world we can't change—gravity, entropy, the speed of light, and our biological nature that requires clean air, clean water, clean soil, clean energy and biodiversity for our health and well-being. Protecting the biosphere should be our highest priority or else we sicken and die."

Greta Thunberg

Founder, School Strike for the Climate.
The face of the future. A new generation of sustainability advocates is also on the rise, none more prominent than this 16-year-old environmental activist from Sweden. In less than a year, Greta has catalyzed a global movement influencing leaders of all ages, in business, science, politics and schools, to face up to the climate mission – for their children's sake.

"Everything needs to change. And it has to start today' … We must all wake up and fight to protect the living planet, no matter how powerless we feel. Our future depends upon it."

Annette Verschuren and Derek Evans

Annette, CEO of Toronto-based energy storage firm NRStor (and former president of Home Depot Canada), and Derek, CEO of Calgary-based oil-sands producer MEG Energy, believe it's time to bridge the gap between energy and climate. In a recent article in The Globe and Mail, they urged Canadians to take pride in their oil industry and lead the charge to develop net-zero energy solutions – and bring all Canadians together.

"We need to progress beyond 'either/or' to an 'and' conversation when it comes to energy transition. For unity's sake, it's time to bridge the gap between energy and climate change."

THE OPPORTUNITY

Everyone has a voice. Now is the time to find yours. Leaders have a special responsibility to speak out. This is what leadership is about: seeing the future clearly, developing a plan, and inspiring others to take action.

Let's accelerate the sustainability mission, together. Let's deepen our understanding of today's sustainability challenges. Let's explore and mobilize solutions and create a consensus for change, in both our professional and personal lives.

Emboldened by outspoken, positive change making leaders, let's share our vision, out loud. Like Annette Verschuren and Derek Evans, two leaders from different regions of the country, let's work across traditional barriers to develop and implement action plans. Let's use our positions of influence to connect and inspire other leaders to shape a more positive and resilient future – starting today!

We can do it. One Mission. Together. As leaders.

Yasmin Glanville is the Founder of RSI, Chief Communication and Innovation Strategist of Re-Ignite; and, a board director, senior advisor, keynote speaker and change agent.

INSPIRATIONAL LEADERSHIP TIPS

ONE. Identity the One Mission you stand for. Select one or more of the Sustainability Development Goals that best resonate with your capabilities and passion – and collaborate with others to advance the One Mission.

TWO. Shift from Doom to Bloom. Don't wallow in the problem – focus on what can be done. Let's use our time constructively to mobilize change. Time is too valuable to waste.

THREE. Connect with the big picture and collaborate. In today's era of sound bites and social-media tribalism, it's easy to disconnect from others and lose sight of the big issues. But purpose-driven leaders harness the power of collaboration and face-to-face conversation to energize groups around common purpose.

FOUR. Envision the Future Present. Rather than getting stuck in the past, anchor every day with your vivid vision of the future – and the path for getting there.

FIVE. Shift from siloed thinking to a connected worldview. Everything is connected. Every decision and every action can affect positive and systemic change.

We can do it. One Mission, together shaping a better future!

KEY TAKEAWAYS AND ACTIONABLE INSIGHTS

To help mobilize the featured waste challenge solutions, the November 19th delegates and partners shared key takeaway ideas and actions for bringing them to life – in their organizations and stakeholder communities. Some of these insights are captured below. Consider using them in your business and projects too.

HIGHLIGHTS:

Common to all are circularity, systems thinking, innovation, scalability, measurability, acceleration, collaboration and workable solution strategies and practices for transforming waste into purpose and driving related goals for shaping a sustainable future for everyone.

COMMUICATE WHAT YOU STAND FOR: PURPOSE, VALUES AND WHY

- Leaders need to articulate the key why/purpose of a business and how this creates sustainable value that benefits the greater good.
- Connect the dots between profit, sustainability and purpose.

ACTION AND VALUE FOCUSED COMMUNICATIONS FROM LEADERS

- Engage and collaborate with all stakeholders, not just the shareholders, to influence positive change that matters.
- Ask different questions to get different results.
- Educate internal and external stakeholders on new sustainability and resiliency criteria that relate to their business and purpose.
- Showcase long-term savings and other ROI of investing in sustainable value creation.

"Find your voice, have courage as a company. Stand up on social issues."

"We need to empower people with the ability to make change and inspire them through an aligned vision and a community of purpose."

ADVOCATE FOR PUBLIC ACTION TO SUPPORT AND INVEST IN SUSTAINABLE VALUE CREATION

- Advocate for legislative intervention in waste.
- Encourage and lobby for government-enforced minimum codes and standards.
- Reach out to MPs and MPPs.
- Collaborate with municipalities to co-create workable and adaptable solutions to the waste challenge and related sustainability issues.

"We need to get beyond theory and old paradigm, siloed thinking. Government and business need to work together. That time is now!"

APPLY CIRCULARITY TO FOOD, CONSTRUCTION AND TECHNOLOGY TO DRIVE ZERO WASTE AND PURPOSE

- Design with end of life in mind and potential future uses.
- Embrace innovation, systems thinking and future readiness.
- Increase measurement and data collection of waste.
- Identify opportunities to reduce/reuse/recycle and repurpose waste in the value chain.
- Apply solutions to food waste within and beyond restaurants – e.g. in multi-use facilities and office towers, food courts and community centres.
- Use construction waste solutions for both new and existing buildings – e.g. commercial and residential renovations/retrofits.

"46% of landfill waste comes from the construction industry; carbon emissions as an invisible waste; waste of labour."

"If we thought about waste more, we would have a lot less of it." – Mike Van Massow

ATTRACT AND RETAIN NEXT GEN TALENT

- Identify and incorporate an actionable social and environmental purpose for the business.
- Recruit and invest in skills training new talent from local communities – e.g. Indigenous communities, youth at risk and others across the age spectrum – not just university grads.

"72% of millennials will not take a job unless the employer has a strong CSR position. Gen Zs believe companies have a moral obligation to solve social issues such as affordable housing, healthcare and diversity and taking action on the climate crisis." – Tim Coldwell

"It is also the right thing to do. People want to engage in a business that is thoughtful, engages staff, makes them feel good about where they work, builds customer and employee loyalty and purpose." – John Watts

MAKE IT TANGIBLE. MEASURABLE

- To support investment in waste and other sustainability challenges, business needs to identify the problem, and evaluate the solution and performance impact to demonstrate the social and financial return on investment.
- Let's get past theory. Identify what we **CAN DO NOW** in our organizations and communities.

MAKE A DIFFERENCE BY MAKING IT REAL – WITHIN AND BEYOND BUSINESS

- Step up to the invitation to be a positive change maker and influencer - regardless of age, rank, title or area of expertise.
- Be a mindful leader all the time, not just at work.
- Embed sustainability goals – including zero waste in food, technology, buildings, communities and talent – in the DNA of business and communities.
- Make it real by starting with small steps that build on what you know best.

" I like RSI's One Mission Invitation and agree that everyone can be a positive change maker. Whatever position you're in, you can actually take a personal leadership position. If everybody did that, even in one tiny step in their own personal lives with their friends, family, or in business, that would make a huge impact just by starting there." – Cynthia Benedek

"RSI focuses on connecting and activating senior leaders/decision-makers. While grass-roots organization work to mobilize citizens, RSI works with progressive business leaders to turn ideas into tangible action - as illustrated by the reflective delegate quotes." – Bill Ratcliffe

CLOSING STATEMENTS

As with all RSI thought-leadership reports, we welcome comments and inputs from leaders and influencers who believe in the vision of a more sustainable and resilient future and want to participate in shaping it.

The primary focus of this report is Rethinking and Reshaping the Future of Waste – in the context of food, energy, technology, construction and buildings – and, UN SDG 12 (sustainable consumption and production). However, the cited recommendations also apply to other SDGs – a goal that a circular economy seeks to achieve by unlocking the value of waste.

To accelerate actionable responses to the urgent call for workable solutions to key sustainability challenges facing our world, RSI connects and builds action partners from different sectors and places who want to actively participate in shaping a healthier, prosperous resilient future, starting today!

CONTINUING THE CONVERSATION – MOBILIZED BY ACTION.

Join the mission to promote, imagine and create a smarter, more sustainable future.

Be open to collaborating with other purpose driven action partners and experts to accelerate the discovery, use and advancement of workable sustainability and adaptation strategies and practices that work now and tomorrow.

SO HOW IS RSI POSITIONED TO SUPPORT AND PARTNER WITH LEADERS TO SHAPE A BETTER FUTURE?

As a trusted "think-do" knowledge exchange, advisor and connector for leaders and influencers, RSI provides a portfolio of standard and customized services shaped around ONE over-arching MISSION: to speed up the discovery and use of workable solutions to some of the most critical challenges impacting our world and our ability to thrive.

Public and Private Leadership Forums and Dinners

RSI customizes, promotes and facilitates leadership events, designed to support specific sustainability and ROI goals, and desired outcomes.

Thought Leadership Reports

Our qualified researchers, writers and subject matter experts produce themed reports that showcase solution strategies, case studies and practices that address specific sustainability and resiliency challenges and goals.

Keynote Talks and Facilitation

RSI has cultivated a diverse group of forward-thinking speakers and facilitators, recognized for their expertise, leadership and ability to energize and engage audiences in courageous conversations and action.

Advisory Services for Leaders

We offer professional advisory services for leaders, boards, teams and partners, partnerships who want to sharpen and optimize their core value in realization of defined sustainability, and future proofing goals.

Action Learning Workshops for Business and Communities

To accelerate real time, actionable learning (vs. theory), RSI customizes and facilitates educational workshops designed around actual purpose-driven projects for organizations, teams and stakeholder groups.

Results Focused Action Partner Groups

We convene and facilitate strategic and value aligned action partner groups. Each group is shaped around a common, results Focused solution discovery and optimization project(s) that all parties — organizations and subject matter experts — collaborate on to drive one grand sustainability and resiliency mission.

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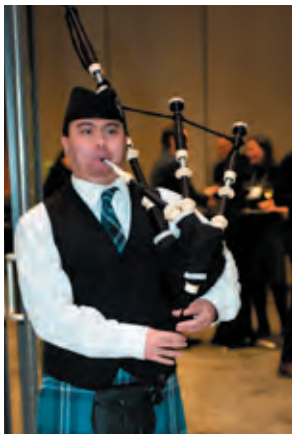

FOR MORE INFORMATION AND TO CONTINUE THE DISCUSSION

If you are interested in discussing this report, engaging RSI and our Partner experts to be a speaker or advisor and learning about other action partnership opportunities, send us a note at: **Communications@rethinksustainability.ca**

For more information about RSI: **www.rethinksustainability.ca**

Thank you.

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