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Waste

Public Dialogue Forum

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A research / practitioner partnership between Professor Ann Dale, Community Research Connections Program, Royal Roads University and Sustainability Solutions Group

Participants

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Rebecca Foon, Director, Sustainability Solutions Group

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Ann Dale

Tis a snowy day here in Ottawa, but it is our first snow of the season. Good to be able to talk on-line, and I look forward to our conversation today on the management of our waste, an often neglected topic, out of site, out of mind. We have changed our format a little based on what worked during our last conversation. The top of your window has the Live Chat space which is for the e-audience. The space immediately below is for the panel.

I would like to start by asking each of you to introduce yourselves and why you are interested in waste?

Chuck McKenna

Hello I am Chuck McKenna and I work for Nova Scotia Environment as a manager of the solid waste unit.

As manager of solid waste for the provincial government I am involved from a regulatory perspective and also looking at achieving overall disposal targets set by the provincial government.

Marika Smith

Good morning, my name is Marika Smith and I am the Director of the Compost Education Centre in Victoria. My interest in waste is ingrained in everything I do at the Centre, but specifically in understanding and reducing food waste, which accounts for roughly 40% of all waste destined for landfilling in Canada. Given this high percentage, this is a very relevant and tangible area to target in terms of waste reduction education.

Rebecca Foon

Thanks so much Ann, and thank you to all of you for joining us. My name is Rebecca Foon, and I am a director with Sustainability Solutions Group (I am based out of Montreal, also a snowy day here). I am really looking forward to our conversation - and learning more about the best practices and innovations you are all involved with.

Stephen Salter

I'm Stephen Salter, an industrial ecologist based in Victoria. I work with communities and industry to develop projects for recovering value from waste energy, water, and materials. To learn industrial ecology, I've toured installations for biomethane, wastewater treatment, stormwater, potable water, district energy and so on in Sweden, Brazil, India, Canada and the US. In my own work, I've found that the best ecological option is often the best economic and social option. I love the field, since closing the loop can turn "two bads" into "two goods".

Rob Newell

Hello. My name is Rob Newell. I am a researcher at Royal Roads working with Ann's Community Research Connections program (crcresearch.org). I have been involved in the Solutions Agenda research project since the first conversation, and it has produced some very interesting insights. I'm looking forward to our exploration on waste management today.

Brian Roberts

Good morning. Brian Roberts from the Cowichan Bio-Diesel Co-op here. We work with our partners at Greasecycle to recycle waste cooking oils from restaurants into clean, green biodiesel. I think of "waste" as a by-product we haven't found a use for yet.

Chuck McKenna

Brian - I think that is an excellent point. Either haven't found a use for or the economics just haven't worked. Extended producer responsibility helps in this regard and Nova Scotia hopes to move more product categories towards EPR.

Ann Dale

Welcome, Brian. Clearly, waste management is going to become more important, especially as our populations grow, and land becomes a limiting factor of production? What problems have you encountered getting your company up and running?

Brian Roberts

Hi Ann. Where do I start? Our challenges range from the high cost of infrastructure needed to build a community-scale biodiesel micro-brewing operation, reaching economies of scale for production (our B100 is more expensive than fossil diesel we aim to replace), investment in convenient distribution pumps to get the product to the people, crashes in oil prices making fossil petroleum even cheaper at the pump than our biofuel, public perception that biodiesel is not a "fill and go" solution and they need to "convert" their diesel engine to use it, and our Provincial Government's insistence that they charge a carbon tax on our carbon neutral bio-fuel. I could go on... but I will say that, despite all the challenges, we know we are making a difference and love what we do here!

Ann Dale

We have a most interesting panel of innovators from across the country and audience members. Let's go immediately to our first question.

What is 'waste' and how does our classification of waste impede action?

Stephen Salter

Waste is a human concept, and the word "waste" was originally used to describe land not used by humans. Wasted resources are those we're not yet including in closed, natural cycles. It's interesting that the word "Resource" means "to rise again". Changing technologies, commodity prices, cultural values, and so on all shift the definition of waste. I think we'd be better off talking about "wasted resources" than waste.

We don't waste what we value, and we don't value what we waste. In nature there are producers, consumers, and decomposers, and waste is an undesirable entity only from the

point of view of consumers since waste is food to a decomposer. We humans tend to act as consumers, but we need to think and plan our systems in terms all three.

Marika Smith

For so long in the developed world, waste has been viewed as anything we no longer want or that no longer serves a useful purpose to us. In general, this view has been fairly ego-centric and tends to not focus on the item itself and other social, economic or environmental impacts production or disposal may have. Easy, affordable disposal methods and services combined with an ever-increasing demand for convenience has severed any need for personal responsibility of the end of life of an item.

Chuck McKenna

Two things I guess, formal regulatory classification and perhaps more importantly how citizens think about waste. It is very important for people to think about the potential of waste.

Interesting theme of useful purpose was also mentioned by Marika. I agree. Of course that varies over time. Expanded Polystyrene is just now being picked up curbside in one region of Nova Scotia. It now has a useful purpose and the economics make enough sense.

Rob Newell

Picking up on a few points here. Marika's mention of usefulness in the ego-centric sense, and Stephen's mention of waste being consider something that is not of human value. It seems that 'waste' itself is heavily a social construct, and the 'value' can be to a certain degree something assigned and 'found' by people themselves. So, this makes this a sociological and cultural matter as well as that of industrial process. I suppose quite simply this is argument for the 'reusing' part of the three Rs, and moving away from throw-away culture.

Rebecca Foon

Totally agree, especially when considering that Canadians produce over 30 million tons of garbage a year and that there are over 10,000 landfill sites. It seems that innovative waste management also takes a shift in consciousness or philosophy - a deep acknowledgement and connection to biodiversity/ecosystems, the critical issues at play including climate change and our interconnection to all of it.

Stephen Salter

Rob, could it be that we tend to think of ourselves as separate from nature, above its rules? I sometimes think we have enough brain to design our built environment, but not quite enough humility to follow nature's simple laws.

Rob Newell

This is true, and digs into a more philosophical conversation about nature-human separation and whether this is a false dichotomy, which I'll resist delving too deeply into. Interesting point, and it ties into your earlier comment about biomimicry. The concept itself essentially speaks to this separation as it indicates that we are trying to emulate 'nature', i.e., emulate something that is 'not ourselves'. As we go forth with these sort of innovations, it might be useful to think about how we are framing them?

Ann Dale

And I wonder what values such as new is better and more modern contributes to how we create products, disposable? And Stephen, is there any way to mimic nature, as I believe there is virtually no waste in natural systems?

Stephen Salter

Industrial ecology is one attempt to mimic nature, by recognizing that every waste can be recovered, rise again. We're making progress there, but I think we have a long way to go before we're designing products to be taken apart and fully recovered.

Chuck McKenna

True waste may be considered a material with no true residual value or a material with no potential for use as a cheaper input to another process or as a waste derived product.

Ann Dale

Chuck, I was recently at the Trudeau Conference on climate change in Toronto, and some panelists talked about stranded assets, that is, assets that will have to be left in the ground as we move to decarbonize our economy. I wonder if there is a better term, should we rebrand 'waste' to something else? Whatever happened to waste not, want not?

Chuck McKenna

Ann - stranded assets are a real issue. Unless fully deprecated it is a challenge to make change. New investments or investments in the last few years make it more difficult for some to change.

Marika Smith

I think we also need to be cognizant when attempting to design a 'sustainable' product that could potentially do more harm than good; for example, the myriad of so-called compostable and biodegradable plastics that have saturated the market. Most materials do not break down efficiently in industrial composting facilities, and may contribute to soil contamination in the long run.

Stephen Salter

I agree Marika. Making plastics which just break down into particles won't help. I'm thinking more about the millions of cell phones and other electronic gadgets, built for speed, not for recovery.

Could a municipal landfill become a "stranded asset"?

Chuck McKenna

Stephen - yes I think for sure a municipal landfill could fall into this category. Landfill capacity is a topic of discussion here. Further reductions in tonnage could force a landfill into that situation.

Stephen Salter

On landfills, two municipal planners have told me they're concerned that increased solid waste diversion is reducing their ability to cover the debt servicing costs on their landfills. They therefore feel conflicted about solid waste diversion.

Chuck McKenna

The potential for a stranded asset e.g. a landfill can cause some people to oppose innovations that create more diversion. If not oppose then perhaps not move as quickly.

Stephen Salter

Western societies are largely based on "straight pipes" for energy, water, and materials where we take-use-toss. In contrast to nature's closed cycles, straight pipes create impacts upstream where "resources" are taken, and also downstream where waste is dumped. I think this broken cycle describes un-sustainable quite well.

Chuck McKenna

The solid waste management story is one about innovation, ingenuity, vision and progress. This is exciting and there is much to learn here that can be applied to other sectors of our economy.

Stephen Salter

I like your view Chuck, that it takes vision - imagination.

I also think that since energy, water, and materials are so interconnected, if we do something good in one area, other areas benefit. For example, when Brian provides biodiesel, he's also reducing the consumption of water which would otherwise have been used to produce fossil fuels.

Chuck McKenna

Waste management that focuses on the three Rs reduces our dependence on limited natural resources. Our limited natural resources is something that is often not front in center in our thinking.

Rob Newell

This comment and Stephen's recent comment on economic growth ties in strongly with the larger discourse around Limits to Growth, and indeed, in our Action Agenda on Rethinking Growth and Prosperity ([http://crcresearch.org/solutions-agenda ... prosperity](http://crcresearch.org/solutions-agenda...prosperity)), we featured waste management (and approaching zero waste) as an action item. Now, drawing in Marika's comment on value on reused materials, it actually seems that economic activity and production can prosper in a fully cradle-to-cradle system because the output fuels the production. In fact, some operations, such as reFUSE in Victoria, structure and operate there business solely around the reclamation of output, or thrown-away materials. So, obviously I'm oversimplifying and not including the macro-view, but it seems there is potential for a system of economic prosperity that isn't mutually exclusive to waste reduction, at least eventually.

Stephen Salter

The "carbon efficiency" of Sweden and Brazil is about five times higher than Canada's. In other words, Sweden and Brazil produce five times more economic turnover per tonne of carbon emitted than Canada. To Rob's point, it would be interesting to create a similar indicator for "resource efficiency", accounting for economic turnover per tonne of wasted resources, by country.

Marika Smith

Having a life-cycle waste reduction and management/resource recovery plan at the beginning of any new building project or considered in official community plans can definitely reduce environmental impact on landfills, drive economic value in the reduced production of new materials and the reuse and recycling of building materials, and hopefully ultimately cultivate sustainable, social behaviors in the community.

Stephen Salter

I like your point Marika, about co-benefits. A friend makes biodiesel here in Victoria, and he tells me it's changed his relationship with energy. He now literally has a "feel" for the weight of energy (biodiesel) it takes to move his car around.

Ann Dale

Seems we have to change a lot of values around what constitutes 'waste' and perhaps referring to landfills as a stranded asset is a good beginning, and we need to change the 'rules of the game'. A definition from one of our audience is "muda" a term utilized in Lean continuous improvement initiatives, thanks Vincent. In this strategy it is the creation of waste that causes financial implications to businesses, Let's move to our second question. Why is managing our waste so important to our sustainable development?

Stephen Salter

To Ann's question, maybe it's also about Growth vs. Development. Using a life as a metaphor, I think of growth as what happens to the end of adolescence when we stop growing physically more or less, and development as what happens after when we hopefully continue to evolve in other ways. We're still developing our capacity to close the loops.

Economists say economies rely on growth, which if based on straight pipes cannot be sustained. If on the other hand we derive value not only from the consumption part of the cycle but also from the "decomposer" part of the cycle (e.g. recycling, and upcycling to compost or biodiesel) then we can increase jobs and economic turnover without consuming more resources.

Ann Dale

Stephen, this is a point we have to keep emphasizing. I heard on CBC radio the other day that green jobs now outnumber jobs in the oil and gas sector, not by much, but by a few hundreds, believe it was on The Current. And we researchers have to do a lot more to reveal the co-benefits of doing one thing leads to other benefits, many of which cannot be anticipated. Something we should pick up in our climate change adaptation and mitigation project.

Another interesting link from the e-panel. Lean methodology "the 7 wastes" http://www.leaninnovations.ca/seven_types.html

Marika Smith

We have a popular saying here at the Compost Education Centre; "Table scraps are the fertilizer you've already paid for." It's an anonymous quote I came across in a soils textbook but I think it speaks to the strange dichotomy of how we think about waste such as food scraps; paying one hand to take them away, only to buy it back as soil amendment for our gardens. It's nice to put a real value on this type of resource and see a light bulb of new understanding go off in people when we say this simple quote.

Ann Dale

Marika, I love the quote, seems we have the makings of a brilliant communications strategy. I believe I came across a figure about how much food ends up wasted, do you recall it. And I just learned something the other day about the labelling, about the best before the date, and expiry dates? The latter means you must consume before that date and the former simply that is fresher to that date?

Chuck McKenna

Ann - it is amazing how people throw out food on the best before date. Tragic.

Marika Smith

Yes Ann, according to the Food Wastage Footprint-UN, approximately one-third of all the food produced globally is lost or wasted. In general a Canadian family of four wastes 172kg of food annually, equivalent to \$1,464 worth of food for a total of 29% or \$27 billion worth of food

wasted annually. That's higher than the combined GDP of the 32 poorest countries in the world (World Bank 2009) If we consider all the additional resources to grow, harvest, package, ship and prepare that food, the numbers are staggering. Rather than depress me, these statistics really inspire me that real action can be achievable with education. I recommend the fantastic Vancouver-based documentary 'Just Eat It: A food Waste Story, free to view on the Knowledge Network: <https://www.knowledge.ca/program/just-eat-it>

Rob Newell

The Communications students that worked on our video complement to this dialogue (<http://youtu.be/5NC5lwx9-X8>) found the figure of approximately 40% of Canadian food items end up as landfill waste. Obviously, this is a round number and broad estimate; however, it does illustrate the magnitude. In light of this powerful quote Marika has provided, it does make it seem strange that this number could reach this level. Food, in particular, should be 'low hanging fruit' (forgive the pun) in terms of cycling outputs to inputs, as opposed to other materials that bind elements more strongly such as plastic. "Table scraps are the fertilizer you've already paid for" is a very succinct way of saying that these are useful materials and the overhead has already be paid.

Chuck McKenna

Working on the regulatory side of solid waste management over the last couple of years has been inspiring. So many people working to achieve a goal or vision and seeing progress towards that goal. Progress and green jobs. I hope this can inspire other sectors.

Stephen Salter

The Province of BC completed a study (I think in 2014) showing that economic turnover increases with greater solid waste diversion: more recycling = more jobs.

Ann Dale

Stephen, we will definitely try and locate that reference and put it up on our website for our 'listeners'.

Stephen Salter

Ann, the study is called "Zero Waste Business Case" (May, 2013).

Chuck, I've been reading about the progress your region has been making. Do you see the roots of this progress in culture? Do you think the public in your area is interested in reducing the footprint of waste?

Ann Dale

Stephen, a reply from a member of our audience," Stephen - I think everyone is interested - it is maybe more a question of why isn't the behavior happening. Here's a link helping us into the shoes of non-recyclers [http://www.earth911.com/home-garden/why ... t-recycle/](http://www.earth911.com/home-garden/why...t-recycle/)"

Chuck McKenna

Stephen - I don't think so initially although some 20 years later now I'd agree that it is becoming cultural. So not in the beginning. Not sure what to attribute to the start and the staying power. Some strong political decisions at key times. Other strong sector leaders. Perhaps the fact that one of the earlier decisions created a fund that was used well for diversion, innovation, education.

Stephen Salter

Chuck, it sounds like you now have a kind of cultural momentum, which is terrific.

Chuck McKenna

Stephen - to answer your second question. Yes we just completed a public consultation on new solid waste regulation amendments and received good support for taking our diversion regulations to the next level. So yes I'd say there is public support.

Stephen Salter

Chuck, that's terrific. What does the next level look like in your area?

Ann Dale

Vincent answered our question about the volume of waste. Food Waste Quick Facts: Re:Ann Dale - <http://www.unep.org/wed/2013/quickfacts/> "30% of food is wasted in the US". Such a maldistribution of resources.

Ann Dale

Thanks everyone for bearing with us for this new real-time e-Dialogue platform. We are still working out a few issues and we appreciate your commitment. Our next question. What innovative waste management strategies do you know of--and why are they innovative? I

believe and again I can't remember the country, perhaps Norway, has just announced they are moving to a virtually zero waste national strategy, if only, if only Canada would move this way, introduce legislation of such a policy to be implemented by the year 2020. Sure, people would scream but just think of the innovation that would occur in a short period of time, with all the co-benefits that would occur--greater protection of water resources, reduction of GHG emissions, no more embedded transportation costs to landfills and so on.

Stephen Salter

Speaking of zero waste, the managers of the Mountain Equipment Co-op stores in Victoria and Vancouver tell me they now divert 97% and 98% of their solid waste away from disposal and into recycling. If they can do it, why can't everyone?

Chuck McKenna

Stephen - we are working really closely with municipalities in Nova Scotia to look at more extended producer responsibility to create a broader and more fair playing field. e.g. more product categories contributing. Printed Paper and Packaging is one area seriously under review. We are also considering more landfill bans. Trying to ensure the solid waste system stays sustainable and that we achieve a legislated goal of 300 kg/person as soon as possible (legislated date is 2015 but we won't push this to the detriment of the overall system's economic viability)

Stephen Salter

Chuck, that's terrific, congratulations.

Stephen Salter

To Ann's question, in Curitiba, I've interviewed individual catadores who recover recyclables for sale to the city. The economic benefits are shared by thousands of cooperative recyclers, and Curitiba has reached 70% diversion in this way. The streets of the favelas are too narrow for conventional collection methods, so citizens bring their garbage to grocery stores, where the city "buys" it in exchange for school supplies, transit tokens, or food vouchers - whatever the family needs most.

Marika Smith

In terms of targeting the typically 30% pre-consumer food waste (food produced that never makes it to supermarket shelves for various reasons (mostly aesthetic), The Inglorious Fruits and Vegetable Campaign in France is extremely clever and successful: <http://itm.marcelww.com/inglorious/> To fight against food waste and change the

mindset about 'imperfect' produce being somehow less desirable, Intermarché, the 3rd largest supermarket chain in France, decided to sell (30% cheaper) the non-calibrated and imperfect fruits and vegetables and called the campaign "the inglorious fruits and vegetables". Most days, they are sold out before closing.

Chuck McKenna

A few employed here (not sure how innovative) but will list anyway

Legislated disposal goals e.g. 300 kg/person by 2015

Landfill bans

Clear bags

Diversion credits (money) via the Resource Recovery Fund Board to municipalities

Data call (good information on disposal, recycling tonnages and costs)

Municipal Regional structure and Regional Chairs Committee

Stephen Salter

Chuck, this is very impressive! You mentioned the Resource Recovery Fund: are the initiatives to increase diversion more or less self-funding?

Chuck McKenna

Stephen - Not sure what you mean by self-funding.

<http://putwasteinitsplace.ca/>

Stephen Salter

Chuck, I wonder if there is a net increase cost to citizens as diversion increases, or if the cost of the initiatives is offset by revenues from recycling, reduced costs of conventional disposal, and so on?

Chuck McKenna

Stephen, of course this depends on your accounting system. If total cost accounting probably lower cost. But if looking at the short term and narrow view then more cost. But more and more people are seeing the overall benefits and green jobs. Getting consumers to pay helps.

Stephen Salter

In Kristianstad, Sweden, food waste and agricultural waste are digested to produce compost and biomethane. The compost is returned to farmers fields, and the bio-methane is used to run transit buses, municipal trucks, and citizen's vehicles. It's sound ecologically, and the savings + revenues create non-tax revenues for the municipality.

Stephen Salter

In Oakland, the East Bay Municipal Utility District diverts community organic waste (kitchen scraps etc.) to the anaerobic digesters in its wastewater treatment plant. The resulting biomethane now produces more enough electricity to power the plant, with excess electricity sold to the utility.

Rebecca Foon

And to add on to this, San Francisco has a Zero Waste mission and is the first large U.S. city to initiate a large-scale curbside collection. As part of this Zero Waste mission, you can check out how hauler uses collection trucks to communicate the value of source separated organics and recyclables.

[http://www.biocycle.net/2009/03/24/food ... he-street/](http://www.biocycle.net/2009/03/24/food...he-street/)
<http://www.sfenvironment.org/zero-waste>

Chuck McKenna

A few innovative initiatives:

- wallboard to compost
- wallboard to animal bedding
- asphalt shingles to alternative fuel or pavement
- glass/porcelain/ceramic to gravel
- carpet recycling
- expanded polystyrene - densified for export
- textiles - higher capture rate, shredding
- glued wood as a bulking agent in composting

Stephen Salter

On a much smaller scale, in India single families will own small anaerobic digesters (less than one cubic meter) to produce biogas for 2-3 hours of cooking per day. Families there have told me it's not just saving the cost of propane, but the avoided hassle of queuing up for rationed propane vouchers, hauling the propane cylinders around, and so on.

Stani Veselinovic

Education and convenience are key to as successful recycling program. On Hornby Island there is no curbside collection so the only place where you can get rid of your trash legally is our depot. You will get charged \$\$\$ for anything that is not recycled, composted or not reusable (we have a Free Store) and stuff you deem as GARBAGE. So everyone tries very hard not to have to pay too much and they recycle extremely well. We are a not-for profit organization and are funded by our local taxes. We have huge public "BUY IN" that supports this tax based recycling program.

Ann Dale

Stani, as you know, Islands have a very distinct culture, and you have a strong place-based incentive not to waste. Do you think this is scalable to larger communities?

Stani Veselinovic

Ann, I would like to think so. But we have to convince users to do the right thing. Hornby has been recycling since 1978 because the Regional District closed the landfill and Hornby had to come up with a solution for their garbage. So they started to recycle. It was the right thing to do but not necessarily the most cost effective. Now everyone on Hornby is so used to the idea of recycling that it has become a habit. If it is too easy to trash your recyclables then they will be trashed.

Stephen Salter

Stani, that's a very clever system, and it sounds like the default is to recycle. Can you estimate what proportion of materials people bring to your depot is recycled, and what proportion is deemed "garbage"?

Stani Veselinovic

Our thoughts on Hornby Island on Waste to Energy are quite simple. For WTE plant to operate it needs HUGE amounts of waste. Exactly what we are trying to reduce. A WTE solution means an increase in waste production and a decrease in recycling as the WTE plants need

recyclables to convert into energy. From Hornby's standpoint recyclables are too valuable of a commodity to convert into energy. It requires more natural resources to be harvested from the earth. Hornby Island believes we should conserve these resources and Reduce-Reuse-Recycle and most of all Rethink.

On the point of sustainability Hornby Island strongly supports the viewpoint to subsidize recycling efforts. Hornby understands the greater good that comes from doing so. It would be nice if recycling would pay for itself, but it doesn't. So Hornby Islanders support subsidizing the recycling efforts of the recycling program. They think it's a good way to spend taxes.

Rob Newell

This is a brilliant system, Stani, as it moves towards the financial strategies that shift expenses to the 'bads' or negative behaviours. A common theme when people are thinking about how to design strategies and policies to encourage sustainable development. For sometime, I have felt that the 'taxing' has been on the good behaviours, meaning that people have had to spend money to recycle items beyond the standard cans, bottles, etc. I find this is changing (at least in Victoria) because I know of places where I can drop off things like soft plastics and car batteries without charge; however, it would be nice to have that one step further where I would get charged for NOT recycling these items.

Stephen Salter

We've talked quite a bit about solid waste, so here's a waste energy example. Industrial waste heat is bought by Göteborg Energi for use in the district energy system. The company sells heating as a service, at a fixed price. In this arrangement, the energy utility has an interest in keeping clients buildings warm, while leaving as much energy in their pipes to sign up the next building. As a result, the utility will take responsibility for insulating clients' buildings. The interests of profit and ecology are aligned, which is not the case when energy is sold as a commodity.

Marika Smith

At our Centre we also promote the use of a green cone food waste aerobic digester (called the Solar Cone in the US), as backyard-scale food waste diversion tool. If residents are able to handle their food waste residual on-site, this is a great compliment to a conventional composter as it takes cooked food, dairy and meat scraps as well as fruit and veggie scraps (no carbon material) and converts it to a liquid leachate through thermal convection. There are several curbside food waste pick up programs in our region, however research has revealed often high levels of sodium and plastic residuals in finished compost from commercial facilities, which makes it harder to sell. That's not to say that these programs are not successful or necessary, because in large cities they are often the best course of action for diversion; just highlighting the economic and ecological benefit of promoting on-site

composting when possible and to empower community members with choices that connect them to their waste.

Rob Newell

I'm picking up on the comment here "empower community members with choices that connect them to their waste". It made me think of a fairly small-scale operation that I initiated when living in Kimberley, BC (small town in the East Kootenays). I was coordinating a community education program aim at reduce human-bear conflicts (Bear Aware), and one of the issues I came across was compost as a bear attractant. Being omnivores, outdoor compost can be appealing to bears, which in turn can lead to high rates of in-town bear activity and habituation. Of course, I didn't want to discourage composting, so I started what I began to refer to as a 'worm coop', where I would set up an indoor worm composting operation and cultivate and provide 'starting worms' to those interested in this form of composting. Those that received worms would be given the chance to build up there worm population and then be put on the list as potential 'donors' for others looking for starter worms. It ended up being a kind of fun and social composting strategy that increased indoor composting (good for the bears). Obviously, a very small-scale project that was operated small community, but it did have a local effect, if just a minor one.

Ann Dale

So many ideas on the table, and perhaps Stani can reply to them? I think another link we have to emphasize in our materials is that waste to energy is eminently sustainable. Chuck has given us a list of ways to increase our take-up of waste management, or is it waste production? We also know about full cost accounting, closed loop systems, industrial ecology parks, life-cycle, how can we push these strategies forward on a larger scale?

Stephen Salter

To add a water example, I think the Living Machine/Solar Aquatics installations like the one in Errington, BC make clever use of natural processes & solar energy to treat wastewater. Best of all maybe is that this kind of system makes part of the closed loop visible, as opposed to conventional systems which take waste "away". In Victoria, the Dockside Green development uses highly treated wastewater to replace potable water for irrigation, toilet flushing, and so on.

Some Additional Information

Ann Dale

@ vincent schutt

Dale Harley appears to be the manager of the Orgaworld organization and has this perspective about the financial imbalance in waste management. <http://www.orgaworld.nl/en/>

Stephen Salter

A bit of philosophy, with apologies for clumsy metaphors.

In our culture, I think we live too much in our heads, and too far from our hearts, souls, and even the soles of our feet. The more time we spend in virtual 2D space facing screens, the weaker our authentic connections with others, and the less grounded in dirt we become. The word "heal" has the same root as "whole", and I think we need to first heal the Cartesian mind/spirit split within ourselves, so that we can strengthen our empathy and connection with our global neighbours, and reconnect with nature. I think Scandinavian cultures have maintained this connection better than many, for example with the law called allemansrätten which gives every person the right to of access to all land, including privately owned farmland.

Ann Dale

Stephen, you raise a critical point about reconnection and reconciliation of the inside/outside, and the importance of the personal imperative. I didn't know that heal had the same root as whole, thank you.

Chuck McKenna

I come at it from the regulatory side so I see value in legislation and regulation. Extended Producer Responsibility for example.

Setting a strong goal and vision helps. People will work towards it.

Education, engagement, social marketing.

Focus on efficiency.

Compliance so everyone participates.

Ann Dale

Changing the rules of the game. Our climate research in BC has confirmed the importance of multiple levers and tools, but the most important of which was strong provincial legislation. www.mc-e.ca

Marika Smith

There is definitely a need for policy change and regulatory modernization in multiple sectors. i.e Re-think expiration dates etc. of food and aesthetic demands from supermarkets. Reduce or eliminate packaging: a great example of this is an 'unpacked' German grocery store without packaging. [https://socialimpactfinance.startnext.d ... unverpackt](https://socialimpactfinance.startnext.d...unverpackt)

Chuck McKenna

Marika - Nice to hear about the no packaging store. Think I saw a television news piece on this. I don't have a link but one of my co-workers talked about a certain grocery store that only sold product beyond their best before date. Don't quote me on that though. Just going by recollection.

Stephen Salter

Marika, it's interesting that compost from urban food is high in sodium, perhaps showing that our waste is a reflection of ourselves. We have a similar issue with wastewater and its high content of pharmaceuticals.

Marika Smith

Absolutely true. I was at a conference recently where local farmers were under pressure to accept finished compost from facilities but they were concerned about the feedstock origin of the material, especially if they were trying to farm organically. This tells me that while in theory, composting and recycling the organic residual into our soils seems the best ecological decision, we do need to consider the source, literally.

Chuck McKenna

To push strategies forward on a larger scale it would certainly help if economic analysis would try to account for all the benefits over the long term. Tough one I know but there are people that specialize in such studies. GPI Atlantic for example.

I think our planning and design work is also dis-integrated across the organizational silos of solid waste, liquid waste, land use, energy use, climate change, transportation, sustainability, and so on. Ann, do you think integration across the silos is beginning to take hold in our education system?

[illegible]

We are nearing the end of our conversation. I would like to thank each of you for your time, expertise, and practice you brought to our conversation, and our e-audience, much appreciated. We will be publishing our conversation in about a week, which will only be changed for typographical errors and flow, so your voice is directly recorded. As well, Chris

Strashok will be contacting you to discuss your experience with the new platform. A last word from our audience member, Vincent.

I'd like to reiterate the concept of behavioral change. We have considerable capacity already. That capacity goes so unused. Using that capacity is critical to growing it further. Cialdini critical here <http://www.mindtools.com/pages/article/newlmd/1195.html>

Stephen Salter

Thank you for arranging this conversation, Ann. It's been a pleasure exchanging ideas with all of you.

Stani Veselinovic

Thank you for the invitation.

Very much enjoyed the conversation.

Wishing you great success.

Chuck McKenna

By all. Great chatting and learning.

Rebecca Foon

Thank you so much everyone for participating in this wonderful dialogue, it has been such a pleasure. As Ann mentioned, we will be publishing the conversation shortly. Thank you again.

Marika Smith

Thank you Ann and everyone for including me. That was extremely inspiring and informative!
