

METRO VANCOUVER FUTURE OF THE REGION SUSTAINABILITY DIALOGUES

DEMATERIALIZATION: TRANSITIONING TO AN ECONOMY WITHOUT WASTE March 28, 2012, NORTH SHORE

The Future of the Region Sustainability Dialogues are a series of discussions intended to assist decision makers shape the future of the region by inviting a range of views that challenge conventional wisdom and stimulate fresh thought on regional issues. The sessions explore topics such as housing, industry, labour and immigration, drugs and crime, the regional economy, transportation, energy and agriculture. The “issues summary notes,” below, provide an overview of unique points raised in the March 28, 2012, dialogue on dematerialization. Summary notes from each regional dialogue and related board reports are available on the Metro Vancouver website www.metrovancouver.org.

Issues Summary Notes

ABOUT THE TOPIC:

DEMATERIALIZATION: TRANSITIONING TO AN ECONOMY WITHOUT WASTE

- We are here to explore the topic of dematerialization, what it means and what we can do to facilitate a change in this area.
 - What does materialization actually mean?
 - Why is it important that we’re having this conversation?
- [At] the Metro Vancouver 2011 Sustainability Congress, we explored five key sustainability themes including dematerialization.
 - What is dematerialization?
 - What does it mean for me as a consumer, as a business owner, as a local community representative, or as a decision maker?
 - What can governments do? What can the private sector and academia do?
 - What can we do together?
- The purpose of this dialogue is to continue the conversation. Economic growth brings challenges as we attempt to reconcile the consumption of materials with the finite limits and resources extracted from earth.
- Today we will explore how we can maximize the efficient use of resources in our economic processes, better manage materials through their life cycle [and] transition to an economy without waste.

THE DIALOGUE

1.0 Context

1.1 Defining dematerialization

- When we look at dematerialization, we’re actually looking at how materials flow through our economy, and currently we look at that in a very linear way.



- We want to move to an economy without waste, and we really want to see more circular flow, so we're letting materials move around and around as long as thermodynamically possible.
- [Dematerialization refers] to reducing the amount of materials required to produce one output of goods earth services. It's reducing the amount of materials for each good and service, so in that sense it's about efficiency.
 - [These materials include] construction minerals, ores and industrial minerals or metals, fossil fuels and biomass, which includes food, feed, water, air, soil and ecosystems.
 - Like all species, we extract these materials and modify them through human activity to create value. That's our economy.

1.2 Opportunities to increase dematerialization

- Dematerialization is an acupuncture point [that will] open the door to solving multiple problems—not just material use, [but] social community [and] climate change—and also lead us to rethink our economic model and our quality and ways of life.
 - We need to redesign our products with less toxic stuff [and] repurpose more durable products.
 - [Institutions and individuals should purchase more sustainably.] We [can] car share. The waste of one industry becomes the resources for another, such as [the] eco-industrial networking [that] was proposed for the Maplewood industrial park.
 - We also want to shift our macroeconomic model to align it with sustainability values.
- [We need] to reduce the material inputs into producing or consuming the sort of things that we do every day.
 - This could [mean] making more stuff that we buy more efficient in the production process, making the transportation of that stuff more efficient, making the packaging of that stuff more efficient, or building stuff that can be broken up and recycled more efficiently.
 - We want to be able to use more public transit, use more materials that stay with us longer [and] don't go into the waste stream, and reuse and reduce.

1.3 Rates of material extraction

- We live on a planet that has a finite amount of resources. We extract 60 billion metric tonnes a year of materials, and those rates of extraction are increasing as we get more population and increasing affluence.
 - In the 20th century, we increased our material extraction by a factor of eight, and for construction materials that was 34 times for ores and industrial minerals, 27 times in just the 20th century.
 - Many resources are reaching their productive limits, as we see in evidence in things like climate change [and] the lower grades of ore that we're mining right now.

1.4 Material extraction results in problems such as climate change and inequitable distribution

- This is about the scale and the scope of human activity and its global negative environmental impacts.
 - Climate change is one example. We have others like peak phosphorus.
 - Global trade of these materials means we're more disconnected from the feedback on the state of the environment and the environmental burdens we might be having on far distant places.

- And then there's the social connection. What are the livelihoods like of people producing the materials that we use, and how equitably are we distributing these materials?

2.0 The effects of efficiency

2.1 Opportunities for efficiency

- Dematerialization is the wise use of natural resources through increased resource productivity, and opportunities for efficiency lie all across the value chain or the life cycle of every product.
 - We can find efficiencies through extraction, production, manufacturing, distribution, consumption, or in the final disposal or recycling reuse of materials.
- Over the past 10 years, resource productivity has improved 2.2% per year, largely because of efficiency gains like technology improvements, more recycling and more reuse.

2.2 The market does not tell us how much consumption is appropriate

- Efficiency has increased over time, but relative to what we believe is the right amount of material use, we still consume too much.
- The market fails in not providing the right signals for us to consume the right amount.
 - The market often doesn't price in all the bad things involved in our production, consumption, transportation, etc.

2.3 Efficiency presents problems unless the savings are invested properly

- Efficiency is tricky because it can lead to overall increases in material and energy use.
 - Say you buy an energy-efficient appliance or a hybrid car. [If] you decide to take that extra vacation on an airplane somewhere else, you've basically offset the energy savings that you made.
 - This is called the rebound effect or the Jevons paradox. As coal efficiencies rose, they were met by an increase in demand, so overall coal use increased.
 - The rebound is not always bad. In India, [there's a] 50% rebound in terms of energy efficiency, but it leads to families spending less money on energy and more in raising their quality of life through purchasing to meet basic needs that were not previously met.
- Efficiency as a goal is not always the answer.
 - Professions like health care and education demand care, patience and longevity, which is not always part of the efficiency calculations.
 - When we get those savings, we [need to] allocate them into investments [in] a sustainability transition and assets like natural capital, community, education, health care and low carbon technologies. That's when we actually start getting efficiency gains that make a difference.

2.4 Sufficiency must also be made a concern

- Efficiency is only the first part of it. In [our] high-consuming, high-material-energy-throughput lifestyles, industries and societies, we need to move beyond asking, "Can we do more with less?" and ask questions about how much is enough.
 - [We need to move] from talking about efficiency to [discussing] sufficiency and what our economy is for—for wellbeing—what our quality of life is for, and how we achieve these in order to meet a sustainable future.

2.5 Savings from increased efficiency must be applied to accelerating sustainability

- How do we actually allocate the savings from increased efficiency into accelerating the process of sustainable transition?
- It links to internalizing externalities when we look at pricing—can we internalize ecological and social costs when we’re looking at producing goods and services?
 - It also links to the shifting economic prosperity model. Investment is linked to that, because we need to expand what we think of as the base of our economic prosperity.

3.0 Accounting for externalities in pricing

3.1 The market needs to account for the cost of pollution damages

- [Purchasing] a three-cent plastic bag from the grocery store involves the [extraction and refining] of crude oil, [which is where] most of the toxic pollutants come from.
 - It involves a really high-temperature chemical process, the second-most polluting in terms of toxic materials [and] production processes.
 - We often don’t pay for the toxic and non-toxic pollution that comes out of it, which has obvious immediate [effects on our] health, ecology [and] planet.
 - We also don’t pay for the waste that I create after I buy that bag, which is non-biodegradable, so any sort of damage that comes out of it is usually not paid for because the property rights on these damages are not well-defined.
- [Pollutant damages not priced into the market are called “externalities.”]
 - [Economists] recommend [somehow getting the right price signals into the market] right through the production-transportation-consumption process, even though the market is not generating [them].

3.2 Establishing a tax on pollution

- We’d like a tax—not [on] production, but [on] pollution.
 - We measure the pollution that comes out from production, transportation and putting stuff in the waste and actually make everyone who produced and transported this pay for that pollution.
 - If we do that right, everything will cost more, we’ll consume less and the material used will be more efficient because we’re re-pricing it.
 - The rebound effect is minimized when you actually price it right.
- It’s all about getting the prices right. If we can start pricing everything right, it might move towards dematerialization in the right way.

3.3 Computer prices do not reflect the full costs of production

- How much should you have really paid for a particular computer?
 - I should have paid at least twice as much as I did. I am afraid it may actually be more than twice as much, because there’s just so much in our production processes that is not accounted for.

3.4 Changing labels to reflect externalities can modify buying behaviour

- [Our government provides a disservice in not demanding] proper labelling. If we could create a program to inform consumers so that the externalities were on the label, then we could start to change some of the buying behaviour.

3.5 Recycling fees and deposits should capture externalities

- The recycle fees and [deposits are] part of that pricing you're talking about, where [pricing is moved] up to [include] the externalities, [for example,] on the packaging.
 - What's the next logical step toward capturing some of those externalities?

3.6 The price of petroleum products should be increased to their true economic cost

- I've spent the last 35 years trying to sell as many petroleum products as I possibly can. Obviously change is afoot.
 - Petroleum products are underpriced and they should be dramatically increased to where the true economic cost of finding and producing and using the products is.

3.7 Industries are not paying the right prices for materials

- What efforts have been directed at industry, and who is providing the necessary amount of materials that create ongoing capacity?
 - Industry doesn't pay the right price. It functions under the same market prices that we function under.
 - There's no reason for industry to reduce packaging [or] reduce the use of materials unless industry has to pay for it.

3.8 Incorrect prices are causing a lack of demand for recycling capacity

- We don't have a demand for [recycling] capacity because the prices aren't right.
 - If you create the right prices [for materials], people will want the capacity to recycle.
 - That requires a concerted effort by several levels of government. Things can be done, but obviously jurisdiction over taxes [and] regulations matters.
- Often when we talk about zero waste, we actually are looking at the end of the disposal, at the end of the pipe.
 - We need to go right up to the front and price, so that when we're designing packaging production, we're actually reducing packaging at that level.

4.0 Government regulation and policy related to pricing

4.1 International co-operation as an alternative to pricing

- Is there something other than pricing to [decrease use of materials]? Is there a model of co-operation that can achieve the result without pricing?
- That fails because we'd [often] rather let someone else do something than do it ourselves.
 - If I were the United States, I'd rather have Europe do what it can to reduce carbon emissions, but not do it myself because I have to pay a price for it. I'd rather let someone else pay for it.
 - It may be misguided to hope co-operation will help us get us there.
- Co-operation may help governments do this in a way that is least painful to its citizens, but I don't see a way out of making people function in this economic model through prices.

4.2 Governments should compensate the poor for high energy pricing

- Pricing has real effects, especially on the poor. Getting energy pricing up high has bigger effects on the poor than on the rich, and that is a big problem.
 - When governments do this pricing, [they should] compensate the poor [during] the transition towards cleaner inputs.

- With the right pricing, in the long run, things will cost less. Heating will cost less eventually, because people will try to generate heat through processes that don't use the high-priced bad inputs.

4.3 Pricing mechanisms can be made socially equitable

- There are ways of developing socially equitable pricing mechanisms.
 - We can do a tax shift, so that taxing or pricing pollutants or other “bads” is used for “goods” such as employment.
 - If [taxation makes it] more expensive to purchase gasoline, you can reduce income taxes, which allows people to offset [increased gasoline] costs.

4.4 For certain objectives, regulation works better than pricing

- Governments do taxation and regulation. Can regulation contribute something?
- Definitely. Pricing is incredibly powerful, and there's still a lot of room for regulation.
 - In certain cases we want to maintain a certain limit on toxicity levels, and we set fines and even prison sentences for exceeding those toxicity levels. It's a good idea to regulate these things.
- There is room for regulation, and there's also a lot of room for full-cost pricing.

4.5 Regulation and pricing are the same thing

- Regulation and pricing, in the economics mindset, [are] the same thing. Regulating a maximum toxic release generates an implicit price.
 - I'm not saying we just need pricing; I'm all for regulation as well, and I'm all for regulation for things that say when you design your new phone, it should be designed in a way that you can take it back and recycle it. Put the burden on the manufacturer, because eventually I'll pay for that and that's fine.
 - If I want to spend \$3,000 or \$5,000 on buying a new computer, I should be able to pay \$7,000 instead.
 - The people to protect want to go back to the people who need energy for basic needs, and somehow governments need to step in to be doing that right.

4.6 The public demands green solutions but isn't prepared to pay for them

- From a business point of view, the general public is somehow split. It pays lip service to sustainability issues, but resists putting a price on them.
 - [There was a] protest with regard to TransLink trying to price the use of the roads in order to pay for shared transit.
 - In the building industry, we find people are happy to admire green technology in our buildings, but they go right across the street and buy [a unit] that doesn't incorporate the green technology if it costs 5% less.
- How do you address the dichotomy between what people say they want to do and what they're actually prepared to pay for?
- It goes back to our political system. We eventually don't want to pay more for what we buy. We want our politicians to do something. Some of us want our politicians to do something that most of us don't want.
 - We need to get people's support behind doing what is considered the right model for our economic development in the future. There's going to be short-term pain. This is a long, complex solution that I hope most of us will end up supporting.

5.0 The role of Port Metro Vancouver

5.1 Port Metro Vancouver functions as part of an economy that relies on material consumption

- Port Metro Vancouver is all about moving material goods and resources that go into those goods.
 - When people look at a typical day in the port, [they] see ships loading raw materials such as chemicals, coal, crude oil and lumber and [unloading] finished goods such as automobiles, television sets, generators and cellular phones.
 - When they hear about the port in the business media, it's often about the port acquiring more industrial land or constructing more infrastructure to help the port grow.
 - This all clearly indicates that the port is solidly [rooted] in an economy that is all about using raw materials and material goods. It's about an economy that needs to continually grow by consuming materials.
- The port's mandate is to operate the port in the best interest of Canadians, and [we wouldn't] be serving this mandate if we ignored the sustainability question.

5.2 The Port 2050 planning process

- Port Metro Vancouver recently entered into a long-term planning process which we call Port 2050.
 - We opted for a scenario-building process, which allows us to have an ongoing strategic conversation about the emerging future.
 - The intent was to allow us to make better decisions about our future today while remaining open to big shifts in the business environment such as a transition to an economy without waste.
- Global prosperity will remain in place for a while. Port 2050 calls this the “rising tide scenario.”
 - Increasing volatility driven by resource conflicts and climate instability will drive a shift in that global prosperity [toward an] alternative prosperity model, which Port 2050 has deemed the “great transition scenario.”
- The Port Metro Vancouver website has a bit of information about [Port 2050].

5.3 Port Metro Vancouver's environmental impact

- I highly [commend Port Metro Vancouver] for taking the initiative for this Port 2050 scenario-building concept. I visualize the port as one giant churning machine that moves equipment and goods through our Lower Mainland area.
 - [It's not only] human Canadians you're operating the port for. In the churning process, to build all the port facilities, you've destroyed a lot of wetlands and [forestry] areas. But there is hope because, now, when new facilities are being built, such as the convention centre, habitat is being restored.
 - [Through the Port 2050 planning process, could] port revenues go into restoration and regeneration, both above ground as well as below water?
- We've believed that we're part of a larger environment for quite a long time.
 - Port Metro Vancouver is the first port in Canada [to have] a dedicated environmental services department. Everything that's done in the port gets an environmental assessment.
 - With Port 2050, the focus was not on environmental issues per se, but they were part of the overall mosaic being considered.

5.4 Port Metro Vancouver is extending its capacity to suit the changing global economy

- The port's challenge in discharging our mandate of operating the port in the best interest of Canadians is to continue to grow the capacity of the port in a flexible, adaptive manner regardless of what drives global prosperity.
 - We will have to continue to focus on business as usual in developing the capacity to address the economy as it is, but we need to be prepared for a shift away from traditional economic growth to [another model]—and we're not sure what will be.
 - We've created a strategic initiative to address the issue. We're developing a number of tools that will help us monitor developments in this regard, and participating in these dialogues is one of those tools.

5.5 Reduction, reuse and recycling will not make the port unnecessary

- Loading and unloading raw materials and finished products is likely to continue for a while, regardless of what drives economic prosperity. But the nature of the materials that we are transporting and unloading might change.
 - The mantra of “reduce, reuse, recycle” will continue to apply, but reduction of use can only achieve limited success, even if the population stops growing. We can never completely stop consuming.
 - Similarly, reuse [is limited]—most things wear out eventually. There are many things that we use that can't be reused or recycled indefinitely, and the recycling process consumes energy.
- No matter how efficient we get at recycling and reusing and reducing, it's still ultimately not sustainable because it's never a completely closed cycle.
 - There's always loss somewhere along the way that has to be replaced, and it's not sustainable. That's what the port is concerned about and what we looked at in 2050. Something has to shift, because it just can't keep going this way.
 - No matter how efficient we get at recycling things, we still need to consume natural resources and we're still degrading our natural environment to some extent.

5.6 The port will adapt to industry reliance on raw materials derived from recycled goods

- The drive to reduce reliance on inexpensive natural raw materials will continue for a long time, [but] Canada is in the [business of] selling raw materials.
 - There will always be a need for a port to ship those to the market and to receive finished goods in return, but we can't ignore other developments such as increasing development of eco-industrial networks such as Maplewood.
 - Increasing reliance by industry on raw materials derived from recycled goods is in the cards—possibly even goods or materials that are recycled or mined from landfills.
 - The port needs to be ready to adapt to shipping those kinds of materials, and we need to be aware of when those shifts start to develop.

5.7 Dolphins have returned to the port due to its use of alternative piling materials

- Dolphins have come back and the reason is quite simple. The pilings that were used in Squamish contained materials that prevented the herring from depositing their eggs.
 - Now that that has been remedied, the herring are back and the dolphins are back. It's a very simple mechanism, and I hope the port is focused on that.
- Yes, the port does seek opportunities to create those kinds of improvements.

- We still do permit creosoted pilings to be used in our port, in Burrard Inlet at least, but we encourage alternatives such as concrete and steel pilings.

6.0 Wellbeing as an economic goal

6.1 Establishing a new economic prosperity model based on human wellbeing

- [The economy] is for human wellbeing, ultimately.
 - We flow materials through our economy in order to improve human wellbeing, and historically we've used economic or financial assets as the main way of assessing whether or not we're doing well.
- The new economic prosperity model [asks] us to expand our understanding of what assets we're measuring and what we're investing in.
 - Natural assets [such as] natural capital [and] ecological assets and social assets such as community cohesion and trust [are] core to human wellbeing.
- When we think about getting dividends from particular extractive practices or from any part of the value chain, in this new economic prosperity model, [we're going to be] investing back into things that build economic, natural and social assets.
 - That would mean reinvesting in regenerative ecosystems, basically investing into community assets such as public space, educational programs [and] health care.
 - Those are a baseline for human wellbeing. That's what I mean when I speak about reinvesting back into our community. It's not just on economic and financial assets.

6.2 Valuing materials more will help dematerialization and increase wellbeing

- Dematerialization is about materials, so we can change the materials we have, replace the kinds of materials, change the weight or toxicity of those materials [and] share them much more.
 - People say we need to become less materialistic, but we actually need to become more materialist because we really need to value those materials and keep them in our system much longer and have those longer lines.
 - It's beyond materials. How do we meet wellbeing by expanding the values, by looking at citizenship, by focusing on not just [materials], but natural and social aspects of our wellbeing?

7.0 The importance of social capital to sustainability

7.1 Enacting regulations to accelerate social sustainability

- When we talk about capital, there is increasing recognition of social capital, and there is even a move afoot to measure social capital as part of corporate reporting. This is starting in Europe, and there's a little bit picking up even in Canada.
- How can we expect elected or appointed leaders to do what we don't want them to do? How can we get a larger part of citizen-led accelerated sustainability in our democracy rather than citizen-decelerated progress?
- How many people in the community share our attitudes? Many of us [are] decelerating the very process that we're trying to advocate.
- [My question is] towards more material-efficient wellbeing and to integrate the citizen-led parts of our society that are very fragmented and very hard to pull together. Is it possible to actuate social regulation?
- When we do something that everybody knows is not actually that great, we lose our social esteem.

7.2 Materials are being overemphasized with regard to wellbeing

- This dematerialization conversation is about materials, but it's also about the non-material aspects of wellbeing.
 - We've been overemphasizing how materials actually improve our wellbeing and underemphasizing other aspects of what improves wellbeing.

7.3 Wellbeing is a result of helping others, achieving equity and trust

- Bhutan just started measuring natural and social capital. The United Kingdom [has been] measuring wellbeing in addition to gross domestic product at a political level.
 - John Helliwell says we have way underused what we now know about what makes people happy—wellbeing.
 - Human beings become incredibly happy when they have served something bigger than [themselves]. When they are helping others, there is an incredible sense of personal wellbeing that comes from that.
 - People are happier when they know things have been equitably distributed, even if they don't necessarily get the most amount. So we get wellbeing from equity.
 - We are a fundamentally social species, and we should find ways of leading that support us working in community and in social practices, which traditionally have been underemphasized.
- That's where we need to go in terms of moving towards wellbeing, and that's part of what you're describing in terms of the movement from individual consumer as the focus of individuals to citizen, which is where we start embedding ourselves back into a broader social network.
- The other way people get wellbeing is a feeling of trust.
 - If they know someone's going to return their wallet if it's lost, a sense of connectedness to community—these are all aspects that we can draw on as we start to move forward in dematerializing, emphasizing more the kinds of nonmaterial wellbeing while also having material wellbeing be done in a much wiser way.

7.4 Happiness cannot be measured through measuring GDP

- We've measured things like growth, efficiency and prosperity, and yet there's another way.
 - People [in other countries] are talking about the happiness factor, and we're talking here about wellbeing and sufficiency. [If] we want to move towards using less [and] having a better quality of life, how can we do it, and how can we expect leaders to do what we actually don't want them to do?
- Are we measuring the right things? Growth, prosperity, GDP—are these the right measures, or are we seeing subtle changes or radical changes on how we measure things?
- Economists have said, "We need to measure GDP, because all we did was measure consumption and production, and that was it." The economic model is based theoretically on utility, which is happiness.
 - It's not based on consumption, but because we believed until then that markets functioned right, measuring consumption was equivalent to measuring utility.
 - People in the 1970s started realizing that measuring consumption was actually not measuring utility because markets don't function right. So we're not measuring happiness.

- A lot of economists believe if we want to measure happiness, which is the ultimate setup of the economic model, we're not doing it right by measuring just GDP. We need to start measuring other things.

7.5 Measuring happiness requires measuring investments in natural capital and education

- If you just measure standard investments, that's not good enough. You need to measure investment in natural capital [and] human capital like education.
 - Those expansions are happening. We're not there to happiness yet, but we're somewhere in the middle.

8.0 Making electronic devices sustainable

8.1 Electronics should be designed to last longer in order to lessen consumption

- Cellular phones and computers have been adding to consumption by a change of material every 18 months—a huge quantity of product torn away everywhere in the world.
- We should be designing for longer use, for things to be repaired and for things to be upgraded. Is there something we can do there?
- Europe did an assessment of individual footprints, and electronic waste came up as the top consumption product. If they shift that, they could make a big difference in individual consumption. How do we actually shift this?
 - Electronic cycles have started to mimic some of the fashion cycles, and each of them are getting faster and faster, shorter cycles.
 - Part of the issue is the pace at which we're making these adjustments. Can we think about longer cycles in terms of the upgrading?
 - There is a bit of a trade-off. When I want to find out if the fish I'm purchasing is sustainable, I can scan a code and find out how it's been produced. Certain aspects of those electronics are assisting us in a sustainable future; however, they're built to fall apart after a certain amount of time.
 - Cords from the old model don't fit the new model. Cell phones are glued closed so they can't be repaired, not even a battery or backlight. We have to really get into repurposing and building them to be taken apart, like Nokia has done with their cell phones.
 - We should be able to open up that computer and replace the chip or even replace part of the outside so we can start keeping the novelty aspect going without replacing the entire manufacturing.
- The focus on consumption being bad is incorrect. It's that we're not doing it intelligently. Why not build cell phones that are easily upgradable to the latest features rather than having to replace the whole phone?

8.2 Recycling of electronics is leading to heavy-metal exposure in China

- Our recycling of electronics has environmental burdens on other places such as China, but also on the people who are supposedly recycling them now, which includes a lot of heavy-metal exposure.

8.3 Leasing of electronic equipment would stimulate redesign

- We don't need to own this stuff. We could lease it and return it back to factories, which would stimulate a lot of this redesign.

8.4 Waiting an extra product cycle for electronics will cut consumption

- We've talked about product cycles. Every year and a half, there's a new feature in your cell phone or your television or your computer that you just have to have.
 - Maybe you don't really have to have it. Maybe you just wait just one extra cycle, three years rather than a year and a half. You cut your consumption of that particular product in half by doing that.
- [There's also] the features when you buy something. I look at a camera, but if I buy another camera that has more additional features, maybe those features consume resources and maybe I don't really need those features.
 - Really examine your purchasing habits and make some intelligent decisions about what you really do need rather than what you like.

8.5 The burden of redesign should be placed on the manufacturer through regulation

- I'm not saying we just need pricing; I'm all for regulation as well, and I'm all for regulation for things that say when you design your new phone, it should be designed in a way that you can take it back and recycle it. Put the burden on the manufacturer, because eventually I'll pay for that and that's fine.

8.6 The enforcement of regulations on technology design depends on the regulating body

- Richard Lipsey pointed out that regulation has its limitations. He was pointing to things like the cycle helmet law, [which is] not particularly well enforced.
 - How do we enforce regulation in terms of your [cell phone] and how you use it? Is it possible, or are there new challenges that will come out?
- If the U.S. tomorrow says every cell phone being sold in this country has to be designed in a way that is environmentally sustainable, the world market will change. So it depends on the body that's regulating.
 - Even for pricing, eventually to get firms to pay for the toxic waste they produce, someone has to be enforcing it.
 - The enforcement issue is going to be with us for anything that we try and do in terms of regulating the environment, because around the environment, property rights issues are weak.

8.7 Statistics on the industrial waste from electronics

- The industrial waste of electronics is a big problem, and it's probably one of the biggest issues with the smart meters that hasn't really been talked about.
 - We're putting 1.4 million computers outside across this province, and that takes a lot more resources than the old meters if you think about the amount of earth that had to be dug out to create that box.

8.8 We are producing useless garbage that necessitates more space and bigger resources

- Half of the stuff we buy is useless crap we don't need. It doesn't work and yet it fills the environment. Europe has incinerators and they burn the stuff. Of course, we understand what does that do to the atmosphere, and it causes problems.
 - We are trapped. All of this started after the Second World War. We started making stuff, building stuff. We became more educated. We got scientists, we got pseudoscientists building, making stuff.

- We have to understand where we’re coming from and go back and restart the thinking, because right now I don’t see how we can carry on this way.
- Our populations are growing. The port wants more space to move all this stuff. They’re building these great big container things, building bigger ships. It’s going on. It’s getting bigger and bigger, more than we can cope with.
- We’ve got more staff at Metro Vancouver trying to deal with this. Our taxes are going up because of this. It’s an endless thing.

9.0 Extended producer responsibility

9.1 There is a disconnect between the responsibilities of individual consumers and industry in managing climate change

- [Despite] the efforts I put in to bring down climate effects, I had to then take the packaging itself and dispose of [it]. We have been looking and dealing with capacity for years and we’ve done nothing about it.
- Who’s going to govern the law? Who’s going to set the law? If it isn’t the province, is it the federal government? Where is the industry today to take some of the heat? They’re the ones that are producing an incredible amount.

9.2 The B.C. government’s extended producer responsibility policies force manufacturers to deal with their packaging waste

- [The B.C. government’s] extended producer responsibility policies—instead of municipal governments being in charge of dealing with that packaging, the industry and businesses are responsible for taking back the packaging material.
 - Extended producer responsibility is a take-back program where you basically take whatever product or packaging back to the manufacturer and then they have to deal with the waste, so that cost of disposal is in their hands.
 - The B.C. government and B.C. generally is one of the leaders globally on extended producer responsibility. We already do it for things like tires and small appliances, and packaging is happening next year.
 - These industries are going to be taking back this packaging, and if done properly—and there’s issues with that, with EPR—we can actually trigger some of the redesign that we were just talking about.

9.3 Sending packaging back to the manufacturer

- I just bought a new screen for my computer. That came from China, so does that mean we’re going to pack up the cardboard and the Styro that came with it and send it back to China?
 - When it gets back to China, are they going to then say, “Oh, this cardboard came from Canadian forest products in British Columbia”? They’re going to ship it back to British Columbia and the Styro’s going to go back to the oil sands in Alberta.
- [That’s] one of the biggest problems with extended producer responsibility at this point. Reid Lifset [said], “I have a dream that when the packaging goes back to the manufacturer that it triggers a redesign.”
 - When they start having to handle the packaging themselves, then they’ve used the new fees that they’ve collected to redesign the product. Either you shift from Styrofoam to biodegradable materials, or you make adjustments in terms of how you package it.
 - Some companies are now using up-cycled plastic containers to move groceries around San Francisco, and that has replaced tons of cardboard that used to be used to move groceries.

9.4 Companies should direct deposit fees into redesign instead of unconnected association financing

- The different computer companies set up a separate industry that dealt with returned electronics.
 - The deposit fees would go back partly to the government that was managing the deposits, but also partly to these industry associations. But they weren't connected to the business, so the budgets were separate and it wasn't triggering redesign.
 - Done properly, extended producer responsibility deposits would go back into the budget for the design, and the materials would come back to the companies themselves.
- Interface Carpets receives the carpet directly back in, and their budgets for design and disposal are overlapping.

10.0 Take-back programs

10.1 Sending packaging back to the manufacturer

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- [That's] one of the biggest problems with extended producer responsibility at this point. Reid Lifset [said], "I have a dream that when the packaging goes back to the manufacturer that it triggers a redesign."
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 - Some companies are now using up-cycled plastic containers to move groceries around San Francisco, and that has replaced tons of cardboard that used to be used to move groceries.

10.2 Many recycling fees and deposits are currently going into general revenue rather than redesign investments

- Everybody gets charged this recycle fee now on a lot of things. Who gets it? Do they just go back to the provincial government, or does the retailer keep them?
- I went to take some liquor bottles back to the liquor store and they said, "Well, you've taken the labels off these. We may not have sold those to you in the first place. We're not going to give you your money back." They're supposed to be keeping us clean and they're not doing their job.
- What you're getting at is so critical, and at the moment a lot of these deposits are going into general revenue and it's not getting that kickback on investment in changing the products.

10.3 Recycling fees and deposits should capture externalities

- The recycle fees and [deposits are] part of that pricing you're talking about, where [pricing is moved] up to the externalities. These are the ones—I think it was low-hanging fruit, to be fair—on the packaging.

- Where's the next step that we'd logically go to try and capture some of those externalities?

10.4 Take-back programs should initiate the producer to make changes

- We import a lot of our stuff to do the pricing at the consumer level. If we can actually have this flow back from the consumer to the producer and then somehow have the producer change something, that is the next level.
 - If we have a take-back requirement, it requires a producer. If it's a retailer, the retailer would say, "I'll interface back with the producer about how they're producing stuff, because my costs are going up and that's reducing people buying stuff from me." We can start moving back that chain automatically.

10.5 Up-cycling should act as a trigger to redesign products

- When you've got a plastic material that you're recycling, you can have it go into a park bench or a buffer around a parking garage, but we're trying to actually create new products like [grocery boxes] that have a little bit more purpose within the economy.
 - That was going to trigger redesign, but instead industries created separate associations that handled the take-back.

10.6 Companies should direct deposit fees into redesign instead of unconnected association financing

- The different computer companies set up a separate industry that dealt with returned electronics.
 - The deposit fees would go back partly to the government that was managing the deposits, but also partly to these industry associations. But they weren't connected to the business, so the budgets were separate and it wasn't triggering redesign.
 - Done properly, extended producer responsibility deposits would go back into the budget for the design, and the materials would come back to the companies themselves.
- Interface Carpets receives the carpet directly back in, and their budgets for design and disposal are overlapping.

10.7 Bowen Island's deposit program

- On Bowen Island, we have a very sophisticated source separation of recycling materials, and we make a lot of money off returnable bottles and beverage containers.
 - There's a principle there—that deposit you make at the store comes back to you if you want it. Here we're making deposits on stereos [and] other kind of products, and that money's going somewhere else.
 - Is that the wrong principle? Isn't it maybe that the person who paid the deposit should get the money back when they take the piece of equipment back to the store?
- [It's] been recognized that if you give the money back when you bring it back, you encourage people to bring it back.
 - In bigger cities where people look through garbage and pick it out, you may not need that, and that is usually more efficient because people generally find it not worthwhile all the time to go back to get five cents or 10 cents.
 - The fact that you give money back encourages someone to go out and get it, which is great. That's something that is recognized across the world and I hope is implemented more efficiently.

11.0 Packaging

11.1 Products should be better packaged in order to eliminate the need for return

- One of the things we have to remember is that [packing is] protecting screens, and if done poorly, we end up actually wasting a lot more resources because they show up broken.
 - As we move forward in developing better packaging, we need to think about how to make sure we still protect the product.
- The resources used to produce that product are way larger than any packaging, so we need to keep focusing on creating good alternatives to Styrofoam. But [we] also [need to keep] our eye on the prize, which is that larger screen, and how we create longer cycles so we can use that screen longer.

11.2 Packaging should be viewed as a resource

- One of the issues is that we see packaging as a waste. It's something that you throw away after you've unpacked your new TV set.
 - If we were to start thinking of it as a resource and made sure that that packaging was useful for something else after we've finished protecting that television set, that might create a shift as well.

12.0 Proper labelling

12.1 Labelling requires government-enforced third-party certification

- [Our government provides a disservice in not demanding] proper labelling. If we could create a program to inform consumers so that the externalities were on the label, then we could start to change some of the buying behaviour.
- [We often] look at all of the labels that are out there and think, "My gosh, there are so many labels," and it just seems like a very complex array.
 - There are a lot of different labels coming out, and they have different value in terms of how much they've been checked by a third party or whether they've been produced by the business itself as a way of discussing what they've put in or the environmental qualities of their product.
 - There's going to be a lot of room for labelling, but we need to move towards third-party certification on that labelling.

12.2 Stores should take the initiative to label sustainable choices for individuals

- Rather than having to look at all of the labels [in a store] and assess, entire stores [should] already be doing that kind of choice editing for us, so that we know it's been checked beforehand.
 - There's a cost to all of us [in] trying to figure out what's going on in this labelling sphere and the monitoring of that. It needs to move up to the kind of choice infrastructure [that shifts] the things that are available to us and [ensures] they are sustainable choices in and of themselves.
 - In California, you cannot buy pyjamas that haven't been treated with fire retardant. That isn't a choice that people are making at the individual household level.
 - We [need to shift] away from just looking at individual choices to shifting the context within which we make those choices.

13.0 Acting locally to promote dematerialization

13.1 Jurisdiction over municipal services affords opportunities for dematerialization

- I'm really into the concept of thinking globally and acting locally.
- We have jurisdiction over our police, fire, water delivery, wastewater, public transportation, parks and recreation services, engineering and planning.
 - How can we dematerialize these areas? Can I have a list of five or six practical ideas for what we can do?

13.2 Metro Vancouver can purchase collaboratively to shift supply chains

- About 30% of a country's GDP is purchasing. Within your public sector, you have a real power particularly, because within municipalities, you're purchasing certain things on a regular basis—office supplies, fleets, office furniture, park signage.
 - You're doing this on a regular basis, which means you can start shifting supply chains. And there are tons of benefits to that.
 - Metro Vancouver [can also do this] as a whole, which means you can collaboratively purchase things.
 - [This] reduces costs like legal fees [and] contracting, but also means you can test things like LED lights in one municipality, decide amongst a choice, and then together purchase in bulk, which really shifts the balance.

13.3 Green costs and purchaser relationships are barriers to sustainable purchasing

- Many councils will buy based on price. Are there regulations in your council and others in the purchasing procurement side that will prevent you buying something that might be positive for your dematerialization strategy?
- [There are] barriers to sustainable purchasing. There's a network of municipal purchasers, which also includes Metro Vancouver's purchaser, and they're talking a lot about green and sustainable purchasing.
 - Say you want to buy a second-hand machine on an equivalent of Craigslist. There are some safety and risk regulations that can prevent that. We need to look [at those to make] the shift.
 - Other ones are tricky. [If a municipality] often buys from Staples, the list of their most typical 10 products to purchase often has an additional 15% discount, because they always buy that.
 - [If] you wanted to replace paper that's non-recycled by recycled paper, [it's] probably going to be a little more expensive, but it's even more expensive because of this 15% reduction.
 - If you can shift what's on that list, it actually makes a big difference.
- The other [barrier] is relationships.
 - You might have been purchasing from the same person for years and you have a trust relationship. Those shift suppliers can be a social issue as well.
 - There's a lot of low-hanging fruit in the purchasing sphere, especially if you do it collaboratively, and especially because you're regular purchasers. You can shift them. [It's a value chain.]

13.4 Local recovery of materials

- Whenever you're creating something like park signage, or building a building with a municipality, you can look at which materials you're using and how you might create some of these closed-loop waste cycles by linking up with others.
 - If the Maplewood industrial park goes forward and the District of North Vancouver is part of that, there could be ways in which you're actually extorting those circular flows. So that's materials recovery.

13.5 Creating local space for repurposing and entrepreneurship

- You were saying we're doing a lot on waste recycling, and we are. We need space, industrial land, to start collecting and redistributing some of these repurposed materials.
 - Municipalities could actually use these waste-transfer stations as depots for picking up and depositing.
 - The port is taking the lead on some of this. In Strathcona and the Business Improvement Association, where they've created one of these green zones, waste-recycling systems, the port donated two containers, because that waste is [often] produced by one producer.
 - The timing is off for somebody else to receive it, so those containers that they donated are the holding banks before they move on to the next user.
- We can be a lot more creative [on] how we're using waste transfer stations and other municipal spaces for creating entrepreneurship around the repurposing economy.

13.6 Implementing bylaws that promote sustainability-friendly infrastructure

- We can support the infrastructure and culture of sharing. How do we use municipal powers to support things like car sharing, tool libraries [and] those kinds of things that allow people to have access to things rather than owning them?
 - You've got bylaws. You can say that every single house that's constructed or multi-family dwelling needs to have a space for a Zipcar, and then you can actually reduce the parking amounts.
 - You can use those kinds of regulations to start shifting that kind of work, and maybe use that for creating more business space or other opportunities.

13.7 Using culture to stimulate local dialogue about the opportunities in deconstruction and repurposing materials

- We can have more of these kinds of dialogues around shifting the culture of consumerism [and start] to shift the entrepreneurship culture to [look] at some of the opportunities that exist in deconstruction, in repurposing materials, but also moving beyond materials to start thinking about wellbeing.
 - Municipalities can play a role in creating festivals and dialogues and theatre plays and the arts that actually support that shift in culture.

14.0 The importance of citizen-government communication and action

14.1 Citizen collectiveness and talking to businesses will facilitate change at the government level

- We need to create those community spaces in which we're having this conversation to start building citizenship muscle to make the larger changes happen.
- [We need to encourage] businesses we think are on the right path by having conversations with business owners that we like what they're doing, giving them the feedback so they continue their innovative models.

- Getting citizens behind is what we need, but we [also] need larger governments to get involved. Smaller governments do something.
 - The producer, because it's serving a larger market, takes what happens in a small place as tertiary.
 - Once you have a larger government taking on this requirement of regulation, then things happens more effectively.

14.2 Communities need to educate themselves and tell the government what they want

- People generally want to do the right thing. They need to know what the right thing is, but they are rapidly becoming educated with respect to the issues we've been talking about.
- Insofar as governments make regulations that help address those issues, and insofar as they reflect what they think we want, we need to make sure that they know what we want.

14.3 Both senior governments and communities should impose legislation and regulations that support dematerialization

- We need bigger government to [enact] legislation to make our big producers and big players in the market recognize what needs to be done in order to make us dematerialize.
- I don't want to discount what we as a small community can do. It's very important that we keep doing what we think is right. If we want to impose regulation at a small level, we should still do it.
 - Eventually the hope is that more of us will do it. Local governments talk to each other a lot, and maybe there will be some feedback effect just like the California effect.

15.0 Metro Vancouver's role in encouraging regional sustainability

15.1 Metro Vancouver should establish a common building code

- Metro Vancouver can work for a common building code for all new buildings, for material that is taken away from buildings [and] broken down, and the material that goes into a new building about how sustainable or how energy efficient the new building is.

15.2 Encouraging density and increasing the price of gas will encourage the use of public transit

- Metro Vancouver could work on joint metro regional planning. [You] encourage the use of public transit by encouraging density.
 - You can't just build public transit and expect people to come. You have to plan your cities and your developments accordingly. There will be development, and I think we need to be doing more of that.
- I love the model of the TransLink-led gas increases. I think that's a great idea and I think we should be doing more of it.
 - Whether TransLink's using that money right, to me, [is] secondary. I think the price signal that comes from those gas tax increases is more important.

15.3 Regional government should curb locally generated waste through monetary penalties

- Regional government could think more about locally generated wastes, simple things which people talk a lot about—coffee cups, food packaging for takeaway containers, etc.
 - Maybe there can be something done to make sure people pay for [what] they generate. It may not be in your jurisdiction to do something that comes from abroad, but at least what is in your jurisdiction could be implemented.

16.0 Bowen Island

16.1 Bowen Island's deposit program

- On Bowen Island, we have a very sophisticated source separation of recycling materials, and we make a lot of money off returnable bottles and beverage containers.
 - There's a principle there—that deposit you make at the store comes back to you if you want it. Here we're making deposits on stereos [and] other kind of products, and that money's going somewhere else.
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 - The fact that you give money back encourages someone to go out and get it, which is great. That's something that I think is recognized across the world and I hope is implemented more efficiently.

17.0 Consumer responsibility

17.1 There is a disconnect between the responsibilities of individual consumers and industry in managing climate change

- [Despite] the efforts I put in to bring down climate effects, I had to then take the packaging itself and dispose of [it]. We have been looking and dealing with capacity for years and we've done nothing about it.
- Who's going to govern the law? Who's going to set the law? If it isn't the province, is it the federal government? Where is the industry today to take some of the heat? They're the ones that are producing an incredible amount.

17.2 Individual efforts to recycle diffuse pressure on producers and governments

- A large portion of [Bowen Island] recycles very well. [They] are relieved to some extent of the guilt and obligation to think about what they do on the upstream buying.
 - Are we in our recycling processes diffusing the pressure that should come from the public to force producers, and in government making the regulations that will force them, to change?
- One Earth hosted [a conference] here of people working in North America on sustainable consumption. One of the biggest debates we had [was on when] individual actions end up becoming a cul-de-sac.

- People just think, “Oh, I’ve done my bit, now I don’t have to do anything.” And when are they an entry point into much larger citizen engagement, and what is the difference between those two things?
- The solution does not lie only in the individual level, and often when we talk about dematerialization, we start focusing in on the household—the shopping bags, the lights—which all play an amazing role cumulatively.
- They need to be part of an enabling structure which comes from government, business changes [and] economy changes. We need to keep the pressure up on those larger enabling structures.
- We found it doesn’t turn into a cul-de-sac when it’s part of a community conversation around change.
- If you embed people within a group of people who are talking about those larger systems changes, individual actions start as an entry point. It’s the place where people start moving forward.
- If they’re on their own, isolated, people often only do it and then let it go.
- There’s evidence from behaviour research right now [about getting] someone to put a sticker in their window that says, “I support ending child poverty.”
 - When you come to their door a week later, they’ve self-identified with ending child poverty.
 - When asked for a donation of \$50 to the campaign of ending child poverty, 80% were likely to do it.

18.0 The need to modify value systems

18.1 A change in societal values around consumption requires widespread education

- Other people have spoken about [how] we’re driven by a need or a want. I don’t think it’s a need. I want to have the latest device, the latest electronic device, the latest clothing, whatever.
 - How do we change societal values? If we had different values, I think we would have different behaviour.
- Where can we find a solution to accommodate this economic consumption, which is created by advertisement, and the education that should be brought to the children to realize that consumption is not going to lead anywhere?
- We need to encourage a better understanding of the world, and then people form their own values. So then if I come back to saying, “Okay, education....” And obviously it’s more complex.
 - Just the word “education” is not enough—it’s the kind of education you get.
 - If we can focus on delivering education to as many people as possible and having a curriculum that encourages a better understanding of the world, I think the value will develop from there.
 - We are social beings, we are co-operative, but we are also selfish, so some of those values will come from having the right prices.

18.2 We must develop other-than-self values of community

- The way we’ve structured our economy and our perception of wellbeing has been overemphasizing values of novelty and individual competition [while outing] external status-oriented aspects of our values.

- What’s needed is not to shift the pendulum all the way over to looking at tradition and conservation and other-than-self or community-building values, but it’s about expanding the circle.
- We still hold on to things like novelty and individual rights and those kinds of aspects of ourselves, but we need to expand the value circle and our economy and the way we think of wellbeing to include other-than-self values and include more conservative [values].
- [We have to build our asset base], which has not been the focus of our economy or the wellbeing.

18.3 Business cases must be embedded within ideas of community in order to extend value systems

- A report by the World Wildlife Fund UK called *Common Cause* cites the work of Tim Kasser, who looks at value cycles.
 - They say that if we make social change happen by focusing on economic values—so we say, “Drive a hybrid car because it’ll be better for your pocketbook”—we’re actually reinforcing the existing value system.
 - We still make the business case, but we embed the business case and the economic arguments within a broader argument about connecting more to place [and] community, building our asset base—not just private but also public, not just short term but also long term.
 - We take every opportunity in building business cases and making arguments around why we need the transition to actually expand our conversation about the types of values we have, because otherwise I think we’re just reinforcing our existing value system.

19.0 Legislation to support dematerialization and reduce pollution

19.1 Both governments and communities should impose legislation and regulations that support dematerialization

- We need bigger government to [enact] legislation to make our big producers and big players in the market recognize what needs to be done in order to make us dematerialize.
- I don’t want to discount what we as a small community can do. It’s very important that we keep doing what we think is right. If we want to impose regulation at a small level, we should still do it.
 - Eventually the hope is that more of us will do it. Local governments talk to each other a lot, and maybe there will be some feedback effect just like the California effect.

19.2 Governments should mandate clean-up by the polluters regardless of who can pay for it

- It comes to the point [of] who can pay it, who can do it. Why don’t we just do it as a society?
 - Earth belongs to everyone, so that means all of us can extract material through the economy [or] through our governments.
 - Why can’t we have the government or us doing it and say, “The pollution you do, you have to clean it up”?

19.3 Like California, the Greater Vancouver Regional District can lead the way with legislation

- California decided it wanted to reduce the emission standards from cars. It reduced it, or it stated that it would expect those cars to be reduced, by a certain amount, which was quite dramatic.
 - The automotive industry threw up their hands and protested, California didn't relent, and now we have California [leading] the way. The automotive industry managed to create the technology to meet the legislation and the rest of the world has benefitted from that.
 - West Vancouver or the GVRD can lead the way by legislation. People who want to build in West Vancouver and are thinking of demolishing a house will have to think very carefully, because the legislation is in place to make that a big inconvenience.
 - At the moment we're throwing away about 260,000 tons of mostly wood waste a year in the Metro Vancouver area. There's legislation in place to reduce that to zero by the year 2015.
- Have you got examples where legislation has led the way and has led to improvements because industry and people had to conform?
- There are several examples where once you legislate it to follow a certain pattern, or follow a certain way to do business, it does make an impact. The California example obviously is the one I've studied most.

19.4 Legislation will regulate the amount of sulphur being burned in Port Metro Vancouver

- The fuels that are burned by oceangoing vessels [are] heavy bunker fuels. They're what's left in the bottom of the bunker in a refinery after all of the other lighter fractions have been evaporated off.
 - It contains all the contaminants and garbage that was in that crude oil that was first put through the refining process [and] is relatively inexpensive.
 - Ships burn that internationally when they're going from one port to another, and it's dirty, but because they're in international waters, no one country has been able to deal with that.
 - The International Maritime Organization is addressing ship emissions, and we now have an emissions control area for North America that comes into effect on August 1st of this year [that will regulate] the amount of sulphur that is permitted to be burned in those ships when they're within a 200-mile limit of the coast.
 - Sulphur is one of the big ones. Those big yellow sulphur piles you see in the port—that comes out of the crude oil that comes out of Alberta. Leaving it in bunkers is a way of getting rid of it, but it's not being permitted anymore.

19.5 Other examples of effective legislation centre on diesel particulate, plastic bags, incandescent bulbs and seatbelts

- You've got diesel particulate legislation happening here, which is making shifts in terms of how we are managing diesel in the region
- At the household level, legislation around plastic bags in many cities actually really made the difference, or incandescent bulbs in Australia.
- We can look back in history. The seatbelt legislation really made a big difference in terms of shifting behaviour.

19.6 We should lobby America and Europe to get behind our legislation

- The counsellor here [stated] they wanted to think global and act local. The best thing to do here is [lobby] like T. Boone Pickens [did] with the Natural Gas Act and the packaging acts.
 - Nothing's going to really happen unless you get the Americans and Europeans on side. We're one-tenth of 1% of the world's population here.
 - It's not going to do too much, so the best thing we'd be doing is just to make sure there's good lobbying interests from here.

20.0 Deconstruction and wood waste

20.1 Recycling materials taken from deconstructed buildings

- We've been talking about recycling the deconstruction of buildings. Last year I asked [about progress on where we can] put all this material, and I'm told we haven't got any place to put all this recycled material of buildings. Has there been any progress on that in the last year?
- That's a good question, but it's a question to pose to Metro. What we have today is a panel who are both qualified and interested in talking on dematerialization, so you'll have to pick up the phone to ask Metro that question today.

20.2 Homeowners have saved \$65,000 through house retention over demolition

- I was very interested in the phrase "challenge traditional thinking and stimulate actions" because this feeds into [our] campaign to encourage owners of properties not to demolish their house but to retain it.
 - The first gut feeling and the reactions we got from architects representing their clients was, "My client can't afford to do that. That's all very nice."
 - We did some investigation and found that people had saved approximately \$65,000 simply by not destroying and demolishing the house and starting all over again with the services and site clearance and all the rest of the expenses. We've now started a campaign to point this out.

21.0 The construction industry

21.1 The construction industry should become more regenerative

- 50% of the materials that go through the Lower Mainland go through the construction industry.
 - From being a fairly linear industry, the current thinking is that we should be regenerative.
 - We should think in cyclical terms, and our buildings should not take more out of the environment than they put back in, or actually should restore what they've destroyed.

22.0 Transport vehicles

22.1 The need for an inland port to cut down on emissions

- I noticed the amount of energy [the Port of Vancouver] put into tying in with the new freeways coming out from Delta out into Surrey and how they tied in the airport with all the trucks. There's a few thousand trucks a day going through there.
- Unless it's absolutely a local delivery, why wouldn't there be any inland port of some sort to move the items away from here, given that one of the biggest things that we're trying to do is carbon?

- We have a truck-licensing system that controls the quality of emissions that come out of those trucks. They stipulate the age, the nature and the cleanliness of the engines. Those are all part of the licensing system.

22.2 Railways transport non-local deliveries

- Commercials on CNN say CSX railway moves one ton a thousand miles for one gallon of gas.
- [Regarding] the number of containers that are being moved by truck, most of the ones you see on the Lower Mainland are for local delivery.
 - [The railways move the ones that aren't.] They make a decision independently of the port to utilize their capacity in a different way.
 - Almost all of the containers that are coming through the port that are destined for elsewhere go by rail.

22.3 Alternatives to using trucks to move containers

- We also have looked at short-sea shipping and moving containers by barge on the Fraser River and through Burrard Inlet, and that's still a real possibility.
 - We recognize that there are efficiencies to be gained from moving cargo by means other than by trucks.

22.4 Local vehicles can benefit from Vancouver-based technology

- You're in command of the police, the fire, the sewers and stuff like that. Just on these technologies, things like asphalt you're using, there's lots of better items there.
 - Sewers [like those] over in the Olympic Village [are] good heating systems, and it's a lot of biogas capabilities that you can do right now.
 - Westport Cummins make the natural gas engines. Every single municipal vehicle could be a natural gas engine with Vancouver-based technology.
 - Other Vancouver-based technology takes the sewer gas and makes it nice and clean, so you can just plug it right into your vehicle.
 - Every single truck going into the port is diesel. Why not make an incentive or even legislate that everybody who comes in has to have a Cummins Westport-type engine running on natural gas today?

22.5 Building infrastructure to accommodate compressed natural gas has been discussed since the 1970s

- One of the things about compressed natural gas [is] necessity to build the infrastructure, the filling stations, the capacity locally in advance of making any large change such as that.
- It's been around a long time, [since the] 1970s.

23.0 Job creation as a motivator for sustainability

23.1 Moving towards a service-based economy is not lessening our consumption

- A [recent] CBC program was explaining the 2008 financial crisis and how it was partially due to a movement away from reliance on manufacturing jobs, much like the Depression was partly due to a movement away from agrarian society.
 - Given that government's overriding desire is job creation, do you see this movement away from the production of goods as a job to service as a basis for our economic growth?

- How does that relate to materialization, and is that something that you've considered?
- As you move in your stages of development, you move from an agrarian economy to a more manufacturing-intensive economy to finally a service-based economy.
 - Usually it's considered that the service-based economy has the least material input. It may not necessarily be true for all individual parts of the service.
 - As a big economy moves through its development phases, it will be demanding less of the material input.
 - As we move in this North American setup towards a service economy with less material demands, our consumption hasn't really gone down. We get it from trade, from other places which are now using those materials.
 - I don't think it's a simple answer that as we just move to services we dematerialize.

23.2 Creating jobs in repurposing, recycling and repair will shorten the work week and shift labour policies

- In this new economy, we're looking at also creating jobs in the area of repurposing, recycling and repair.
 - [Regarding] how macroeconomic policy should be shifting, part of it is also looking at how labour policy should change.
 - Places where people are working long work hours, such as North America as compared to Europe, are being investigated. We're looking at shortening the workweek and then sharing some of those jobs amongst more people.
 - That's one way [to] transition away from a complete focus on increasing material throughput, which leads to need for increasing employment. You can actually shift the labour policies in that way.