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Changing the Conversation
The Climate Imperative
Part 4: Canadians Vote
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Ann Dale

Welcome everyone. We are here to discuss the three scenarios that we have put up on the webpage [Canadians Vote](#). Before I ask everyone to introduce themselves, a note of explanation. They were developed based on a review of the scenarios literature. From the literature we created different categories of outcomes and then applied the lens of three different worldviews to assess how that worldview might influence that outcome. They are intended to stimulate discussion about how the impact of different worldviews about change affect climate action or inaction.

Before we begin, could each of you briefly introduce yourselves and your one big ah ha comment about climate change in Canada, if you have one?

Normand Mousseau

Hello all.

I am Normand Mousseau, professor of physics at Université de Montréal. I have been involved in a lot in energy policy and have participated in the production of the Climate Action Plan by Sustainable Canada Dialogues.

With respect to the "big ah ha" comment that we are in some of the best positions in the world to really move and it is dramatic that we have resisted so long in taking steps in the right direction.

Ann Dale

Welcome, Normand, we are privileged to have your expertise at the table. The [Climate Action Plan](#) contains ten key steps that Canada could immediately take to move to a carbon neutral economy by 2050.

Normand Mousseau

Yes, it is possible, for Canada, to move to a carbon neutral economy by 2050.

This is why the "Climate Change Scenarios" that you have produced are so interesting. As they show how one should go about moving forward.

Aerin Jacob

Hello everyone, my name is Aerin Jacob and I am a postdoctoral fellow at the University of Victoria. My big 'a-ha' moment about climate action in Canada is that it's not just an opportunity to limit climate change, reduce dangerous global temperature increases, etc. -- it's also an opportunity to address other difficult societal and environmental problems, like social inequalities, city and regional planning, and biodiversity loss.

Meg Holden

Greetings Ann and all. I am Meg Holden, I work in the Graduate Urban Studies Program and Geography Department at Simon Fraser University. I have been involved with the Meeting the Climate Change Challenge project on BC municipal responses to climate change as well as the Sustainable Canada Dialogues project on the cities and built environment component of that.

I guess my 'a ha' about climate and Canada is that, coming out of the nightmare of the previous government into the unsure but promising note of the new one, while we have demonstrated a tendency to retreat to outdated ideas about our safest future being "more of the same" in terms of wealth generation through the most basic resource extraction activities, we are at least a nation of people who recognize the power of optimism and will power to lead and change.

Sally Otto

I am Sally Otto, Professor and Director of the Biodiversity Research Centre at the University of British Columbia. My research interests focus on evolutionary change, particularly in the face

of challenging environmental conditions.

My biggest 'oh-oh' moment was the realization that our habitats -- particularly forests here in BC -- are shifting due to climate change northward at a rate estimated at 1-5km per year, which is an incredible challenge for our biodiversity.

I think my biggest 'ah-ha' moment is happening right now, with the hope leading up to Paris COP21 climate change talks.

Catherine Potvin

Hello, I am Catherine Potvin. It is a pleasure to be back on the e-Dialogues. I am a biology professor at McGill and leading the Sustainable Canada Dialogues.

My 'ah ha' comment: Fingers crossed for climate action with the new federal government!

John Robinson

Sorry for the late arrival. I am John Robinson, a professor at UBC. I have worked for many years on climate change mitigation and the linkages between climate change and sustainable futures.

Anthony Perl

Good day, all,

Anthony Perl here, Professor of Urban Studies and Political Science at Simon Fraser University. My research explores the relationship between transportation, energy, cities, and the environment.

In many indicators of urban mobility, Canada sits between the high sustainable transport performance of Western Europe and wealthy Asian cities like Tokyo, Seoul, and Taipei and the low sustainable auto dependence of the United States and Australia. I used to be excited by our position, viewing it as offering the best of both worlds - a way to balance Passage with Place, as I've written elsewhere.

My 'ah ha, and oh-oh', moment came at the same time when I realised that our balancing act could lead us to the worst of both worlds - congested/auto-infested urban areas and sprawling suburbs that were hopeless for transit, walking or cycling. Having our cities poised in between sustainable and unsustainable paths to urban mobility is not an equilibrium, I've come to realise, but an artifact of the late 20th century that is rapidly changing.

Ann Dale

Welcome, Aerin and Sally, just waiting for a few more colleagues to join us, before we begin with our first question. Some colleagues also argue if we get sustainability right, we get climate change mitigation and adaptation right as well?

Normand Mousseau

It is clear that if we defined correctly sustainability, then climate change mitigation and adaptation fall under it. It is because sustainability is so badly handled politically and economically that it is necessary to take climate change issues separately. That could mean, however, that the solutions that we retain bring us further away from sustainability even though they reduced carbon emissions.

Ann Dale

Normand, a very critical point. Okay, let's go. We have prepared three possible scenarios for change in Canada as the country gets ready to participate in the [COP21](#) talks in Paris in December. Can you comment on the benefits and challenges of embarking on any one of these scenarios?

Meg Holden

For me, it would be useful to think about the implications of each of the scenarios for a particular geographical area, and also useful to think of the difference between "what happens in the absence of shock" (whether or not we are adapting) and "what happens in the aftershock" (how we have to respond) for each. To explain what I mean a little more, there is a box about "land use" that speaks to the difference between a mostly sprawling development pattern compared to a mostly compact one, but as an urbanist, the implications of different climate change scenarios are much more complex than this. The densest cities are at the greatest risk in certain kinds of climate shocks that are on our horizon, particularly here on the coast. But we also need to create a better "story" about the prospects of better, more sustainable lives lived in cities for Canada to adapt to climate change and reduce the severity of the change coming our way.

Catherine Potvin

The transformative scenario holds more than the others - the possibility to fundamentally re-orient society. And as such it is clearly the most difficult one to undertake, because it departs from business-as-usual. It demands a shift in mindset as to the relative importance of the environment, economy, etc.

John Robinson

To me the importance of the scenarios is that they ask us to think about what kinds of futures we might have. The future is not a single one; there are multiple possibilities. Therefore the question becomes: what futures are sustainable?

Normand Mousseau

First, out of three scenarios, the 4 degrees appears to be the most optimistic in the sense that it is not that clear that a business as usual would really keep global warming below 4 degrees. With the drop in oil prices, for example, the pressure increases for producers to up production to keep revenues coming in which could lead to a significant increase in hydrocarbon consumption. In addition, a four degrees scenario will require us to move much more strongly onto adaptation, which will also involve economic, regulatory and legislative changes, albeit a bit further down in time.

Catherine Potvin

What I see in the idea of a transformed mindset reminds me of the contribution of Ralph Torrie in the second report of Sustainable Canada Dialogues, [Acting on Climate Change: Extending the Dialogue Among Canadians](#). He says sometimes redefining a problems helps to identify solutions. I heard Ralph Torrie say, for example, that it's going to be harder for oil companies to transition, but if they can consider themselves energy companies and therefore start to explore solar energy, then the transition will be easier. Therefore, although scenario 3 seems very ambitious, it might be the one that ends up moving us forward with fewer pitfalls.

Aerin Jacob

And encouraging change means we have to make it easy for people to visualize what the different scenarios might mean for different people, e.g., vignettes of what the "average Canadian's" life (if there is such a thing...) might be like with each Scenario 1, 2, or 3.

Ann Dale

And of course, given our uncertain futures, the complexities and interdependencies, it is impossible to predict with any certainty any of the desired futures, as our e-audience raises for example, even the 2 degree limit may no longer be achievable. Let me drill a little deeper, what kind of change is necessary if we are serious about climate change adaptation and mitigation--incremental, transitional or transformational? Catherine and Normand have indicated that we need transformational change?

John Robinson

I would suggest that none of the three, as they stand, are incremental, transitional or transformational. All would result in massive change. The question is which are desirable?

Normand Mousseau

I fully agree. That is the message we need to present.

Catherine Potvin

I think that the only way any transition towards a low-carbon and/or sustainable society will take place is if people find it desirable. So lessons from the past energy transition of abandoning coal, for example, show that it was possible because there are benefits to reducing coal, such as reduced pollution. So in the case of climate change and therefore weaning ourselves from fossil fuels, the best possible benefit that people can see in the transition is resolving some nagging problems such as high cost of energy, traffic jams, etc. So it really must rest on people's desires for the future.

Anthony Perl

This is an idealistic assumption - that people must like a change in the direction of sustainability in order for it to happen. The Black Death in medieval Europe was not something that anyone liked at the time, but it happened anyway. And one can make a case that this rapid depopulation set the stage for the Renaissance. Not that I hope for such an outcome with climate change, but a new future is coming whether we like it or not.

Normand Mousseau

This is clear. And letting the world temperature move up by a few degrees would certainly not end all life as we know it. But the question here is how to transition while minimizing the human and ecological costs?

John Robinson

But the difference is here that we are consciously trying to create a sustainable future. In such circumstances, I agree with Catherine. It won't happen if people find it unappealing.

Anthony Perl

I see change as a dialectic between our conscious attempts to advance sustainability and the future's "unconscious" feedback to destroy unsustainability.

Catherine Potvin

From my biological standpoint, I think that ecological systems will re-organize. We saw that at the time of the dinosaurs, at the time of the last glaciations (that were 5 degrees colder). The challenge is really for humans, because our civilization, species has never made it through such large environmental change. So I don't think we have to worry about the planet.

I think we have to worry about maintaining the planet within the niche, the suite of environmental conditions that allows our species to thrive and prosper. And that has temperature boundaries to it.

Sally Otto

Yes, biological systems will re-organize, but over what time scale? We don't have a niche if we don't also maintain a livable habitat for the species and ecosystems that we depend on. If agricultural systems, fisheries, and forestry are all challenged by environmental changes too fast for them to re-organize, our niche is gone. We cannot solve the challenges of climate change by focusing on the thermal requirements of humans alone.

Normand Mousseau

Yes, we need transformational change. But we have been living it over the last decades so we should not fear it. The development of an information age, topped by smart phones and the likes, has made fundamental changes in the lives of almost everybody. Some of these changes come with job losses and industries disappearing or transforming such as taxis.

In this case, we need to prepare a fundamental transition with solutions that are not fully clear today. My own opinion is that we must target both the greening of our electricity production and the electrification of a maximum of services to ensure that carbon emissions decrease fast enough.

And, for this, Canada can count on immense renewable energy resources.

John Robinson

None of the scenarios will come to pass; but they indicate different trajectories. If we want transformative change, then we need to think hard about how to encourage it.

Ann Dale

And what it means? How would you define transformational change, John?

John Robinson

Transformative change to me is change that creates a sustainable world, since our past trajectories have been very unsustainable. So first we need some discussion of what a sustainable world would look like. I think there are many scenarios that might be labelled this way. What is transformative to me might be old hat to you. So there is no absolute answer to the question. We need to decide what kind of world we want to live in.

I would also argue that there is no business as usual scenario here. If you read through

scenario #1 you see a lot of effects that are anything but business as usual. Climate change is a key reason why business as usual does not exist.

Of course we can try to pursue business as usual, but ironically such attempts to hide our heads in the sand on climate change will create the most change.

Normand Mousseau

I totally agree. **Business as usual does not hold.** Of course, one should add that business as usual has never existed. It is just a matter of whether we are happy to leave the transformation to individual decisions based on current social constraints or whether we decide to change the overall constraints to orient somewhat the transformation into a direction that will be easiest for most of us.

Sally Otto

The "Business As Usual" model is too risky -- risky for the natural world, risky for the economy, and risky for humanity.

The good news coming out of the initial submissions to COP21 suggest that we are globally acting to curb carbon emissions. The bad news is that the current submissions suggest that we will continue to see substantial climate warming, with the UN estimating a 2.7C shift by 2100 based on these [early submissions](#).

This early view does allow our conversations to push the dial further...to encourage more action from our governments.

Anthony Perl

Among other things, each scenario leads to a different governance dynamic in Canadian society.

The 4 degree change will only be incremental until a global tipping point of ecological crisis arrives.

Similarly, the 1.5 degree transformational scenario would only be disruptive at the front end of the scenario, and then settle into incremental adaptation to 'new normal' arrangements.

I imagine that the 2 degree transitional scenario would have the most constant level of uncertainty and tension - and accordingly conflictual governance dynamics.

Could one imagine that each scenario will take us through the same aggregate level of dispute and resolution of "What is to be done?", but that the distribution of such conflict will be quite different along each trajectory?

Ann Dale

Very interesting question, Anthony, anyone want to respond? John has revealed that the transformative change scenario, scenario 3, implies it is more sustainable, when perhaps the second scenario may be sustainable as well?

John Robinson

I think it would be interesting to try and create a sustainable version of each of these three scenarios, instead of implicitly assuming that only one of them is sustainable.

In fact, I don't think any of the three is internally coherent as they stand. They are a starting point for a much more thorough examination of different approaches to the future. Could for example, the economic policy measures outlined in scenario #1 actually happen if the climate changes also included in that scenario occurred? How would that scenario respond to those changes?

Likewise, in scenario 3, with its implicit assumption that government policy is the answer to climate change, the only way to achieve a climate friendly future? Could we imagine a private sector-led transformation in this direction? Or fundamental changes in governance systems?

What about breakdown scenarios?

Aerin Jacob

Scenario 3 "Transformation" also offers us the most opportunity to take the reins of change, to be proactive rather than reactive in our individual and collective responses to global environmental change. We can see this proactive approach as both 1) avoiding threats (the likelihood and risks of continuing along our current path), and 2) taking advantage of opportunities.

John Robinson

I agree that each scenario has its own change dynamic. I am not sure, however, why the aggregate change over time would be the same magnitude in each. Or indeed the same kind of change.

Anthony Perl

Perhaps it's an oversimplification, but I think that from a long-run ecological perspective the magnitude of change will equal out because "You can't fool Mother Nature." In other words, planet Earth would eventually reach the same climatic outcome, although the human impacts and socio-political consequences would be quite different along the different routes to this outcome.

Aerin Jacob

We might arrive at the same climatic outcome - I hope not - but I don't think ecological change will even out over time, it's not certain that we will arrive at particular ecological states. The scale and pace of these changes are large. In Canada, species distributions are shifting north, we see new compositions of species, and certainly changing abundances of species (especially the ones humans harvest), partly in response to increasing global environmental change and our patterns of consumption. And the human impacts will not be even, that is, some people have more direct or stronger ties to ecological components and states.

John Robinson

So the ecological change might even out over time, but what about the socio-economic, cultural, political, etc. changes? Any reason to think they would also even out over time.

Normand Mousseau

I don't believe so. There is no "determinism" at play, here. Of course, in the long run, the Earth will die away, but in the meanwhile, we might as well try to preserve the planet in a state that is as livable for us as possible.

As for global warming, the changes that are taking place are at a rate almost never seen in the past (except for catastrophes). What we are observing is human-made, so it is in our hands. Any change taking place slowly will allow a much easier reaction.

Aerin Jacob

That's interesting John. Do you mean quantifying what trade-offs might be involved in making any one of the scenarios work? Some people or groups might be willing to accept certain trade-offs that are unacceptable to others; would depend on how directly each was affected, their different opportunities to adapt or change.

John Robinson

Yes, I think we need to move away from assuming that there is a single most sustainable trajectory, and recognize that different scenarios work differently for different people. So it is very interesting to work with a range of scenarios and try to see how they could be made more sustainable. Starting with some of the key trade-offs that different group would have to make within different scenarios would be an interesting approach.

Catherine Potvin

I also think there are multiple scenarios and those transition pathways in Canada are determined in part by the energy resources of the provinces. For example, endowment in

energy - whether you have oil sands or hydroelectricity - your transition pathway will be different. There are also value systems - Indigenous vs non-Indigenous will transition differently. This goes back to what people want and the importance of desired futures.

John Robinson

I think it is important to realize that many people, some in very powerful positions, either believe that we really don't need to change current trends (there is no problem), or else that the problem of climate change is real but the best way to address it is to speed up current practices. I don't think it helps simply to assume that they are wrong and we are right. A more interesting approach, it seems to me, is to ask ourselves what is the internal logic of those approaches, and how does it connect, or not, with what we are assuming.

Aerin Jacob

John's point about people in powerful positions makes me think about the more unusual or unexpected champions of climate action who might be effective messengers. For instance, Mark Carney, Governor of the Bank of England and former Governor of the Bank of Canada, who has spoken about the business case for climate action:

“The challenges currently posed by climate change pale in significance compared with what might come,” Carney said. “The far-sighted amongst you are anticipating broader global impacts on property, migration and political stability, as well as food and water security. So why isn't more being done to address it?”

[The Guardian - Tragedy of the horizon](#)

In Canada, and elsewhere, implementing effective climate action in multiple sectors will mean reaching across traditional boundaries (political, disciplinary, social, etc.) to identify and connect on shared goals. We won't agree on everything. Those are two key strengths of our SCD work: consensus and interdisciplinary.

Sally Otto

The other question to ask is "sustainable for whom"? Humans are remarkably adept at constructing their environment, moving globally, altering their thermostats, layering or shedding jackets... Other species don't have that luxury. So what is potentially sustainable for humans will not sustain species -- from our forests to our bees -- who are seeing their climate optima move faster than they can.

Normand Mousseau

I have seen a few comments in the top window about whether a bottom-up or a top-down approach would be preferable.

To me, we need both.

At the top, we need to set directions by developing both the appropriate objectives and, more important, the appropriate context to facilitate the transformation and reward the initiatives that go in the desired direction while avoiding to limit bottom-up movements.

A price on carbon, for example, changes the equilibrium and orients changes without selecting winners. That is the role of a good top-down approach.

This leaves the full individual initiatives to take place within a new set of rules, giving full freedom while making sure that, in the end, collective goals are reached.

Ann Dale

And what kind of change is desirable for a more sustainable future(s)? I am going to come out of the closet and argue that there is no way we can even argue for any kind of change other than transformational change--let me pick a sector in which I lived and worked for 23 years. The current structure and decision-making in government actively mitigates against any hope of achieving sustainable community development, it is not about reorganization of the existing system, it about fundamental transformation in the structure, operations, culture and decision-making?

The one good thing about trying to develop scenarios is that they stimulate lots of discussion!

Normand Mousseau

We know that it is possible to transform a society. To stay only on GHG emissions, here are two examples.

In some cases, it can be done without a direct will. For example, the development of large hydroelectricity in Quebec in the 1970's led to a 43 % reduction in oil consumption over 7 or 8 years (leading to a reduction of something like 25 % in GHG emissions over this period). It happened without major fundamental structural changes - it was sufficient to move from oil to electric heating.

On the hand, Sweden has taken a much more structural approach to reducing GHG emissions. With a collective effort involving the solid backup from the public, it managed to cut by half its emissions over 20 years.

The real question, therefore, is whether or not there is a political will to install the proper incentives to make the transformation.

John Robinson

Ann, if all scenarios are transformative, just in very different ways, then what does it mean to say that we need transformative change? I think the issue is less about being transformative,

than about being consciously transformative. How do we make big changes in essentially all of the complex socio-technical-natural systems in which we are embedded, bearing in mind that these systems are inherently unpredictable and uncontrollable, to a significant degree, as I think Anthony was suggesting? Transformation change is inevitable. The only question is how much we can both manage it and adapt to it. I think we need to cultivate humility but also adaptability and vision -oriented planning, that recognizes its own limitations.

Normand Mousseau

Without being picky, I support John here: transformative change will take place whether we want it or not.

For a transformative change that supports the following goals – a sustainable economy limiting global warming to 2 degrees or less – we need to be able to put these values at the core of any decision being taken. This means, for institutions, to ensure that there is coherence in all decisions/programs/regulation that pushes in this direction. It is how Sweden has succeeded, for example (while accepting that total coherence is impossible).

Ann Dale

I think there is a change continuum depending on many variables—values, perception of urgency, human factors such as agency, and even personal acceptance of change. I am not certain that transformative change is inevitable, when we could put a man on the moon and yet, just in the last decade have started to transform how we make cars. In the interests of time, let's move to our last question.

What kinds of institutional arrangements are needed for transformative change?

Catherine Potvin

If I'm thinking of the federal government that is now shaping the new government of Canada, the body that will be dealing with climate change must have three features: (1) it must be in a hierarchical position that allows it to talk with and feedback with traditional ministerial sectors like energy and transportation. In essence it must be cross-disciplinary; (2) It must be able to work at multiple levels of government, engaging with First Nations, provincial and municipal governments; and (3) it must have the ability to be consultative and listen to what the population needs and desires.

Meg Holden

As an urbanist, I think PART of the institutional change that is needed is change in the story about Canada to include the positive prospects of a PRO-URBAN CANADA. Tainted by the last near-decade of abuse and ignorance by our federal and provincial politicians of the work that can be done for a sustainable future by Canadian cities, I support this message developing

from the ground up. I like the ideas about communication strategies raised in the e-audience, and also mean the line item things that city governments do, like integrated land use and transportation planning, complete communities planning, creating better ways to get around and interact in public and parochial places in the city.

But, emboldened by the resounding success of the new PM Trudeau, it would be so great to see the federal government play a role in supporting the value of an urban Canada, too. In fact, I am quite confident that this is coming.

Anthony Perl

I see a global governance version of the creative destruction that I mentioned for energy companies being the path to a new set of institutional arrangements to govern our engagement of more sustainable living arrangements, whether we like them or not. And I hope we like them!

I don't have time to go into my reasoning as to why Shell's retreat from the Arctic is an anomaly rather than the trend line of transformation for this sector. But on the governance front, we are already seeing states fail because of climate change pressures.

That will produce direct and indirect forces that will change institutional arrangements - from the migration that is sweeping from the Middle East and North Africa into Europe to the military conflicts (that Canada is still engaged in for the moment) in Syria.

Perhaps I'm naive, but I'm hoping that the institutional arrangements from local to global that have a better fit with a world in which the climate is changing will prevail and eventually reshape the governance spaces where institutions could not cope with climate change.

John Robinson

Anthony, I think this is exactly the kind of contextual geopolitical view we need to take. And we should be on the lookout for points and moments where positive change is possible. Small nudges at those points may be quite powerful.

Catherine Potvin

Anthony, I am reacting to your comment about refugees because this, in my mind, is a real possibility. When I was negotiating at the UN at the climate change convention on behalf of Panama, I was sitting often near Pakistan. And one year in the negotiation, Pakistan had 200 000 people flooded. So, yes, climate change is likely to trigger important movements of populations, similar to those that are happening with Syria. Here's a link to a comic that traces the migration of Syrians to climate change. Whether this comic is based on evidence or not, I do not know - we haven't had time to check the facts - but they are saying that part of the unrest started with droughts, and they're making the claim that the drought is climate change related (again, assumptions we haven't tested). The reason we call for transformative

governance and taking control of the transformation rather than being its victim is to try to think ahead and avoid such events that will lead to [human suffering](#).

Meg Holden

When I try and read "what is behind the thinking" (as per your recommendation, John) of the transformation scenario, what I see is a very big government world. Then I get stuck on items such as "multi-level government", "open innovation", and local control of energy cooperatives, and I have trouble reconciling these things in my head with the kind of very powerful central state that is implied by this scenario.

I guess it bothers me a bit that the different people, groups, and human relationships involved differently in these three different scenarios are not made apparent. What kind of people are we becoming? Are we working any more or less (there are some hints that we will be working less, perhaps investing more time in our community run systems)? Are we assuming greater levels of urbanization to meet reduced car travel patterns? Who is doing the farming on the preserved agricultural land? Does a more pro-active and leadership role internationally mean that Canada plays a much more active role in resettlement of climate refugees, potentially large millions from Sub-Saharan Africa, South Asia and Southeast Asia? What does the resettlement look like? I guess I am agreeing with John that it would be interesting to paint these scenarios in terms more of "sustainability" such that the people doing the living in each scenario could be more apparent.

John Robinson

And also pay more attention to their internal consistency, and to the implicit governance/political assumptions they embody.

Catherine Potvin

It is true that the people are not present in the scenarios we presently have in front of us. This echoes the comment from the audience on top-down vs bottom-up. Legislation is minimal in Scenario 1, while it is mandated in the transformational scenario, but that misses the feedback loop that we have been discussing when we talk of sustainability - that a sustainable future being attractive to people may require less command-and-control to achieve it. I think that the feedback loop is important to achieve.

Normand Mousseau

Indeed. It is becoming ever more important to include a feedback discussion. This does not mean organizing weekly townhalls, of course, but discussion must take place also between the once in every four year votes.

Ann Dale

Let's drill down a little more. How could a transformational scenario affect the oil and gas sector? In the scenarios, we had transitional change as the elimination of all oil and gas subsidies, and in the third scenario, a carbon neutral society. I think Normand suggested one critical step is for oil and gas companies to reframe themselves as energy companies?

Anthony Perl

There will be a lot of "creative destruction," as Schumpeter defined it, along the path to having oil and gas companies reinvent themselves as energy companies. The corporate structures will have to be deconstructed and reconstructed, which is one reason why their leaders (whose personal fortunes are tied to the existing corporate structure) will resist this change strenuously.

Meg Holden

Why do you say this, Anthony? It seems to me one of the more straightforward elements of a transition for a big global firm like for example, Shell, to change its product from petroleum to solar and wind. In fact, we are already seeing firms like Shell and BP in the midst of this transition. Pulling out of the Arctic when the company has extensive "reserves" there is a pretty loud statement in that respect.

Catherine Potvin

When we launched the second [Sustainable Canada Dialogues](#) report in Toronto, we had the privilege to hear Jim Stanford from Unifor, a union that works with auto workers and oil workers. He was arguing that having clear rules to face climate change and incentivise green technologies would have positive consequences on employment. There are three options for oil companies - business-as-usual, shutdown or transition to other energy markets - I think. The labour transition would be easier if there is the kind of transformational change that Ralph Torrie was asking for, which is redefining oil industry into energy industry. This kind of transition then needs to re-qualify, re-train workers. If the companies close then the workers are laid off and have to look for new jobs - this is harder, I think.

Normand Mousseau

Not quite. Electric companies could transition/transform to all renewable with the help of the Federal government to facilitate interprovincial exchanges.

As for oil and gas companies, they will have to adapt to (1) a carbon price and (2) a global slowing down or even reduction in hydrocarbon use. With oil and gas prices so low and contributing less to the Canadian economy, it is probably the best time to move onto this sector and integrate it into the overall scheme towards a low-carbon economy.

This does not mean a specific attack on this industry. Plenty of others are also emitting large quantities of GHG. A level-playing field is all that is necessary.

John Robinson

If there is a sector currently undergoing transformational change in Canada, it is the oil and gas sector. But not all transformational change leads to greater sustainability, so the question becomes, how can we (and this "we" masks a lot of big political differences and power differentials) act so that this change is more, rather than less, sustainable? I have some faith that if government provides some helpful frameworks (probably not coercive regulation) the inevitable huge shake-out that is happening may be more sustainable than appears likely now. Perhaps that is wishful thinking.

Catherine Potvin

John, what a pleasure to see you're becoming optimistic!

John Robinson

I think we have to guard against calling all the big changes we want "transformational" and describing all the big changes happening for other reasons something else. Then we win the argument by definition. So I don't think it is about what institutional change is transformational, but what kind of institutional arrangements are needed to support the kind of transformation change we support. I tried to suggest earlier that they must be adaptive and humble in ways we have not typically tried to be in the past. I think they also need to be far more participatory and begin to catch up with a world in which people are immersed in social and digital media. So we need institutions that learn on the fly, can change course and are highly engaged with their communities. They will also need new forms of accountability in this engaged world. I think all this has significant implications for parliamentary systems like ours.

Given Catherine's comment on my optimism, I am encouraged to say that one of the ways the scenarios, as they stand, are weak is that they say very little about the role of the private sector. I believe that we simply will not achieve a sustainable future only through government action. The private sector is probably the biggest agent of change on the planet, and historically this change has been extremely unsustainable. We need to find ways that the private sector sees it as in their interest to pursue sustainability very actively. The move in the business and sustainability literature away from compliance based sustainability to the idea of "value creation" is a move in this direction. I think this issue should get a lot more attention in the sustainability field.

Normand Mousseau

The three scenarios ignore one important aspect of policy making: time.

To change the global orientation of the economy, which at the moment is largely unsustainable, requires us to reorient investments that will be made over the next decades. The longer we wait, the more we will have invested in the wrong path, making any reorientation more difficult. This is why, for example, inaction can be so costly as we would wake up in 40 years realizing that our investments are worth nothing.

An early orientation, that leaves open technological choices, decreases the cost of this orientation as it can be rolled in much more cheaply into the plans both private and public.

Brutal changes occur. Just talk to taxi drivers, for example, who are forced to review their model by Uber and the likes. But these changes will be costly as the value of taxi licenses, sold for 200 000 \$ and more a piece, could very well take a dive. Planning would allow us to limit these brutal changes as we move towards a sustainable economy.

Catherine Potvin

I fully second this comment. This is why the discussion around infrastructure during the election campaign is so important. It is essential the Trudeau government recognise that infrastructure locks us in a development path that can be as long as 70 years. So any investment in infrastructure must be made today, thinking of the needs of a low-carbon society. This is why I was earlier saying that changes in governance structure are needed so that decision-making bodies overseeing climate change have their say in sectors like transportation, infrastructure and energy.

Chris Strashok

As we approach the end of the dialogue, I thought everyone might be interested in seeing a 'word cloud', capturing the main thoughts and ideas of the conversation. The sizing of the elements in the word cloud indicate the amount of references. It's obviously a tool that works very much on the 'overview level', but it works as a visual summary.

sectors of society, governments and citizens is now urgently required.

Thank you so much for your participation. Any last comments before we conclude?

John Robinson

To me, a big issue we have discussed is about the meaning and utility of the term "transformational change". I would like to suggest that any scenario can be incremental, transitional or transformative. That is, the same scenario drivers and assumptions can be expressed in all three ways. So there is a transformational version of the current trends scenario (#1), as much as the sustainability scenario (#3). And by the same token, an incremental version of each. The question is not which is right, but how do they differ, who benefits and loses, and how they can be encouraged to occur?

Normand Mousseau

No, we are not able to design today long term sustainable pathways. We have to be much more humble by setting long term objectives and ways to reach them but constantly reviewing them to make sure that they are the right ones.

To me it is only by constantly evaluating our orientations and decisions that we can take risks and incorporate the inevitable failure into a successful path.

On this, I would like to thank you Ann for your invitation, and all the other participants/audience for your contribution!

Catherine Potvin

Thank you for a brilliant summary of an entangled conversation. I was not expecting any less. And I am now running to be a Halloween grandmother babysitting the little ones.

Anthony Perl

One of the things that uplifted me most about the recent federal election campaign was the decisive repudiation of a "Raise the drawbridge and close the gates...." policy option for dealing with climate change. I'm talking about Canadians' reaction to the Syrian refugee crisis. That fills me with hope because it tells me that Canada is prepared to help the world's early losers from climate change become winners by resettling a good number of them in our country. We can all become winners by the changes that such migration brings - both to Canada and the world.

Our incoming Prime Minister seems to appreciate the ideas of Wilfrid Laurier. Among Laurier's ambitions was to have Canada become a nation of 60 million people in the 20th century! Perhaps a Trudeau government's sustainability vision should include Canada becoming a nation of 90 million in the 21st century?

We won't be able to do this without the kind of smart, sustainable, and (dare I say it?) sexy

cities that Canadian urbanists like Meg Holden are ready to help us create. And just like the immigrants who made Montreal, Toronto, and Vancouver what they are today, those 60-odd million migrants to Canada in the coming decades hold the dreams, the energy, and the vision to bring about the next generation of sustainable human settlements, here and abroad - if we let them in.

Aerin Jacob

Thanks everyone for a stimulating conversation, and to Ann for moderating. Not an easy task. Glad for many comments and suggestions raised by the e-Audience too.

One month until the Paris climate talks... Remain hopeful and remain engaged!

Meg Holden

Thank you Ann, Anthony, John, Catherine, Normand, Sally, Aerin and all. Best wishes for a transformative remainder of your day.
