

“Everything is Included”
Copenhagen Sustainability Lecture Series
27 June 2011
Professor Stephen J. Toope
President and Vice-Chancellor
The University of British Columbia

Thank you.

I want to express my deep appreciation to you for extending this invitation to come to Denmark and spend time with you in this wonderful city. I recently learned that Denmark leads all countries in the world in clean technology as a percentage of Gross Domestic Product. Your country is truly an inspiration to us in Canada, and to people around the world. While I’m here I hope I can visit your Green Lighthouse. It sounds wonderful.

Although our universities are in different countries on different continents, I believe that we have much in common and much that we can learn from one another. My university, the University of British Columbia, and this one, the University of Copenhagen, share a longstanding and strong commitment to sustainability. We are also of a comparable size and stature that gives us the opportunity and, I would say, the *responsibility*, to make real contributions to the cause

of sustainability, contributions that other organizations may not yet be able to make. In particular I want to speak today about putting our own campuses at the service of research as Living Laboratories.

But first, in good academic tradition, let us explain our terms. I was intrigued to see that you have changed the theme of this lecture series from “Climate Change” to “Sustainability.” I applaud this choice. I am one of those people who care a great deal about words and their implications (this is in part because I am a Professor of Law), and when I hear “climate change,” I tend to think of a big, complex, urgent and very serious *problem* that we all have to fix or fight, or arguably, adapt to. And I think, as I imagine you do, of a great debate marked by information and *misinformation*, action and *inaction*. I hear “climate change,” and I also think of a *symptom*, a symptom of a global disease, almost like a fever.

In contrast, when I hear “sustainability,” I think of *a way of living*. I think of *a human value* that is inextricably and dynamically linked to natural systems. Sustainability isn’t *against* anything, or any one. It should have no enemies, and in an important way it takes no sides. Nature is included; the economy is included; culture is included. People—all people—are included. *Everything is included*. I want to

repeat that, because I will refer to it again later: *when it comes to sustainability, everything—and everyone—is included.*

No one, in principle, is against things that last, that are robust and can endure. No one, if they really think about it, wants things to fall apart, hit a wall, go extinct or become intolerable. (Well, perhaps there are a few such people, but the challenge to us all is that for sustainability to be achieved, even *they* must be included.)

Now as much as I admire the concept of sustainability, I won't deny that there *are* people who say that the *word* has lost its meaning. Do they say the same about the word in Danish, too? BAYR-DUK DI-HD? Is that right?

Some say that sustainability has been over-used, misappropriated or ruined by the way people define it. I can understand why they say this. But I don't go along with it.

At my university we have an antidote to the "ruining" of the word sustainability. *We don't define it.* Why not? Because once you try to pick out sustainability and pin it down as a particular thing, you risk losing sight of its power to widen our gaze and challenge our

assumptions. As one of my colleagues often says, “Once you think you know what it is, you’ve stopped thinking.” At my university, and I’m sure at yours too, it’s important never to stop thinking.

And so, at UBC we talk about sustainability not as a thing or a process or even a topic of study, but as a *conversation*. It’s **a societal conversation about the kind of world in which we want to live**. We recognize that there are social, economic and environmental aspects to that conversation. But we try not to *separate* these aspects, because, as you may have noticed, once you make categories out of those three—however much you insist that they are all interdependent parts of a three-legged stool—people have an unfortunate tendency to choose sides, or focus on one and reduce or even exclude the others.

And so we don’t pin down the word, and we don’t choose sides. But that doesn’t mean we aren’t deeply committed. We *are* deeply committed. In fact what we say at UBC is that we don’t define sustainability - *sustainability helps define us*.

Sustainability has been an essential part of our mandate at the University of British Columbia for more than 20 years. It’s been part

of every aspect of our University; and by the time I arrived in 2006, I could feel it everywhere. It really *does* help define us.

For example, it was one of our faculty members, William Rees, who originated the concept of the environmental footprint as a measure of human demand on Earth's ecosystems. And UBC's Clean Energy Research Centre, started in 2000, now offers a Masters in Clean Energy Engineering, and works closely with faculties across the university and with industry partners. One such project is the BC Clean Energy Technology Co-operative. This brings together UBC, the National Research Council of Canada and a utility, Powertech, to unite the expertise of over 200 S&T experts with competencies in 25 areas across 55 specialized labs.

From the point of view of our students, there has been a tremendous passion and enthusiasm for sustainability for decades. It is our goal for every one of our undergraduates to "minor" in sustainability, no matter what the "major" focus of their degree is. We currently have more than 350 courses and 25 programs regarding sustainability throughout our curriculum. Armed with knowledge and awareness of sustainability, our graduates are accelerating the pace of change in almost every profession they enter.

And from the point of view of our campus operations we have met and exceeded our Kyoto targets five years early, even while our enrollment went up by 48% and our building space increased by 35%. We not only saved money achieving this target, we have saved enough to finance other sustainability endeavors. For example we are bringing more people onto our campus to live, and encouraging public transportation, replacing parking spots with housing. Efforts such as these are bringing about significant changes in the *social experience* on our campus and with our neighboring communities, changes that will become more and more visible as we move toward zero emissions by 2050, a public commitment we have pledged to fulfill.

Now, I don't want you to think that I've come here to brag about our past achievements. Although I *am* proud of my university, that is not why I mention these things. I'm mentioning them in order to make the following point about those achievements: *It isn't enough.*

Over the past few years we came to realize that for all the efforts we were making in research, in education and in our campus operations, we were leaving something out. While a tremendous number of activities took place at and through our university, often they were

taking place independently of one another. In some cases our faculty was not even aware of initiatives our students were taking with our staff. Everyone was working hard at sustainability but they weren't necessarily working together. *We were not including everything.*

Universities are in the business of tackling the world's toughest problems in order to change the world for the better. This is what great research universities are, and this is what they do and what, really, they have done for hundreds of years. Changing the world by advancing knowledge, by cultivating critical thinking, by preparing *minds* to address the critical issues and tough challenges of the day.

But universities are not just *minds*. They are also, quite obviously, *places*. At my university we speak very deliberately of UBC as "A Place of Mind." Our university has a physical presence, a place on this earth. So does yours. These are our campuses.

It takes a certain amount of space and a great deal of physical energy and organizational infrastructure to house, support and operate all the research and education that is our primary reason for being. Our physical presence is absolutely necessary, but from an academic

perspective it is rarely taken into consideration. It has simply not been a key element of the academic equation.

In practical terms, there has long existed a kind of firewall between the academic and the administrative operations of a university such as ours. *One is tasked with illuminating the world, the other is asked to keep the lights on.* As inseparable and logically connected as they may be, these are quite different functions, and they call on different skillsets. In every university of which I am aware, they are treated not just differently, but also separately. It's as if academics and operations existed in two distinct worlds, and we weren't really considering any sort of connection between the two when we thought about sustainability at UBC.

But consider this: The University of British Columbia's largest campus in Vancouver comprises about 500 buildings on about 400 hectares of land. We own and operate all the utilities—electrical, heating, water and waste—and we have our own roads and other infrastructure, our own zoning and other regulations. We are, in essence, our own city with a population of about 50,000 people. Perhaps your four campuses taken together constitute a community of comparable size?

What a perfect opportunity to contribute to this conversation about the world we want to live in! Beyond doing our best to reduce our environmental footprint, why not use our own “municipality” as a subject of advanced research on technological, social and economic approaches to sustainability issues? Why not serve as a platform for change? Why not *beta-test* solutions right here, on campus, at a size and scale that is applicable to other large communities? Why not build on knowledge and actually demonstrate and transfer practical solutions to the wider world?

Why not? Good question. Because until rather recently, we weren't. Nor, as far as I know, were any other of the top research universities in the world.

What we were doing was engaging very actively in reducing our energy use, waste production and carbon emissions, and we were doing this rather well, as I have suggested. But we were almost exclusively applying existing, proven technologies.

Despite our best intentions, we were not including everything. More specifically, what we were not including was a true, integrated relationship between our core research function and our basic

operations, administration and infrastructure. One was *researching* sustainability and the other was trying to *be* sustainable, but the two were not in communication with each other.

Guess who pointed this out to us? Our students, on the one hand. And pioneering corporations eager to demonstrate innovations in the clean-technology field on the other. Two groups of people who have less interest in the way things have generally been and lots of interest in how things *could* and should be.

“Include everything.”

What does this mean? It *doesn't* mean “do anything and everything.” In fact, when we set out to develop our Sustainability Academic Strategy, we saw our task as requiring a detailed mindful practice of considering and integrating the many diverse, often ad-hoc activities that arise among our students, staff and researchers. We looked specifically for ways to integrate all our activities under the umbrella of our core academic mission. What is that core mission again? It is to change the world for the better through education, research and—I can now emphasize—*through concrete integrated action as a member of a larger global community.*

The effort to develop an integrated Sustainability Academic Strategy has taken some time, and the effort is continuing. The strategy has many components, but the one I want to draw attention to today is what we call the “*University as a Living Laboratory*”.

When we talk about ourselves as a living laboratory, we tend to say things like “*students and faculty conducting sustainability research in collaboration with university staff and industrial or community partners working with academic and operational staff.*”

For those of us who have been living and breathing this effort to integrate our activities, this description may be quite appropriate, but as I share it with you I feel that I could do more to underscore what is different and distinct about our strategy and our Living Laboratory:

As researchers, we’re experimenting on ourselves.

As owner-operators of a substantial and extensive institution we are offering to take risks that no one else in the larger world is yet prepared or equipped to undertake.

Consider this: we are stewards of a significantly large and complex urban community. We are capable of entering into partnerships with others to test and demonstrate innovative systems, technologies and social changes in this community – at a size and scale that is transferable to other large, complex urban communities.

In UBC's case we are the sole owner-occupiers of our own utilities, so we are able to fast-track the highly complex process of migrating from a legacy system to a new and perhaps yet unproven one.

We are a public institution that has a longer planning horizon than other organizations, especially corporations. While we must carefully plan our finances, we are not forced to publish quarterly earnings reports. We are able to evaluate and consider changes whose benefits may accrue over decades or more.

We are an institution with a teaching and research mandate. This means we have more reasons than the simple bottom line for trying a new approach: most importantly a thirst for knowledge. We have access to research funding which we can contribute to strategic partnerships. We can even, if the project fits our academic and

operational requirements, invest money from our own operations budget into a research and demonstration project.

As owner-operators we have the leeway to try things, and as researchers we have an incentive to try things *first*. This is the essence of the University as a Living Laboratory.

Let me give you an example of how the Living Laboratory pulls together various activities in the entrepreneurial business world, in the more established business world, on our campus and in our research.

In my part of Canada, British Columbia, there is a company called Nexterra that is developing systems that convert biomass such as wood waste into synthetic gas, or “syngas.” The syngas can be used by a General Electric Janbacher engine not only to produce electricity but also to make waste heat usable in the form of steam and hot water. This combined heat and power system fueled by waste wood is ideal in the province of British Columbia, as we live in a heavily forested part of the world. The city of Vancouver has a great deal of urban wood waste that has limited uses and in some cases was going directly to landfills. Coincidentally, UBC has aging heating and

electrical infrastructure in need of maintenance and upgrading.

Furthermore, a member of our own faculty—Professor John Grace in our Clean Energy Research Centre—is a world-leading researcher in the area of bioenergy.

Putting all these elements together—integrating our operations and our research with business partnerships—resulted in a proposal for what we call the **Bioenergy Research and Demonstration Project**. It will be the first steam heat and electrical generating utility with this technology of its size and scale. And it will be incorporated directly into our existing campus infrastructure to be tried and tested.

This demonstration project will reduce greenhouse gas emissions by an amount comparable to removing 1,100 automobiles from the road while generating enough electricity to power 1,500 homes plus steam heat for some of our buildings. It will get us roughly one third of the way to our 2015 goal of a 33% greenhouse gas reduction from 2007 levels. Because nothing like it had been done at this scale before, it could serve as a model for comparable systems in cities around the world.

The cost: 27.4 million Canadian dollars, or about one hundred forty-five million Kroner.

How could our operations people, who are accountable for university infrastructure, be convinced to agree to such an experiment? One key reason is that it will save us between 50 and 80 million Kroner over the next 15 years. Simply stated, it made good sound financial sense.

How could “the academy” agree to it? Because, although it was an operational project conducted with corporate partners, it certainly fit within our core academic mandate. That is, as researchers, we were genuinely curious to see what would happen and how we could help make it work.

How could our Board of Governors agree to it? Well, it made research sense, financial sense and operational sense. Beyond that, however, the final reason is that we all feel a deep commitment to sustainability. If we weren’t prepared to “*walk the talk*” (as we say in North America), then how could we imagine anyone else would take a risk at this scale?

With this demonstration project we combined the four cornerstones that serve as the foundation of our Living Laboratory:

1. Partnerships among researchers, businesses, organizations and the public sector
2. Conducted within our core academic mandate
3. Making sound financial use of our own infrastructure
4. With the prospect of transferring knowledge gained into practical action that changes the world for the better.

Does this sound reasonable and straightforward to you? Does it sound like a good idea? A workable approach? A useful academic strategy? Or does it make you shudder in horror at the prospect of unimaginable complexities?

Well, I certainly hope you like this idea, because frankly I'm here to sell it to you. I and my university think that you and other universities can and should take this step: to fully integrate your academic mission with your current operations and to fully engage the world beyond your gates in order to facilitate change. The details

are of course different depending on situation and context, but I think the concept is fully transferrable.

But if you experience a little bit of a shudder, I understand completely.

The concept of a living laboratory *is* relatively straightforward. It is, I believe, easy to see that this approach holds tremendous promise for research universities and for the world as a whole. But as the futurist Paul Saffo often says: “don’t mistake a clear view for a short distance.”

Closing this distance—integrating all aspects of the university into a workable living laboratory—is neither simple nor straightforward. So because I hope you will consider implementing a living laboratory strategy yourselves, I’d like to share some of what we learned as we navigated, and continue to navigate, this terrain. My hope is that the following four firsthand insights might be useful to you.

First, be prepared to re-think your approach to intellectual property.

Universities typically hold on to these rights but seldom have the resources to capitalize on them; but for startup businesses, control of

these rights is essential. What we learned was that intellectual property (IP) was becoming an impediment to innovation, not a means to it. So we relaxed our approach to intellectual property. We focused instead on relationships with our partners, and on the fruits of the research, not on ownership.

Second, be prepared to challenge traditional organizational roles and coax people out of their comfort zones. In order to integrate academics and operations with outside partnerships you will need to bridge what amounts to different cultures within your university. Consider these different entities:

University administrations are classical hierarchies. Their organizational structure looks a lot like a pyramid. Decisions mostly move from the top down, and it is reasonable to expect a certain amount of discipline and allegiance among the staff.

Within this hierarchy, *Operations* focuses its attention completely within the footprint of the campus. Our CFO and Vice President of Operations rarely travels for work. He and his staff are trained to make careful, long-range plans and implement them, taking full responsibility for the entire process. They tend to be generalists by

necessity. They are not, as a rule, encouraged to take risks with the smooth operation of the campus.

The Board of Governors oversees the overall administration of the university, and they are required to be fiscally responsible because they are the stewards of other people's money: taxpayers, tuition-paying students, endowments, donors, and foundations. They are fiscally conservative, for good reason.

Now consider the academic community of a university. Its structure, if it has one, is *not* hierarchical, but almost completely flat.

Researchers enjoy academic freedom and, as specialists, are more likely to experience allegiance with a handful of other researchers around the world than to feel any particular loyalty to the University they work for or the campus they work on. And their traditional approach to research is not necessarily in synch with the new demands of a Living Laboratory.

Let me explain: the longstanding model for academic research goes something like this: come up with an idea...work on the problem...come up with the answer....share the idea. And the job is done.

There's an old joke about a mathematician who goes to a conference and falls asleep in his hotel room. In the middle of the night he wakes up to discover that the couch in his room is on fire. There's a bucket of melted ice on the table nearby. Seeing the fire and the water, the mathematician says to himself "So. A solution exists." And, satisfied with himself, he goes back to sleep.

Not to be cruel, but academics—and I am one—are to a certain extent rewarded for an approach like this: we are motivated to seek answers and rewarded for discovering them and sharing them publically. But *applying the answer* is generally not as interesting and not as professionally rewarding for most of us. And yet, it is the *entire* job of an operations person.

So perhaps you can imagine that bringing all these different people—all these different *cultures* of people—together over a common project can lead to certain difficulties. Perhaps you don't have to imagine it: perhaps you've experienced some of this yourself.

We couldn't predict, as we began developing our Sustainability Academic Strategy and challenging our traditional roles, exactly how or how much our organization would have to change. It wasn't easy

to determine *how* different people with different skills and responsibilities would even begin organizing themselves.

If the organizational structure is too tight and too hierarchical, it won't be able to facilitate the cross-functional conversations and academic freedom that are necessary. If it's too loose it won't have the consistency and follow-through to bring people along and move things forward. We had to feel our way through this. Our organization evolved, adjusting lines of communication, making use of informal connections, having some difficult conversations, building trust and all along the way, finding common ground. It wasn't always comfortable, but it was productive.

My third recommendation is an expansion of the second. Be an agent for social change, and be prepared to change the way you and your larger community behave. The conversation on sustainability is inextricably linked to social behaviour. Changing formal and informal connections, having difficult conversations, building trust and finding common ground are necessary activities not only for changing the organizational behaviour of the university, but also of changing behaviour throughout the community and the broader world. The opportunity exists, for our university and also for yours, to create new

opportunities for learning that inspire our communities of students, faculty, staff, alumni, and partners. Technology can only ever be part of the solution. When we speak of a Living Laboratory we see the social dynamics of our own population of fifty thousand people as an essential subject of study, demonstration and change. We are a laboratory not only for demonstrating new technologies but a *living* laboratory for investigating different ways to *be*.

The mission of our Centre for Interactive Research in Sustainability illustrates the living laboratory principles. These are:

- Develop applied technical solutions in building materials and design for commercialization by partners.
- Combine expert knowledge and public values and preferences in exploring pathways to a sustainable society.
- Collaborate with private, public and non-governmental organization partners to create superior policy and business decisions for sustainable urban development.

Fourth, and my final recommendation: Be prepared not only to work differently, but to work much *faster*, especially as regards your partners in business.

Entrepreneurial and innovative companies move at the speed of thought. Academics and administrators are great thinkers too, but they do not, as a rule, *move* at anything close to the same speed. Since beginning to put our Sustainability Academic Strategy into practice we have become much more nimble. We've had to be.

At my university the results of these changes have been quite remarkable. For example, once our operations people saw that the sustainability initiatives were economically better and also really exciting and interesting things to work on, they became the most enthusiastic advocates of sustainability in our organization. And they brought with them their experience and skills for making long-range, complicated decisions which added new dimensions to our researchers' ideas.

Once our faculty members understood that the academic integrity of their research was going to be enhanced, not compromised, they got involved. Sure, they remained skeptical; but still, they got involved. Faculty members now actively sit in on every operational committee, and, together with the operational people, make certain that every decision made at our university incorporates thinking grounded in sustainability goals.

And finally, the greatest energy source at our university, and probably at yours, remains our students. We seek to do everything we can to honour their passion and prepare them to surpass their teachers. We have a program in place that encourages professors to incorporate our Living Laboratory projects into their courses. We do *not* offer specific degrees in Sustainability, and that is a conscious decision within our Academic Strategy. As I mentioned earlier, we are working to make sure that *every* student at our University can make sustainability an integral part of his or her education. Our mission, if you will, is to help prepare people who, no matter what their profession or jurisdiction, will be advancing the conversation of sustainability when they leave us and go out into the working world.



We are, each of us, part of an intricate and intimate global organism. This is true of our universities. It is true of our countries. It is true of our professions, and it is true of ourselves as individuals. If the future that we are all going to share is to be different from the past we carry with us, it will be because we all will have learned to think, to act and to interact in different, more comprehensive ways. We have an opportunity, and, to repeat, a responsibility, to provoke and inspire

continued learning and dialogue that accelerates the progress of sustainability both within our universities and beyond them.

It is no longer enough for us to wear sustainability like a feather in our caps; it needs to become the clothing that we wear every day.

The challenge for us all is to keep the conversation on sustainability alive and fresh. To do this we must work to make sure that the subject does not become too special, or too specialized. That our language does not become polarized or exclusive. And that we learn to cross the boundaries between people and learned professions.

What we are engaged in is neither a game, nor a battle, but we do want to *win*, and when we do, there will be no losers. *Everything—* and *every one—*will be included.

I'm eager now to hear from you. What are you doing? How can we in Canada learn from you?

Thank you.