

**David Suzuki's Lecture, "The Challenge of the 21<sup>st</sup> Century: Setting the Real Bottom Line", was given at the 2008 Commonwealth Lecture in London, England, hosted by the inter-governmental organisation the Commonwealth Foundation.**

## **Dr David Suzuki**

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I am a born and bred Canadian (although I did spend eight years in the United States for my university education in the 1950s and early '60s) and that shapes my perspective on the world. Although Canada is a sovereign nation, the country's border allows the influx of American movies, television and products that do influence us greatly. We Canadians have struggled to maintain our values and identity in the face of the most powerful nation on earth. So I was proud when Canada ratified the Kyoto Protocol in 2002 and I'd like to believe that our ratification influenced Mr Putin to sign on as well and make it international law.

Last year I spent thirty days on a bus going from St Johns, Newfoundland, on the east coast, all the way across Canada to Victoria in British Columbia on the west coast. I spoke in 41 communities to more than 30,000 people and also taped more than 600 interviews with people across the country telling me what they would do for the environment if they were Prime Minister of Canada. What I learned is that Canadians value nature as a part of who we are; they want it protected and they are willing to pay more taxes to do that. They want Canada to meet its Kyoto obligations. They want efficient, affordable public transportation. They want a carbon tax but they also want government and the corporate community to do their share.

When you are cheek to cheek with the United States it is hard to maintain independent values. We now have a minority government that has repudiated our Kyoto commitment and gutted programmes to reduce emissions. I would plead for the Commonwealth to remind my nation that Canada has been a good global citizen and that you expect us to fulfil our promises and obligations in the future.

It may interest you to know that I spent three years in an internment camp in British Columbia for being Japanese-Canadian, despite the fact that I was born and raised in Canada, as were both of my parents. My grandparents immigrated to Canada where they met and married. Yet we were all deprived of our rights of citizenship, lost all of our property, were incarcerated for the duration of the war and then were expelled from British Columbia at its end. So I am sensitive to the rights of the underdog and the fragility of our democratic promises.

I also treasure diversity. I, as a Japanese-Canadian, come before you in a shirt that wears the emblem of the Haida first nations people who have adopted me and my family. My half English/half Japanese daughter is going to marry a Haida this summer. So the Commonwealth Foundation's three pillars – governance and democracy, culture and diversity and sustainable development – are of great interest to me. I congratulate you for the theme of Commonwealth Day, *The Environment, Our Future*, because I believe this is the most important and urgent issue of our time.

Human beings are a truly remarkable species. We are able to conceive notions like democracy, science, equality before the law, justice and morality – concepts that have no counterpart in nature itself – but we have our shortcomings too. We demarcate borders that often make no ecological sense: dissecting watersheds, fragmenting forests, disrupting animal migratory routes. These human boundaries mean nothing to the flow of water, the atmosphere or oceans, yet we try to manage these resources within these confines.

When human numbers were small, our technology simple, and our consumption mainly for survival, nature was generally able to absorb our impact. Even so, it is believed that with simple stone spears and axes the Palaeolithic people that migrated across the Bering Strait and down towards South America extinguished slow moving mammals in their path.

As is well documented by Jared Diamond in his book *Collapse*<sup>1</sup> and Ronald Wright in *A Short History of Progress*<sup>2</sup> cultures have arisen, flourished and disappeared as human demands outstripped the carrying capacity of surrounding areas. In pre-history and even medieval times, humans were essentially tribal animals, confined to their tribal territory, perhaps meeting a couple of hundred people in a lifetime. They did not have to worry what tribes were doing on the other side of the ocean or giant lakes, or over mountains and deserts. But humanity has undergone an explosive transformation in the past century.

Consider this: in 1900 there were only a billion and a half human beings in the world. In a mere one hundred years, the population of the planet has quadrupled. Almost all the modern technology we take for granted has been developed and expanded since the late 1800s. Our consumptive appetite has grown rapidly since World War II so today over 60% of the North American economy is built on our consumption and ever since the end of World War II, economic globalisation has dominated the political and corporate agenda. All of these factors – population, technology, consumption and the global economy – have amplified humanity's ecological footprint, the amount of land and sea that it takes to provide for our needs and demands. The consequence is that we are now altering the chemical, physical and biological makeup of the planet on a geological scale. In the 4 billion years that life has existed on earth there was never a single species able to do what we are now doing today.

The famous Brundtland Commission report *Our Common Future*<sup>3</sup> which came out in 1987 coined the phrase 'sustainable development' and called for the protection of 12% of the land in all countries, a target which has absolutely no scientific basis and yet which very few countries have managed to achieve. But we are one species out of 15-30 million species on the planet and setting a target of protection of 12% of our land base for all the other species means that we seem to take it for granted that we can take over 88% of the land. And we seem determined to do it, to take over that 88%, destroying habitat and ecosystems around the world while driving tens of thousands of species to the brink of extinction every year.

We protect tiny patches of oceans as marine protected areas, whilst slaughtering fish and accidentally killing turtles, birds and marine mammals with long lines, drift nets and bottom trawlers. Boris Worm and his co-workers at Dalhousie University in Canada predict that if

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<sup>1</sup> Diamond, Jared (2005). *Collapse: How Societies Choose to Fail or Succeed*. Viking Books. 592pp.

<sup>2</sup> Wright, R (2005). *A Short History of Progress*. House of Anansi Press.

<sup>3</sup> World Commission Environment and Development (1987). *Our Common Future*. Oxford University Press. 383 pp.

we continue to overfish, pollute and destroy habitat in the oceans, as we are today, every fish species currently exploited will be commercially extinct by 2048<sup>4</sup>.

We have spread our toxic debris in the air, water and soil so that every one of us now carries dozens of toxic compounds in our bodies. A few months ago in Canada three members of parliament volunteered to be tested for a battery of over eighty toxic substances. They were shocked to find that all three of them carried dozens of these in their bodies. Our use of the air as a dumping ground for carbon dioxide and other greenhouse gases has altered the chemistry of the atmosphere which in turn is now acidifying the oceans as carbon dioxide dissolves as carbonic acid.

We have no means of dealing with these global issues with the level of urgency now required. For the first time in history we have to ask what the collective impact of all 6.6 billion human beings on earth will be. We have never had to do this before. We are tribal animals and it is difficult for us to get our heads around this task. We need the perspective of many of the small island states in the Commonwealth, states that are in imminent danger of being submerged by sea level rise from global warming. The metaphor of the canary in the coal mine is very apt. I was there in Kyoto in 1997 when island states pleaded for action to protect their land, but to no avail. Perhaps that should not surprise us. Many of the rich industrialised nations who created the problem of climate change through the use of fossil fuels for their economic growth, some in the Commonwealth, are themselves in great danger from climate change, yet are very slow to respond.

Australians elected four consecutive Conservative governments that denied the reality of human-induced climate change and refused to ratify Kyoto even though the country suffered severe drought for years. Australia is an island continent with most of its population living along the edges where sea level rise will have its greatest impact. My own country, Canada, is extremely vulnerable. We are a northern country and warming, we know, is going on more than twice as rapidly in the north as it is in temperate and equatorial areas. For decades Inuit people of the Arctic have begged for action to reduce greenhouse gas emissions because they can see the changes, but they have been ignored. Canada has the longest marine coastline of any country in the world and simple sea level rise through thermal expansion will impact Canada more than any other nation on earth. And Canada's economy continues to depend on climate-sensitive activities like agriculture, forestry, fisheries, tourism, and winter sports.

I was very proud when Canada ratified the Kyoto Protocol, but our current government has turned its back on our Kyoto obligations and cancelled all the previous government's programmes to reduce emissions. Indeed, until very recently, it denied the reality of human-induced climate change and continues to support the rapid expansion of Alberta's tar sands, which is the most polluting activity in the country.

North America along with Europe, Japan, Australia and other industrialised countries created the problem of climate change. Our industrial and economic growth now serves as a model for the developing world to follow. If a rich country like Canada or the United States cannot cap its emissions and bring them down, why should countries like India or China or any of the other developing nations pay the slightest attention to the demands to reduce theirs?

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<sup>4</sup> Worm B, Barbier EB, Beaumont N, Duffy JE, Folke C, Halpern BS, Jackson JBC, Lotze HK, Micheli F, Palumbi SR, Sala E, Selkoe K, Stachowicz JJ, Watson R (2006) Impacts of biodiversity loss on ocean ecosystem services. *Science* 314:787-790

I deliberately chose the title *The Challenge of the 21<sup>st</sup> Century: Setting the Real Bottom Line* because in Canada, the media, politicians and corporate executives repeat over and over again the mantra that the economy is the bottom line. I believe that this is totally misdirected attention.

What is the environmental crisis that we are talking about? What does it mean? In 1962, I was galvanised to join what became the environmental movement when Rachel Carson published *Silent Spring*<sup>5</sup>, a book about the unexpected effects of pesticides. It is hard to imagine what the world was like in 1962, but when her book came out there was not a single Department or Ministry of Environment in any government on the planet. Rachel Carson put the environment on the agenda around the world.

As I was swept up in the movement, along with millions of others around the world, I felt that human beings were removing too much from the environment, and returning too much waste and toxic material back into it. At that time the solution was to create an infrastructure of government departments of the environment, to enforce laws to protect endangered species and regulate the quality of air and water. But by the early 1970s I realised it would not work this way because we do not know enough to be able to regulate new technologies as they develop.

Let me give you a couple of examples. DDT had been synthesised in the 1800s but it wasn't until the 1930s that Paul Müller showed that DDT kills insects and could solve a lot of problems. This seemed a way to control pests that had plagued humankind while offering corporations an opportunity to make money. Müller won a Nobel Prize for his discovery in 1948. Then in the 1950s birdwatchers observed that predatory birds in particular were in decline and biologists discovered a phenomenon which we did not even know existed – bio-magnification. They found that DDT sprayed in concentrations of parts per millions is absorbed by micro-organisms that are not killed by it. Instead, it is concentrated so that at each trophic level up the food chain, DDT concentration is amplified. Eventually, in the fatty tissue in shell glands of birds and the mammary glands of mammals the DDT can become concentrated tens of thousands of times.

Looking back, could we have avoided DDT damage with regulations? When DDT began to be used, the phenomenon of bio-magnification was not even known to exist. We only discovered it when eagles began to disappear and scientists tracked it down. The same happened with chlorofluorocarbons (CFCs). CFCs seemed to be a wonderful invention – large ring molecules with chlorine atoms attached. Chlorine is a highly reactive element but it becomes inert when part of these ring molecules. Why does that matter? Well, CFCs seem to be a perfect additive to spray cans. If you are going to put, say, deodorant in spray cans you do not fill the whole can with deodorant, you do not need that much. You just put a little bit at the bottom and add a propellant. But if you put air in, the oxygen is highly reactive and breaks down the deodorant. CFCs, however, are big molecules and they are chemically inert. So we began to use CFCs by the millions and millions of pounds. Only years later did scientists discover that CFCs persist in the environment and in the upper atmosphere, ultraviolet radiation from the sun breaks chlorine atoms off the CFCs and the chlorine free radicals react with ozone and break it down. When scientists announced this, I had not even realised that there was an ozone layer up there to break down. How could we have managed CFCs when we did not have any idea what their effect would be in the environment?

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<sup>5</sup> Carson, R (1962) *Silent Spring*. Houghton Mifflin. 400 pp.

Something similar happened with nuclear power. When the atom bombs were dropped over Japan in 1945, scientists did not even know the existence of radioactive fallout. They did not know about electromagnetic pulses of gamma rays that knock out electrical circuits; neither did we know of the risk of nuclear winter. How could we manage these technologies when we are so ignorant of the way the world works?

I am a geneticist by training, and history indicates we are in for similar surprises with genetically modified organisms, or GMOs. We are now manipulating the very blueprint of life, creating organisms that have never existed before. Any scientist who tells you they know that GMOs are safe and not to worry about it is either ignorant of the history of science or is deliberately lying. Nobody knows what the long term effect will be. Europeans have been much more conservative about allowing GMOs into their countries. When I come to Europe, environmentalists tell me they are watching Canadians, who have been doing a huge experiment by eating it for over 5 years!

So for me as a scientist it was a real dilemma. We often see unpredictable environmental impacts arising from our use of science and technology. How can we manage the impact of these new powers when we are so ignorant about the world around us?

In the late '70s I began to see that there was a different perspective on the whole issue. When my wife, Tara, and I began to work with first nations people I would hear them talk about Mother Earth and the sacred elements. To me this was a nice metaphoric or poetic way of speaking but they would correct me and insist that they meant it literally. The Earth, they said, is our mother because it gives birth to us, creating us out of the four sacred elements, earth, air, fire and water. On reflection I realised they were absolutely right, and that science corroborates these ancient wisdoms. We environmentalists had framed the problem the wrong way. There is no environment out there separate from us here and no way to manage our interaction with it. There is no separation. We are the environment because we are created out of those elements of the Earth.

Now that may seem obscure but let me illustrate. When we were born and left our mother's body, the very first thing we needed was a breath of air. From that moment, 15-40 times a minute, we need air until the last breath we take before we die. We do not even think about it. But let me ask you for the next minute and a half just to think about what happens when you take a breath. 1-3 litres of air sucked deep down into the most moist and warm parts of our bodies, our lungs. If you have ever looked at a fresh kill of an animal and touched lungs, you will know that they are primarily made up of air.

Our lungs are made up of about 300 million capsules, or alveoli, and they are clustered around an alveolar stem like grapes. We have lots of these clusters in our lungs and we need them all to provide the surface area needed to come into contact with the air. If you flatten the alveoli of our lungs out into two dimensions, they would cover a tennis court. That is about how much surface area is wrinkled up in our lungs. Each alveolus is lined by a surfactant that reduces surface tension so that the air sticks to it. Immediately carbon dioxide rushes out of our bodies, oxygen and whatever else is in the air rushes in, and haemoglobin molecules in red blood cells grab on to the oxygen so that each beat of our heart can transfer that oxygen to every part of our bodies. And when you exhale you do not exhale all the air in your lungs. If you did that your lungs would collapse. About half of the air stays in your lungs even when you exhale.

The point I am trying to make is that you cannot draw a line that marks where the air ends and I begin. There is no line. The air is stuck to us and circulating through our bodies. We are air. It is a part of us and it is in us. Air is not a vacuum or empty space but a physical substance. We are embedded in a matrix of air and if you are air and I am air then I am you, we are a part of this single layer that encompasses the planet. We are embedded in that air with the trees, the birds, the worms and the snakes, which are all a part of that web of living things held together by the atmosphere or the air.

There is a wonderful thought exercise which the American astronomer, Harlow Shapley, did many years ago. He asked 'What happens to one breath of air?' How do you follow a breath of air? 98% of the air is oxygen and nitrogen. You breathe it in, oxygen and nitrogen go into your body. When you breathe out, a lot of the oxygen never comes back out because we need it, and some of the nitrogen, which is 80% of the air, stays in your body too. About 1% of the air is an element called argon, which is inert and does not react chemically with anything. You breathe it in, it goes into your body, and when you breathe out, it comes right back out. So argon is a very good marker or indicator for a breath of air. How many atoms of argon are there in one breath of air? Shapley calculates  $3 \times 10^{19}$ . That means three followed by 19 zeros<sup>6</sup>. Take it from me, that is a lot of argon!

So if we follow one of my breaths of air it eventually diffuses across London, then England, and finally around the world. According to Shapley one year later, no matter where you are, because the atmosphere is a single system, every breath you take will have about 15 argon atoms from that original breath a year before. On that basis Shapley calculates every breath we take has millions of argon atoms that were once in the bodies of Joan of Arc and Jesus Christ. Every breath you take has millions of argon atoms that were in the bodies of dinosaurs 65 million years ago. Every breath you take will suffuse life forms as far as we can see into the future. So air, surely, deserves to be seen as a sacred substance.

We think we are an intelligent creature, but what intelligent creature, knowing the role that air plays in our lives keeping us alive and connecting us to the past and into the future, would then proceed to use air as a garbage can and refuse to pay for putting carbon and all our pollutants into the atmosphere? We have much to reflect on the way that we use this sacred substance. It hurts me when I see young couples walking with a baby in a stroller and the baby's nose is right at the level of the exhaust pipes of our cars. You might as well put a hose on the exhaust pipe and pump that stuff right into the baby's body. Why are 15% of children in Canada now suffering with asthma? We are using the air as a toxic dump. We are air. Whatever we do to the air we do to ourselves.

So, you see, for me this is the shift in the way the environmental problem should be viewed. The environmental crisis is a crisis of human beings and we are treating ourselves as a repository for all of the pollution that we send out through our chimneys and tail pipes.

I will not elaborate on the other elements. Every one of us is at least 60% water by weight, we're just a big blob of water with enough organic thickener added to keep from dribbling away on the floor. When you take a drink of water you think it is London water. But in reality the hydrological cycle cartwheels water around the planet and any drink you take,

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<sup>6</sup> Shapley, Harlow (1967). *Beyond the Observatory*. New York, Scribners.

wherever you are, has [some] molecules from every ocean on the planet, the canopy of the Amazon, the steppes of Russia. We are water. Whatever we do to water we do to ourselves.

We are the earth because every bit of our food was once alive. In North America over 95% of our food is grown on the land. We are the earth through the food that we consume and yet we spray toxic chemicals directly onto the earth and the plants and animals we are going to eat. We even inject it into the creatures we are going to consume. We are the earth, and whatever we do to it we do to ourselves.

And we are fire because every bit of the energy in our bodies that we need to grow, move or reproduce is sunlight. Sunlight is captured by plants through photosynthesis and we then acquire it by eating the plants or the animals that eat the plants. When we burn that energy we release the sun's energy back into ourselves. We are created by the four sacred elements, earth, air, fire and water and that is the way that we should frame our approach to 'environmental problems'.

Why are we failing to respond to this simple truth and acting on it? There are, I believe, a number of factors that blind us to the reality of the problem and prevent us from acting in the way that we should. Two of them stand out for me. In 1900 the world population stood at 1½ billion people. There were only 16 cities with more than a million people. London was the largest with 6½ million people. Tokyo was the 7<sup>th</sup> largest city in the world with 1½ million people. Most people in the world lived in rural village communities and when you are a farmer you understand the importance of weather and climate. Farmers know about the movement of water and its necessity in the soil. You know how to build topsoil and fight off predators. You are much closer to the natural world when you are a farmer.

Cut ahead only a hundred years. By the year 2000 the population of the world had quadrupled to 6 billion, but now there were more than 400 cities with more than a million people. The ten largest cities in the year 2000 all had more than 11 million people. Tokyo was the largest city in the world with 26 million people. Can you imagine in a hundred years going from 1½ million to 26 million people? By the year 2000, especially in the industrialised nations, where 80% to 85% of us live in large cities, we have been transformed from a farming species into a large urban dweller. We are city animals now and in a city we live in a human-created environment where it becomes easy to think that we are special and different. We are so clever, we create our own habitat; we do not need nature.

A few years ago, I did a television series with 10 and 11 year old children called *The Nature Connection*. I asked them where they thought electricity came from when they turned on the lights, where water came from when they turned on the tap, and what happened when they flushed the toilet or put the garbage on the kerb. They did not know! When I asked where their food came from they said from the supermarket! Many of them did not know that vegetables grow in the soil, and were shocked to be told that hamburgers and hot dogs are made from the muscles of an animal.

If we are so ignorant of the fact that it is the biosphere, the zone of air, water and land that gives us these services, that gives us our electricity and water and food, and the biosphere that will absorb our waste when we are done with it, it becomes easy to assume and accept that the economy is the real bottom line. If we have got a good economy we have good garbage collection and sewage treatment. It is what fills our stores with all the goods, it gives us a

dependable source of electricity, and the economy becomes the highest priority for urban dwellers.

Even Ministers of the Environment buy into this. A couple of years ago I had an encounter with a provincial Environment Minister who told me that we can't afford to protect the environment if we don't have a strong growing economy. I told him that he was Minister of the Environment not the Minister of Finance, and that his job was to protect the environment! But even he believed the economy is the source of everything important because if it is growing we can afford extra money to protect the environment.

Economics and ecology are words built on the same root – 'eco' – from the Greek word 'oikos' meaning home. Ecology is the study of home. Economics is the management of home. What ecologists try to do is to determine the conditions and principles that govern life's ability to flourish and survive. Now I would have thought any other group in society would want the ecologists to hurry up and find out exactly what those conditions and principles are, so that we can design our systems to live within them. But not economists. We have elevated the economy above everything else and this, I think, is the crisis we face. The economic system that has been foisted on people around the world is so fundamentally flawed that it is inevitably destructive. We must put the 'eco' back into economics and realise what the conditions and principles are for true sustainable living. Let me just take a minute to give you the reasons why economics is out of sync.

First of all, nature performs all kinds of services. Nature pollinates all of the flowering plants, it is nature that decays material, returns it to the earth. It creates soil, participates in the nitrogen cycle, the carbon cycle, and the water cycle. All of these are economically valuable services performed by nature but economists called them 'externalities', by which they mean that they are not in the economic equation. Economists externalise the real world that keeps us alive. I confronted this when we were fighting to prevent logging in a valley where my government had granted permission to a forest company. The native community said they did not want the trees cut so I went to help them fight for their forest and I encountered an executive of the forest company. He asked me whether "tree huggers" like me would be willing to pay for the trees in the valley, because if we were not, those trees would not have any value until someone cut them down. Of course, he was absolutely right!

You see, as long as those trees are alive, they are taking carbon dioxide out of the air and putting oxygen back. Not a bad service for an animal like us who depend on it, you might think. But to an economist that is an externality. Those trees are clinging to the soil so when it rains the soil does not erode into and destroy the salmon spawning beds. That is an externality. Those trees pump hundreds of gallons of water out of the soil, transpire it into the air to affect weather and climate. That is an externality. That tree provides habitat to countless bacteria, fungi, insects, mammals and birds. That is an externality. So in our crazy system that forest, as long as it is standing, performing all of those functions, has no economic value.

Economists believe the economy can grow forever. Not only do they believe it can grow forever, which it cannot, they believe it must grow forever. Since World War II they have equated economic growth with progress. Nobody wants to stop progress but, if economic growth is what we define as progress, who is ever going to ask what an economy is for? With all this growth are we happier? How much is enough? We do not ask those questions. We have fallen into the trap of believing that economic growth forever is possible and necessary.

I am going to show you why this is absolutely suicidal. Anything growing steadily over time is called exponential growth and whatever is growing exponentially has a predictable doubling time, whether it is the amount of garbage you make, the number of taxis on the road, the amount of water you use, or the human population. So, if the population is growing at 1% a year it will double in 70 years; 2% a year it will double in 35 years; 3% - 23 years; 4% in 17.5 years. Anything growing exponentially will double predictably.

I am going to show you why it is suicidal to think we can keep growing forever. Let me give you a test tube full of food for bacteria, that represents our world. I am going to put one bacterial cell into that test tube (representing us), and it is going to divide every minute; that is exponential growth. So at time zero you have one cell; one minute you have two; two minutes you have four; three minutes you have eight; four minutes you have 16. That is exponential growth and at 60 minutes the test tube is completely full of bacteria and there is no food left, a sixty minute cycle.

When is the test tube only half full? Well the answer of course is at 59 minutes; but a minute later it is filled. So at 58 minutes it is 25% full; 57 minutes 12½ % full. At 55 minutes of the 60 minute cycle it is only 3% full. So, if at 55 minutes one of the bacteria said to its companions that they had a population problem, the other bacteria would be incredulous because 97% of the test tube would be empty and they had been around for 55 minutes. Yet they would have only 5 minutes left. So bacteria are no smarter than humans and at 59 minutes they realize they only have a minute left. So they give massive amounts of money to scientists, and in less than a minute those bacterial scientists invent three test tubes full of food. That would be like adding three more planets for our use. So it would seem that they (and we) would be saved.

What actually happens is this - at 60 minutes the first tube is full; at 61 minutes the second is full; and at 62 minutes all four are full. By quadrupling the amount of food and space, you buy two extra minutes! How do we add even a fraction of 1% more of air, water, soil or biodiversity? We cannot. The biosphere is fixed and finite and every biologist I have talked to agrees with me, we are past the 59<sup>th</sup> minute. So all those leaders saying that we have to keep the economy growing are saying we have to accelerate down what is a suicidal path.

Now when I say this to politicians and business people they get very angry with me. They remonstrate that our stores are filled, cities are growing and booming and we're living longer and healthier lives. How can we be past the 59<sup>th</sup> minute? I say it without apology. We are promulgating an illusion that everything is alright by using up the rightful legacy of our children and grandchildren. That is not sustainable, it is suicidal. I believe that is the challenge for our time. We have created a system that is completely out of balance with the real world that keeps us alive, and climate change is a part of the problem that we have created with this kind of economic system.

We have to set a new bottom line, a bottom line dictated by the reality that we are biological creatures, completely dependent for our survival and well being on clean air, clean water, clean soil, clean energy and biodiversity. We are social animals who need strong families and supportive communities, full employment, justice, equity and security and freedom from racism, terror, war and genocide. And we remain spiritual beings who need sacred places in the natural world that gave us birth.

Are there alternatives to the way we are living that allow us to live rich full lives without undermining the very life support systems of the planet? There are plenty of answers and different paths to follow as shown by individuals, organizations, corporations and governments in different parts of the world. I document some of them in *Good News for a Change: Hope for a Troubled Planet*<sup>7</sup>.

To the many individuals who ask me whether there are effective things they can do to reduce their personal ecological footprint, the David Suzuki Foundation, working with the Union of Concerned Scientists, came up with a list of ten effective actions that we call the *Nature Challenge*<sup>8</sup>. We are challenging individuals to commit to doing at least three of the suggested steps in the coming year and to date have more than 365,000 Canadians signed on.

Finally, it is clear that political and corporate priorities are focussed on too short a timescale, the political agenda being determined by coming elections while the corporate priorities are dictated by the quarterly reports. So we suggested looking ahead a generation and deciding the kind of future we would like: a Canada where the air is clean and 15% of children no longer come down with asthma; a country covered in forests that can be logged forever because it is being done properly; a nation where we can drink water from any river and lake as I did as a child; a place where we can catch and eat a fish without worrying about what contaminants are in it.

I have taken this vision of what we would like to business people, municipal politicians and multi-faith communities and all have enthusiastically agreed with it. So by looking ahead and projecting a future we wish for, we can agree on a shared vision. Can it be achieved? We set concrete targets and deadlines to achieve what we call *Sustainability Within a Generation*<sup>9</sup>, and it has received wide interest and support. In the nine categories of action, achieving genuine wealth, efficiency, clean energy, waste and pollution, water, healthy food, conserving nature, sustainable cities and promoting global sustainability, we believe we can achieve the desired goal in each. Indeed, John Godfrey, a Liberal Member of Parliament, has introduced a Private Member's Bill calling for *Sustainability Within a Generation* as a formal goal of the Canadian government. All we need is the recognition that it is absolutely urgent that we begin to make change and the will to work towards the goal.

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<sup>7</sup> Suzuki, D.T. & Dressel, H. (2002). *Good news for a change: hope for a troubled planet*. Niagara Falls, New York, USA, Stoddart Pub. 398pp.

<sup>8</sup> <http://www.davidsuzuki.org/NatureChallenge/>

<sup>9</sup> Boyd, D.R. (2004). *Sustainability Within a Generation: a New Vision for Canada*. The David Suzuki Foundation, Vancouver, Canada. 52 pp.