

On this occasion of the 50th anniversary of the IAEA we have the opportunity not only to celebrate its years of service and past achievements, but also to reflect on the challenges ahead.

Over the past 50 years our world has changed dramatically. This is a time of blinding technological change, blurring sovereignty, increasingly interconnected economies and growing alienation between citizens and their institutions.

The horror of 9/11 has surely illuminated the extent of our inter-connectedness and the fragility of a world of inequity. Two-thirds of humankind fall far short of having a decent quality of life. The gap between rich and poor is widening. A billion people living in dire poverty alongside a billion living in splendour, in a world made smaller by cell phones and the Internet, is surely a recipe for social confrontation. With a wave of terrorist attacks, epidemics and sudden economic downturns our fears seem larger, our apprehensions greater and our vulnerabilities magnified.

When the United Nations was created, the concept of enduring peace and security was central. We generally think of peace as freedom from war. Certainly when we take up arms against each other we are not at peace. But neither are we at peace if there is not enough food to eat. If there is inadequate shelter. If we are sick and cannot get medical care. If we are impoverished and cannot hope to escape poverty's grip. In these terms, millions of our sisters and brothers on this planet cannot be said to be secure or at peace.

I believe that a new notion of security – human security – is evolving. And, if we examine just one element of the agenda – the nexus of environmental and energy security – the challenges become clearly visible.

A sustainable world is not an unreachable goal, but any critical environmental, social or economic analysis would certainly raise questions about our current trajectory. In environmental terms we know what needs to be done. We know that we must end the assault on the Earth's life support system with our wastes and pollution and poisons.

Today's event pays tribute to the IAEA's role in deploying nuclear science to meet the Millennium Development Goals. The agency's laboratories and technical cooperation programs contribute in diverse fields: the promotion of radiation for food safety; the use of nuclear technologies in water resources assessment, monitoring and remediation; the use of medical radioisotopes to assess the efficacy of drugs for the diagnosis and treatment of diseases; and enhancement of agricultural productivity through pest control. The agency sets standards for the safety and security of radiation sources.

And by supervising the world's nuclear club, providing leadership on the regulatory oversight mechanisms now in place, and developing a system for international monitoring, the IAEA has overseen the peaceful development of a civilian industry that contributes significantly to meeting the world's energy needs.

Yet the world demand for power to fuel economic growth and improve social development continues to grow unabated and is expected to rise even more sharply in the coming decades. How to meet our ever-increasing energy needs in a responsible and environmentally sustainable way is one of the most vexing social and technical conundrums confronting the world today.

Evidence of our lack of progress in addressing global warming is before us daily. Just this past week, NASA scientist Jim Hansen warned that we have at best a 10 year window of opportunity to take decisive action to keep carbon dioxide emission growth in check if we are to avert a catastrophe. Already in the Canadian Arctic an area of sea ice "the size of Texas" has been lost.

As energy demand grows, climate change forces us to face the inevitability of a carbon-constrained world. There are those who advocate that nuclear is at present the only safe large-scale energy source available for baseload power. With nuclear energy providing

almost 17 percent of the world's electricity, its supporters point to an avoidance of production of two billion metric tonnes of carbon dioxide every year.

But public acceptance of nuclear energy faces challenges. The fear of human error such as occurred at Chernobyl, or of technical failure like that at Three Mile Island, is very real in the minds of many citizens. They cannot be ignored. They have every right to feel secure from accidental radiation releases.

The threat of terrorism and the nuclear weapons ambitions of certain states ensure that proliferation issues are always at the forefront. Progress on the arms control and disarmament agenda is monitored with concern.

And always there is the matter of nuclear "waste". Used nuclear fuel remains dangerous to humans and the environment essentially indefinitely. It must be managed carefully, in a way that provides the safety and security society demands, and in a manner that recognizes the rights of future generations to make decisions that are in their own best interests.

For the past 3 years Canada's Nuclear Waste Management Organization has had the privilege and challenge of engaging with Canadians in an attempt to find an approach for the long-term care and management of used nuclear fuel. It is from that experience that I draw two observations that may be helpful in finding a responsible path forward on energy and environmental security issues.

The first observation is that it is not the scientific and technical challenges that should occupy our greatest attention. It is the challenge of attitudinal and behavioural change - both of individuals and institutions - that will prove to be formidable over time.

Almost all of the problems we face are those at new interfaces demanding integration between related forces both environmental and human. Social, ethical and economic considerations join the technical as legitimate and essential aspects of the public policy process. No one UN agency, government department or academic discipline holds all wisdom and knowledge. Our times demand that we bridge divides, find alignments and make diversity a virtue.

To be able to choose the right technical solutions we must first ask what requirements the technology has to live up to. Despite the fact that scientific and technical research into waste management options has been going on for decades a solution has eluded us. Perhaps that is because there has been no agreement on the societal values we wish to protect. Perhaps also because we have been arrogant in our assumptions that expertise resides only in the minds of a select few.

How we approach this challenging public policy issue will say a lot about our values and priorities as a society – how we want to live. Fundamentally it is about developing a contract between science and society: a contract that allows us to benefit from technology while managing the risks and respecting the values of our citizens.

You may have noticed that I said it was a privilege to engage the Canadian public in our work. That is my second observation – there is an inherent wisdom among citizens that policy makers would be wise to tap.

During our study we were often asked: Why is it necessary to consider ethical and social aspects? Surely we seek the best technical response. In its simplest form the answer is that the public has a right to be engaged in discussion about matters that affect their lives fundamentally. Central to the issue of waste management is risk. While scientists and specialists can articulate the nature of the risk and ways in which that risk might be mitigated, it is really society that will ultimately decide which risks they are prepared to accept. We have come to understand that some degree of social acceptability is a requirement in obtaining a social license to operate. So values and deeply-held beliefs matter a great deal.

An ethical framework also made us profoundly aware of the time dimension. We were asked to propose a system which must meet rigorous standards of safety and security for periods longer than recorded history. No other public policy initiative has ever been challenged to perform over such time frames. We do not know what technologies will be available to future generations. Nor do we know what changes there will be in institutions, values, political perspectives or financial circumstances. We have a responsibility to deal with the problems we have created today and a duty to leave a sound legacy for future generations.

The fact is that there are no “right” answers to many of the ethical questions. How do we accommodate the desires of the current generation while recognizing that the decisions we make now may affect the lives of our children, their children and many generations to come? How heavily should we rely on emerging technologies? What forms of institutions and governance inspire trust and confidence?

By seeking genuine dialogue and multiple perspectives we found common ground among citizens and specialists. The public demonstrated consistently that it is both willing and capable of thinking through the difficult trade-offs. They instinctively understood the precautionary approach - because they are humble about the state of our current knowledge and uncertainties over time, optimistic about the future, and respectful of the implications of decisions made today to future generations. The public does not shun risk. Instead it seeks to manage it in the best way possible with decision-making processes which are phased, adaptive, inclusive, deliberative. Only a transparent process of decision-making which deliberately considers a diversity of views was considered trustworthy of protecting the public interest.

Recently a visionary designer Bruce Mau asked the question: “Now that we can do anything, what will we do?” His thesis is that in a world facing profound challenges, many brought on by innovation itself, human ingenuity can be harnessed for global prosperity and a sustainable future.

The challenges of alleviating poverty, building a safe and secure world and shaping globalization require our best efforts. A future of more mouths to feed, uncertain environmental conditions and unmet development expectations should make us pause. Sustainable development remains largely theoretical for the majority of the world’s people.

To achieve a world that works for everyone will require uncommon dedication, creativity and energy. This world needs thinking, caring ethical human beings who have a sense of responsibility for those with whom they live and the environment in which they live. We must not be mere observers of the changes taking place around us.

Perhaps there is no better time than now, at a celebration of fifty years of environmental leadership to humbly rededicate ourselves to the welfare of the human race. We owe it to this and to succeeding generations. It is quite simply an ethical obligation.