

An interview with Ambassador John Ritch, Director General, World Nuclear Association

John Ritch, an advocate for Nuclear Energy for Sustainable Development, has been formerly the US Ambassador to the United Nations organizations in Vienna, such as the International Atomic Energy Agency and the Comprehensive Test Ban Treaty. He is presently the Director General of the World Nuclear Association (WNA), a global non-governmental trade organization representing the global nuclear energy industry whose aim is to promote international action on climate change and a central role for nuclear power.

Here are some excerpts from an interview with Ambassador John Ritch, held on 9 October 2001 in New Delhi, on various aspects of application of nuclear energy for civil use.

What are your views on NPT (non-proliferation treaty)?

I am a very strong believer in the NPT. I believe it serves the world's interest and India's. I believe that it represents one of the great diplomatic achievements of history. It was simply an unfortunate aspect of history that India was placed in a position that forced her to remain outside the treaty. And we have to deal with that fundamental reality now, we cannot keep turning away from it, pretending it does not exist, pretending that India can ignore its own strategic interests in order to satisfy the purest aspirations of people who want to perfect the NPT. The NPT is as close to perfection as a diplomatic achievement can be. We have nearly universal participation in it, we have a strong safeguard system to back it up and it just so happens that India is not a part of that, even though India itself has an admirable record in terms of its own NP behaviour. And we need to look ahead to the needs of the 21st century now. We need to preserve the NPT and we need to figure out a way to adjust the Nuclear Suppliers Group (NSG) rules in a way that serves our interests in our wider commercial interaction with India and our interests in preserving a strong non-proliferation regime. And I think, both of these interests can be reconciled through joint diplomacy.

What are the biggest hurdles in promoting nuclear power?

There is no one single hurdle. This is a well-established technology. We have 10,000 reactor years of experience with nuclear power in the world, 200 of

those reactor years in India. It is a very mature technology and very safe. The cost of nuclear electricity is steadily coming down because of advances in plant efficiency, because of new approaches to plant design and construction. Because the comparative cost of fossil (fuel) would be going up and fossil prices would be going up even further when national and international policies start penalizing pollution. National and international policies are going to penalize CO₂ and other pollutants and emissions in a larger way. And as that occurs and nuclear energy becomes increasingly affordable and efficient, then suddenly nuclear energy is going to be recognized for the superior technology that it is. And when that happens, there is going to be a sea change in the way the world produces electricity.

Is nuclear power economically viable?

Nuclear energy is the cheapest energy to produce, once the power plant is built. If there are capital costs at the beginning which are larger than other kinds of power plants, the operational costs tend to be smaller than those for other kinds of power plants. Now for countries that are capital-short, that creates a bias against nuclear energy. That bias needs to be rectified because the long term rational planning for a developed or developing country is to produce clean energy over the long term. And so we need to bridge this financial gap. It can be bridged through international lending, it can also be bridged through new reactor design that enables you to build smaller reactors and to continue to build them in a modular way so that you do not need an

enormous capital. At the beginning you can build a 100 MW and then another 100 and then another 100, constantly engaged, such as the painter of a large bridge. Once they are done they start doing the same thing over and over again, which is the concept of the pebble-bed reactor coming out of South Africa. People have been analysing how to keep these initial capital outlays down. A lot of time and energy has been put into this and when we begin to build again in the West (when I talk about the West, I am principally talking about the US and Western Europe), we are not going to be building unique reactors everywhere. We are going to settle on 2 or 3 designs and then make them over and over again, with a lot of pre-fabrication and a lot of efficiency.

What about the safety of nuclear power plants, particularly after the Chernobyl incident?

The Chernobyl incident is widely misunderstood and widely distorted. First



Ambassador John Ritch (Photo credit: Department of Atomic Energy, Government of India).

of all, there will never be another reactor like Chernobyl built anywhere in the world. So we are dealing with a historical anomaly. We are also dealing with a single accident of 10,000 reactor years of experience in which a relatively, 'relatively' and I emphasize that word, a small amount of human and environmental damage was done. There have been chemical accidents, there have been coal-mining accidents. They are so common that they go unreported in national and international media that completely overshadow the damage done by Chernobyl. There was two months ago, a coal-mining accident in China that went unreported in the world media. It killed a hundred people, which is more than those that have died in the entire history of nuclear power production in the last half century, including all those people lost in Chernobyl. Again, Chernobyl remains hanging like a great spectre over nuclear power, when it was one anomalous incident that had relatively only a small level of human harm. And that relatively small level is not my opinion; it has been validated by an extensive and expensive study by the World Health Organization (WHO) and the UNSCEAR (United Nations Scientific Committee on the Effects of Atomic Radiation).

The concept of clean power employing nuclear fission has been around for quite a while. But after Chernobyl, is it still popular?

No. No energy source is popular. People do not think of energy sources in popularity. People do not even understand where all their electricity comes from for the most part.

Have we learnt enough from the Chernobyl disaster, i.e. has the cause of failure been pinpointed and its after effects understood?

Well, I just said they have not been understood. There is a popular myth that Chernobyl demonstrated that nuclear power was unsafe. What Chernobyl demonstrated was that even if you have a one-of-a-kind accident, it would never be repeated again and that it was the worst accident where people died out of stupidity and bad design. You still do not get a large human and environmental consequence. You have a

public relations consequence that far outweighs the actual human and environmental consequences.

You have been called a 'passionate advocate for promoting nuclear industry on a global scale...

(Interjects with a smile) Enthusiastic and rational, I would say.

... as an answer to environmental degradation'. Can nuclear energy ever be called 'GREEN' or pollution-free?

Definitely. It is the one Green technology which is able to produce large-scale baseload electricity (electricity to supply the major load) all around the world. Every other Green technology that we have right now, may be plausible – solar, biomass, geo-thermal, but they are not expandable on a large scale. They have niche markets, they have niche roles to play and they should be supported. Conservation should be pursued with great diligence. But, conservation and the so-called 'new renewable' cannot meet the needs of mankind. India needs electricity on a large scale, to meet human needs. If we are going to need a clean environment, we are going to do it through nuclear means.

Besides normal reactor safety, there is the problem of waste disposal and dismantling of spent reactors. At present, the first generation reactors around the world are reaching the end of their lifetime. In this context, have actual field studies of the problem of nuclear waste disposal been carried out? If not, is it a good time to start a fresh programme?

Waste disposal has been widely and extensively studied for many years and the scientific community of the world is unanimous that it is not a scientific challenge unmet (not addressed). This has been addressed and solved by science. What remains to be done is to solve the political acceptance problem. In the year ahead I think you are going to see major strides in this field, because the United States, Sweden, Finland and Russia are all moving very rapidly right now to implement a permanent repository in their own countries. You get the combination of large technologically-advanced leaders like Russia and the United States and

smaller technologically-advanced countries with great moral authority like Sweden and Finland, then you have a very persuasive case that when people study this and address themselves to it rationally, they recognize that this is not a problem. Nuclear waste is small in quantity and manageable in the long term.

In a similar vein, hopefully it will not be like the famous pesticide DDT for which even a Nobel Prize was awarded. The world loved it 50 years back, but now shuns it

I think nuclear energy has experienced some of the same water or fate. The difference is that DDT will not be used again and nuclear energy is going to gain a great resurgence in popularity and utilization. Because people will recognize that we have learnt from the mistakes of the past. That the mistakes of the past have been relatively minor compared to the benefits of this Green technology. We are going to be using it on a large and increasing scale, simply because it is the one technology that is going to meet human needs effectively in the 21st century.

Can you please elaborate 'nuclear energy for sustainable development'?

Nuclear energy is a sustainable development technology. It has a safety record that is unsurpassed. Its use causes little or no pollution. Its fuel would be available for multiple centuries and it is able to be utilized on a scale that meets the needs of an expanding world population and an expanding world economy.

The leader in application of nuclear energy for civil use, the United States of America, has in the last 15 years not really shown any new initiatives in this area. If so, why? The situation is similar in Western Europe

Well it is not true. The United States has been generating more and more nuclear electricity every year. We have done so not by building power plants, but by perfecting the utilization of the ones that we have. We have taken our power plants, up from a 50% capacity factor to over 90% capacity. They are being re-commissioned in that sense, for much longer periods of service. The

United States has recognized that we have an inadequate generation capacity for the 21st century. We have not been building any power plants at all in the last 15 years. We are going to start doing that again (building nuclear power plants) and a very significant percentage of the new power plants is going to be nuclear. (The largest user of nuclear power is France, which generates 75% of its electricity from nuclear energy. The United States gets 20% of its electricity from nuclear energy.)

Over the years, USA has been following a skewed policy on nuclear energy, especially towards developing and some developed countries. Even now your website lists India under 'proliferation of nuclear weapons', underplaying India's independent development of nuclear power for civil use. This policy has in fact delayed the worldwide use of nuclear energy as a safe and reliable supply of electricity

This is a subject that any reader wants to read about. What about India? What about Pakistan? You would have to have your head in the sand to think that a reader trying to learn about nuclear energy would not be interested in that subject. So we have a paper that addresses it.

... This policy has in fact delayed the worldwide use of nuclear energy as a safe and reliable supply of electricity

No, why?

For example, the way in which the United States has been interacting with India

The United States has been interacting with India in exactly the same way that the entire NSG has been interacting with India, which is not to interact. This is what needs to be changed. This is an international policy, not an American policy, although the United States has certainly embraced it.

It is understood that the NSG makes demands on full scope safeguards, beyond genuine proliferation concerns. This is slowing down the expansion of nuclear power capacity in the world and business interests of a group like yours. Any comments?

I think it is perfectly understandable that in 'one-point' industry, the NSG in

the effort to support additional participation in the NPT, agreed on a policy of insisting NPT participation as a precondition for normal peaceful nuclear powers. This was a policy that had a rational basis and supported a rational aspiration to maximize the participation in the NPT. That objective has now been achieved. We have brought up against (i.e. faced with) the fact that there are three countries in the world (India, Israel and Pakistan) that simply do not fit within this particular structure. We need to recognize this and accommodate it. Now, in accommodating it we do not want to make changes that cause the NPT to be weakened and I think we can accomplish that. I do not consider the NSG as a nefarious group. I do not consider it as an ideological group either. I consider it as a group of nations with the US and many others as participants, who are trying to make sure that NP regime is effective. And that's what the NSG is all about. But, once all those premises are established, it is possible to adjust the policy of the NSG to recognize that India is a great and important nation and is unable for its own strong strategic reasons, to join the NPT. And yet is a legitimate practitioner of peaceful nuclear technology and should be interacting with the rest of the world on that front because we have large-scale human and environmental imperatives that we need to be pursuing.

Is the WNA website representative of your opinion?

Well, I do not know (laughs). If you find something on that I do not agree with, then no (chuckles).

According to your website and I quote 'India's nuclear power programme proceeds largely without fuel or technological assistance from other countries'. What role will your organization have to play here?

What we are trying to do is bring Indian organizations into a larger nuclear community with a view to expanding commerce between India's peaceful nuclear activities and the rest of the world's. Some of those can be done now, some of those would require a policy change. As it is time to make that policy change, we want to begin to prepare for a world where nuclear energy

would be expanding in India and elsewhere, where co-operation can be valuable and begin to advocate the earliest possible adoption of change in policies that would facilitate that interaction. There are some barriers now and they need to be brought down.

What kind of barriers?

The trade barriers that are established by the NSG.

Now that you have been so strongly advocating nuclear energy, are thousands working on non-conventional energy sources 'wasting their time'? And more importantly, will these intellectuals really leave their research efforts to support your cause?

All of the clean energy technologies should be thought of as partners. Sun, wind, geothermal, biomass, hydro and nuclear energy have one thing in common, they help mankind produce electricity without detrimental effects on the environment or the climate. These are not adversaries. It is in the charter of ethics of WNA that we support all clean energy technologies. The basic tenet of our policy is that we do not like to see these technologies pitted against each other. But, some of the advocates of wind and solar energy pit themselves against nuclear energy. We do not think of it that way. We think that all of these things have to be promoted as rapidly as possible. Because the common enemy is the degradation of the environment and we need to act in a way that averts the dangers that are rapidly rising.

Also, there is public opinion to be addressed. I personally know that an institute in Delhi, which accelerates ions but has the word 'nuclear' in its title is misconceived by the locals as 'The bomb factory'. The general feeling is that 'nuclear is an absolute no'.

Our goal is to turn that around so that people recognize that nuclear is an absolute yes. And a wider public understanding of the realities would cause that kind of shift.

According to you, what percentage of a society's power demand should be met by nuclear energy?

As much as possible.

IN CONVERSATION

Put a percentage on it

France has shown the way. We need to build as many nuclear reactors as we can and it still would not be enough.

In today's interdependent world, a single event can have catastrophic effects that will influence the entire world. Is there a risk in going nuclear so steadfastly?

The world has never been endangered by nuclear power. Even the consequences of Chernobyl were relatively limited when examined by the WHO. The far greater danger to mankind right now is a status quo policy that carries us into a doubling and tripling of greenhouse gases, which will have catastrophic effects on the biosphere. The dangers from radiation coming out of a nuclear power plant are extremely small, the dangers of catastrophic climate change are extremely great.

And with a captive nuclear power station in place, how do you propose to restrict the clandestine use of such facilities, for example, in the development of weapons.

There is only a thin line separating the two, like Bertrand Russell said 'a martyr is a murderer, once he crosses the border'

The relationship between a nuclear power plant and a nuclear weapon is a very distant relationship. A nuclear power plant is not a potential nuclear weapons factory. It is not a potential bomb. A nuclear power plant will not blow up. A nuclear power plant has one thing in common with a nuclear weapon and that is they both derive from an element put on the planet ubiquitously by our Maker, called uranium. A hundred years ago, people began to understand that it would be possible to get power by splitting an atom. They discovered later that uranium was the one they knew how to split. This has great potential for good or ill. But the technologies that are used to achieve that are very different. To pull energy out of uranium for electricity requires technology that is very different from pulling energy out for a bomb. There has never been a nuclear weapon made through the misuse of a

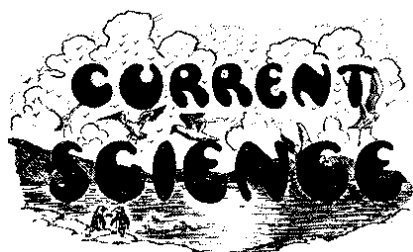
nuclear power plant. All clandestine and publicly open nuclear weapons production has been done through specialized secret military projects. They have nothing to do with the civil production of electricity from nuclear energy.

Finally, what is going to be your mission and WNA priorities in the future? Would you like to highlight any of these?

To fulfil our name by developing genuinely global membership and to begin to coalesce a world nuclear community, nuclear professionals who are existing but in a disaggregated way and to work to promote their common profession which is the use of nuclear energy technology for sustainable development. That is our goal and that is why our subtitle is 'Energy for sustainable development'.

Nirupa Sen, 1333 Poorvanchal Complex, JNU New Campus, New Delhi 110 067, India. e-mail: nirupasen@vsnl.net

FROM THE ARCHIVES



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The impact of science upon society

Scientists see very clearly how, if politicians were more intelligent, if business men were more disinterested and had more social responsibility, if governments were more fearless, far-sighted, and flexible, our knowledge could be more fully and quickly used to the great advantage of the standard of life and health – the long lag could be avoided, and we should work for social ends. It means, says Mr Julian Huxley, 'the replacement of the present socially irresponsible financial control by socially responsible planning bodies'. Also, it obviously involves very considerable alterations in the structure and objectives of society, and in the occupations and

pre-occupations of its individuals. Now a careful study of the literature of planning shows that it deals mainly with planning the known, and hardly at all with planning for changes in the known. Although it contemplates 'planned' research, it does not generally provide for introducing the results of new research into the plan, and for dealing with the actual *impact* – the unemployment, redirection of skill, and location, and the breaking of sentimental ties that distinguish men from robots. It seems to have not many more expedients for this human problem than our quasi-individualist society with its alleged irresponsibility. It also tends to assume that we can tell in advance what will succeed in public demand and what will be superseded. There is nothing more difficult, and the attempt to judge correctly under the intellectual stimulus of high profits and risk of great losses is at least as likely to succeed as the less personally vital decision on a committee. Would a planning committee, for example, planning a new hotel in 1904, have known any better than capitalist prevision that the fifteen bathrooms then considered adequate for social demand, ought really to have been ten times that number if the hotel was not

to be considered obsolete thirty years later? Prevision thought of in terms of hindsight is easy, and few scientists have enjoyed the responsibility of making practical decisions as to what the public will want far ahead. They, therefore, tend to think of prevision in terms of knowledge and appreciation of particular scientific possibilities, whereas it involves unknown demand schedules, the unceasing baffling principle of substitution, the inertia of institutions, the crusts of tradition and the queer incalculability of mass mind. Of course, in a world where people go where they are told, when they are told, do what they were instructed to do, accept the reward they are allotted, consume what is provided for them, and what is manifestly so scientifically 'good for them' these difficulties need not arise.

What we have learnt concerning the proper impact of science upon society in the past century is trifling, compared with what we have yet to discover and apply. We have spent much and long upon the science of matter, and the greater our success the greater must be our failure, unless we turn also at long last to an equal advance in the science of man.