ANS – Speech by Bruno Comby, founder and president of
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October 20th, 2020

THE FUTURE OF NUCLEAR POWER

Dear friends of clean nuclear energy,

I'm Bruno Comby speaking to you from my ecohouse in Houilles, near Paris in France, at the headquarters of ENVIRONMENTALISTS FOR NUCLEAR ENERGY.

EFN is an international not-for-profit organization which gathers over 16,000 members and supporters in 65 countries around the world.

Our time together is short, therefore each minute is precious. I would like to make it clear that this is only an outline and that I could give a much longer talk on each of the subjects I will be mentioning below.

The question I will be dealing with today is THE FUTURE OF NUCLEAR POWER and how to get nuclear power going again.

The answer to this question is not just technical, I would say it is more about EMOTIONS and changeing our beliefs. It is about transmuting not an element into another element of the Mendeleiev table, but about transmuting FRIGHT of everything nuclear into ENTHUSIASM about the many benefits of nuclear energy.

FRIGHT and ENTHOUSIASM are exclusive emotions.

It is either one or the other.

Today the word NUCLEAR or RADIATION evokes mostly fear, dangers.

To get everybody to understand the wonderful potential and the immense future of nuclear energy, we need to wake up, open our eyes, and to think and act differently from what we've been doing.

For the future, we can't continue thinking and doing exactly what we have been doing until now and expect different results.

Nuclear energy around the world and particularly in the United States and Europe, is now in a situation close to being paralyzed after decades of pressure from incompetent but largely subsidized antinuclear groups, followed and amplified by short-sighted opportunistic politicians.

We are also restrained by self-inflicted unnecessary regulations such as LNT (Linear No-Threshold Low Dose Radiation guidelines with terribly false Collective Dose Corollary) or concepts such as ALARA (As Low As Reasonably Achievable design requirements) and many rules and regulations resulting from these ideological mistakes.

Nuclear energy is therefore in a situation somewhat like a car halted by a heavy snow storm, even if the snow is only in our imagination, it is still halting the car due to misbeliefs of what what one should do. It is time to open our eyes, find out whether the snow is real or not, take a shovel and move that snow out of the way, and move proudly and safely towards the future.

Don't forget that myths about train technology almost killed it in its early years.

The technology of nuclear reactors in operation today was developed in the late 1960s and 1970s. It is only about 50 years old.

50 years was the age of railway and train technology… in 1880.

In those times, there were still only horse carts in the streets, no automobile engine-driven cars yet. Trains today are now far better, more modern, faster. We have high speed trains. Trains are now universally accepted. Can you imagine that misbeliefs almost killed the entire train technology in its first century ?

In 1880 a significant proportion of the population was still irrationnally afraid of train technology. Some cities refused to even have a train station in town. Now nobody opposes trains any more.

We can expect nuclear in the future to be well accepted, as trains are today. Intrinsically safe nuclear reactors can then be built at a much lower cost, much closer to cities where the energy is needed.

Let's explore how nuclear should evolve in the coming years to become better, safer and satisfy humanity's health needs and energy needs in an even better way than it already does.

First of all, there are two areas where nuclear technology brings a fantastic contribution to human development : HEALTH and ELECTRICITY generation.

The great benefits of nuclear energy in the future can be expanded :

First of all, what nuclear energy is doing for humanity today with over 400 nuclear reactors operating in France, Europe and the United States and some Asian countries, should spread to every country in the world.

Entire regions of the world such as central and northern Africa should follow the example of South Africa.

Central America and most of South America, and large parts of Asia are yet to discover the many benefits of nuclear power.

If a technology is useful, then we shouldn't keep it confined to a limited number of privileged people. This potential is immense : we can look forward expanding progressively the number of nuclear reactors operating in the world about 10-fold.

In the health area : nuclear medicine today makes a strong contribution to medical diagnosis (medical imagery) and treatment of cancer. Radiotherapy exposes the patient to very high doses of radiation exposure that kill cancerous tumor cells. This is coherent with the « destructive » image of radiation.

In the future there is a huge potential for HEALTH PREVENTION and HEALTH TREATMENTS based on lower doses that stimulate our immune system. Either whole body exposure or local exposure. This needs a radical vision change that remains to be done, but opens a window on tremendous new health benefits.

As concerns today's large nuclear power plants : instead of producing only electricity, nuclear power plants can easily produce large amounts of LOW TEMPERATURE HEAT (50 to 80 degrees celsius). Today this heat is simply thrown out into the oceans and rivers and lost. This lost heat can be recovered to heat greenhouses and keep our homes warm in winter. There is an immense potential for COGENERATION of elctricity and heat, especially in the United States, Canada, Russia, and in northern Europe such as in Finland. Anywhere heat is needed, nuclear power is a solution.

The recommendations for the future have to be different than recommendations applied in the past, because the past has brought the world to almost a standstill for advancement of nuclear power except in Russia and China.

So please excuse me if some suggestions are a bit « out of the box » of what the nuclear industry has been saying until now.

Thinking « out of the box » with an open-minded creative and optimistic attitude is exactly what the nuclear industry needs to regain its useful role in bringing better life standards to the entire world's population.

The industry is halted because it is focusing much of its efforts on answering problems largely invented or artifically amplified by antinuclear groups. Nuclear supporters, promoters and companies should refocus on a positive proactive attitude rather than a defensive reactive attitude today.

Let's start thinking about nuclear in more general, more positive words. See the larger picture and speak out.

Nuclear energy and radiation are not a problem, they are a great solution for the future !

In fact THE key that opens the door to a better life and it makes possible the continuation of our wonderful civilization.

Let's lift our heads and see how vast is the potential. How much good our nuclear industry in France/Europe, and in the United States can bring to every country that needs it, be it in our own countries or in Central and South America, Africa and elsewhere. There are still so many people to be served with clean affordable electricity, and better health care.

Look at the solutions, not at the imaginary problems of well-confined and isolated nuclear waste.

A crisis like WWII or the Covid crisis we are experiencing now is a unique opportunity to rethink the world and offer our children a new start and a new vision.

Some obstacles to be overturned relate to :

government level, public acceptance, nuclear power technology, used fuel reprocessing and recycling, with different solutions for different countries.

Let's examine these different point one after each other.

1) at government level : politicians shouldn't just follow the polls and the journalists. Politicians are – or at least they should be – leaders proposing a vision, moving forward, leading the way, explaining the situation in simple terms and pushing innovative solutions with a clear and powerful vision. Like ATOMS FOR PEACE. This great American vision of nuclear energy by the United States President Eisenhower at the United Nations in 1953 is so true, it is to be revived and amplified.

2) Public acceptance : will become positive again when the public understands the beneficial effect of low doses of radiation. During the first half of the 20th century, radiation had a highly positive reputation, especially healthwise. Today it is the exact opposite : many believe that even a tiny amount of radiation will kill you when in fact radiation is bathing us everywhere in nature, cosmic rays from the sun, telluric radiation from the Earth, even our own body is naturally radioactive. The LNT concept is simply untrue. The French Academy of Sciences has repeatedly outlined that no adverse effects of radiation have ever been observed below 100 mSv of radiation exposure. The LNT concept is not only scientifically wrong, it propagates a negative image and plays a major role in amplifying the FEAR about radiation. There is a threshold for the health effects of radiation and it is 100 mSv. Below that radiation is harmless or beneficial at natural doses. Above that we can observe harmful effects.

Radiation is exactly like everything in nature : the dose makes the poison.

Low and intermediate levels of radiation have beneficial effects to enhance our immune system. This can be useful for therapeutic use in hospitals. LNT is depriving the population from this beneficial use of radiation. There are today only a very small number of facilites, locations and clinics proposing the benefits of radiation for global health. For example there are radon clinics radon spas in some countries, and radon health mines in Montana, and the thorium beach of Guarapari in Brazil is famous for its health benefits. I went there myself to measure radiation on the beach. It is 50 microSv/hour.

We are of course all aware of the beneficial effect of sun exposure for vitamin D metabolism. Radioactive rays are just another type of radiation. It is also GOOD for our health. When the public will understand that low doses of radiation are indeed USEFUL for health, they will instantly change their minds about everything nuclear. FRIGHT will mutate into ENTHUSIASM again, - as when Marie Curie was alive and until the 1950s. Many thermal spas, rivers or beaches around the world owe their benefits and positive reputation to their radon or thoron content, but the public simply doesn't know the facts about LNT and natural radiation.

EFN informs the public about these eye-opening subjects. Let's speak out more and reach out to a larger audience !

Some concepts today promoted by the nuclear industry itself have to evolve.

Such as the ALARA principle which is the basic concept of radioprotection. Don't misunderstand me, EFN is in favor of high safety standards. But ALARA leads the public and politicians into believing that even very small amounts of radiation are toxic. I propose to change the ALARA principle to replace it with the ALAIN principle : AS LOW AS IN NATURE. I could expand more on this conceptual change. It is a highly ecological concept. Radiation regulations and dose limits today apply only to artificial radiation, leaving aside the much higher natural exposure. But our body doesn't distinguish wether the radiation is coming from nature, mother Earth, cosmic rays or a nuclear reactor. All radiation exposure limits should be expressed in terms of TOTAL radiation exposure (natural AND artificial). Having infinitely low limits on artificial radiation and an open bar for exposure to much higher doses of natural radiation simply makes no sense. And as we can not remove natural radiation and just leave it aside, the new basis for science-based radioprotection in the future can only be to include

natural radiation in the exposure and to remain within natural limits. Exactly the ALAIN principle : AS LOW AS IN NATURE.

3) Nuclear power technology : it is constantly evolving (like train technology since 1880). The nuclear community of engineers is doing a really great job to constantly improve nuclear technology and nuclear safety. But it is often mis-represented as a dracula-type of technology gathering mad scientists plotting to destroy humanity, as antinuclear groups would like us to believe ! The Simpsons TV show in the 1970s probably played a negative role in this regard. Please understand it's just a well done cartoon propaganda. Maybe a similar, but pronuclear TV show or cartoon movie should be invented starring a wonderful hero saving humanity thanks to nuclear power. Nuclear technology is of course constantly making good progress towards a better future. Fast reactor technology should be put on tracks again. The 1300 MW Superphenix industrial-sized sodium reactor has demonstrated the feasibility of this type of reactor, before it was sacrificed for merely political reasons when the greens arrived in government in France in 1997. Smaller new reactor concepts are being developed and will be perfect for islands like Corsica, Tahiti, Madagascar or remote areas of the world (to power Alaska for example).

4) Used fuel reprocessing and recycling : the way nuclear waste is being confined by the nuclear industry, rather than thrown back into the biosphere is a great ecological success. The way nuclear fuel is reprocessed industrially in France is a success story and an ecological victory. 97% of today's used nuclear fuel is or can be recycled, as it is in France. And the remaining 3% is then vitrified, confined, made inert and not put back into the ecosystems. What other industry can be that proud of what it's doing ? Reprocessing of nuclear waste should be encouraged. Much like gigafactories for building electric cars and lithium batteries are now being built on all continents by Tesla (a company with a great vision for changeing the world that the nuclear community should emulate), there should be at least one large reprocessing facility for nuclear fuel on each continent. The one in La Hague in France has been operating safely for about half a century and is doing the job for most of Europe. The United States should embrace this ecological vision and consider building a large nuclear reprocessing plant.

5) Different solutions for different countries : each country is unique and different. There is no unique magic energy scenario that applies to all in the same manner. Antinuclear groups would want the entire world to go 100% renewable. Step away from this fake science and simplistic view. Wind doesn't blow all the time, and the sun doesn't shine at night. Unlike intermittent renewables, nuclear energy can render great services 7/7 24/24 365 days a year, for the baseload supply of clean electricity everywhere. How much nuclear baseload for each individual country can be discussed and should be adapted to the situation in each country. For example areas of the world with high mountains and plenty of rain such can rely greatly (close to 100%) on hydro-power. Close to 100% hydro in Austria or Costa Rica. But countries like France with no oil, no coal, no gas, advanced industries and a high density of population will aboslutely need large amounts of nuclear. It is a vital point for France to continue develop nuclear energy. If France shuts down its nuclear power plants, as some backward minded politicians are now proposing (the French Green antinuclear party in government), France will die and disappear from the international scene. Please note that there are also forward-minded PRONUCLEAR ENVIRONMENTALISTS. Come and join our organization !

In all countries, nuclear energy can bring more health, more wealth, more clean energy, more democracy, much needed economical development, well-paid jobs, better politics and a better standard of living.

In order to continue to serve human good, there are however a number of OBSTACLES to be lifted, myths to be dispelled, like the LNT theory. These challenges are not technical. They are merely ideological, political and regulatory. The good news is that ideas, politicians and regulatory rules can evolve over time. If we find better rules, they can replace the old ones.

This is our vision and dream about what is a better future.

A few key ideas need to be better known and a few simple concepts simply need to be changed. Public communication and better public acceptance is the key issue.

The public has been grossly misinformed during several decades. The beneficial effects of low and moderate doses of radiation have been hidden and forgotten. This ideological distortion has a name… it is disinformation.

Imaginary dangers and myths have been created, amplified, distorted and propagated by well-funded antinuclear groups.

Myths to be dispelled are numerous.

Such as : radioactivity is dangerous. It is artificial, doesn't exist in nature.

Or : any tiny amount of radiation can kill you. When in fact small and moderate amounts of radiation are beneficial for our health.

But in the end the truth always wins.

In two words, nuclear energy holds many SOLUTIONS, and we can be highly OPTIMISTIC about it's future.

The public isn't afraid of trains any more. The irrational fear of trains has vanished. In a few decades, the irrational fear of radiation will be remembered as a thing of the past.

NUCLEAR POWER has a great future ahead, so let's move forward and make this POSITIVE vision become a REALITY.

The future of the world is in our hands. It is in YOUR hands. Speak out !

EFN is proud to play an active role in this movement by opening the eyes of the public, journalists and politicians.

Join us to change the world and create a better future with nuclear energy for our children !

Thank you all, stay safe and be happy !

Bruno Comby
Founder and president of EFN

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