Opening remarks from Dr. Sama Bilbao y Leon, Director General of World Nuclear Association, for FISA 2022 - EURADWASTE '22 High-level Opening

I want to start by thanking the European Commission for the invitation to join all of you today at FISA 2022 - EURADWASTE '22. I also want to apologise for not being there in person. I had absolutely planned to be this morning in person in Lyon with all of you. But unfortunately, planes, trains and automobiles have conspired against me, and I have not been able to make it in time.

There are about 500 of you this week in Lyon, and you are all going to be taking part in discussions and conversations on the state-of-the-

-art in research and development of efficient safety for reactor systems, and radioactive waste management. You're going to be looking at key challenges that need to be addressed at the national level, at the European level, and at the international and global levels. And you will also be looking at synergies and opportunities for partnership. You will be scanning the horizon together and looking at what are the challenges and the opportunities that are coming our way, and you will think about many ways to tackle them.

As you are doing all this very exciting work, remember that it is important to begin with the end in mind. The end that you should have in mind is that all this new technology, this innovation and this disruption, are ultimately intended to be used in the nuclear industry, and therefore will ultimately need to be licenced and regulated by our national regulatory agencies. This is why it is absolutely essential that from the very beginning the research and development community engages and collaborates with industry and with the regulators to make sure that we accelerate incorporation of all this disruption into the everyday nuclear industry.

Because nuclear energy is absolutely essential to address the climate change challenge at the speed and scale that is required. Nuclear energy can not only produce low carbon electricity, but also low carbon heat. And this is going to be a game changer to decarbonize the entire economy, including sectors that are very hard to abate, such as heating and cooling for buildings, such as many industrial sectors, such as shipping, transportation, the generation of hydrogen and other synthetic fuels, the production of fresh water... And this means that we are going to need much more nuclear energy. Some of the most robust scenarios indicate that by 2050, we are going to need to have about 1200 gigawatts electric of nuclear capacity in order to provide 25% of the global electricity needs. And this doesn't even include all the other applications beyond electricity generation that I just mentioned.

This is good news, right? This means that there is going to be a huge market, huge opportunities for the global nuclear industry to deploy nuclear technologies, including proven technologies that exist right now and also small modular reactors, advanced reactors and perhaps other future technologies in which some of you are already working.

However, there are challenges also... In order to have 1200 megawatts of nuclear by 2050 we need to build more than 30 new nuclear reactors every year from today to 2050, and then continue.... That is quite a few nuclear reactors. It is not impossible. It has been done before: in the 70s and 80s in France and in Sweden we actually achieved those speeds of deployment. So clearly, we can do it again.

However, there are a few things that need to happen for nuclear energy deployment to accelerate. These are the essential enabling conditions. First, we need the thought leadership and pragmatism of governments to put in place technology-neutral policies and markets, which recognise and appropriately price the attributes of all low-carbon technologies, including nuclear energy, of course.We also are going to need affordable financing for nuclear projects, thus to include nuclear energy among the eligible technologies for climate finance and ESG. We also need to attract and retain the best talent into the nuclear profession. And we need to ensure the generational exchange of knowledge among the experts of today and the future experts. Finally, to ensure the economic competitiveness of nuclear technology, we need to put in place the means for the emergence of a global market, that capitalises on standardization and the consolidation of the global supply chain. This global market necessitates streamlined international licensing and regulatory frameworks that facilitate the deployment of nuclear technology in various countries. All these enabling conditions are needed if we are serious about deploying nuclear energy at the speed and the scale that is needed to achieve global decarbonisation and sustainable development goals by 2050.

Since 2007, when World Nuclear Association created the working group on Cooperation in Reactor Design Evaluation and Licencing (CORDEL), we have spearheaded industry efforts on standardisation and harmonisation in the reactor design and licencing spheres. Our efforts have been supported by the collective work of our members, vendors, reactor designers, utilities, energy end users. We have also worked very closely with many nuclear regulators and international organisations, and these efforts have resulted in a very large number of studies, from the more conceptual and strategic - looking at new paradigms that are going to enable international harmonisation, to the very technical - including detailed comparisons among codes and standards for instrumentation or mechanical components. Throughout this time, we have acted as the industry counterpart to other initiatives, such as the Multinational Design Evaluation Panel (MDEP) or the SMR Regulators Forum. More recently, CORDEL has also become the Secretariat to the Convergence Board for the various Standard Development Organisations. Our experience has allowed us to extract as many lessons learned as possible, map all these initiatives, assess where we are today and put together a path forward that can truly accelerate new nuclear projects.

So for the last year or so, we have embarked in a very intense effort to refocus the work that CORDEL is doing. We have put together a new sequential framework that proposes starting small with pilot projects, and that involves collaboration between the regulators and the industry. The idea is to work together in this sequential approach, going from an initial phase in which we will be focusing on simply aligning activities and developing a common understanding, and then moving forward to more advanced phases in which there will be more emphasis on achieving harmonisation, on having greater collaboration between the various regulatory bodies, and on defining areas that can be easily accepted from one regulator to another, and developing approaches to mitigate the gaps in the other areas in which that may not be so easy. We have put together this framework, we have shared it with many stakeholders, we have gathered comments and suggestions, and we are now hoping to move it forward.

Because, the long story short is, that we are at an inflection point for new nuclear and for the deployment of new nuclear reactor designs. The reality is that many regulators recognise the need for greater collaboration in order to realise this idea of a global nuclear market. There is an absolutely urgent need to move forward together. CORDEL is working to provide the thought leadership to realise this new licencing paradigm, working to support the regulators and working together with the rest of the industry.

This is why there is urgent need for leadership by national governments for the development of suitable legal frameworks and policies, which are going to give regulators the mandate and the resources to move forward in this direction. We

also are going to need effective collaboration among international organisations, regulators and industry to streamline all these different international licencing and regulatory frameworks. All this work is also going to help newcomer countries looking to use nuclear energy to optimise their approach, by taking advantage of all the lessons learnt from existing nuclear countries. These efforts will also be essential as we move forward to licence and regulate new advanced technologies, some of which many of you are working today.

We of course need to continue to maintain safety and to improve the cost competitiveness of existing technologies. The work of the research community will be game changing, because the innovation and the disruptive technology you are working on will help see leaps in performance. But as I said at the beginning, it is important for you to begin with the end in mind. First of all, to bring these new technologies to deployment, it is essential to do this at a global level because they will most likely not be cost effective if they are to be limited to the home market. Thus, when you look at how to deploy these new technologies, think about how to standardise them and how to collaborate with others to bring them forward at a global level. The second recommendation, is to make sure that as you move forward, you engage from the beginning with industry and with regulators to make sure that we really transform the way these innovations are evaluated so that we accelerate the incorporation of disruptive technologies in nuclear.

Thank you very much for the opportunity to address you today. I wish you all a fantastic week of conferences, and I look forward to seeing many of you soon in person.