Dear Vice-prime Minister Dermagne, Minister Van der Straeten, State Secretary Dermine, Minister of State Busquin, Minister of State (and eternal supporter of SCK CEN) Herman De Croo,
Dear former president of the Board of SCK CEN Mr. Deconinck
Dear former Director-General of SCK CEN Mr. Malbrain
Dear Mayors of Mol, Retie and Kasterlee
Dear International partners of SCK CEN
Dear president and members of the Board of SCK CEN
Distinguished guests, colleagues and friends;
Dear Jean and Simon,

Do you ever wonder what may happen in the next hundred years? What will our world be like in ten decades? The future appeals to one's mind. It is without doubt one of the most discussed topics by scientists, engineers and authors. Each year, a new batch of pioneers offer their futuristic forecast.

Take Jules Verne. Back in 1865, the science fiction author already imagined a man on the moon. Back in 1909, engineer Nikola Tesla envisioned that someday, people would be walking around with phones in their pockets.

Can you imagine?

Recently, I bumped onto an interesting announcement of 1953. Or shall I say prediction? It was published in a local newspaper and described the future of the small, rural town Mol in the Kempen. It states that Mol would gain more fame from the Belgian Nuclear Research Centre than it already had achieved for its famous glass industry because from then on everyone would associate the town's name with 'atoms': the Nuclear Research Centre would explore the applications of nuclear physics. We would open up sensational

prospects for human beings and provide society with an energy source that could significantly change the world.

Which possibilities did we create? How did we make our mark on society? Neither Verne nor Tesla had the chance to time-travel. Today, we will. We will relive the past ten decades. Let's fast-forward through hundred dazzling scientific years.

We start **in April 1921**. The third Solvay Conference in Brussels, Belgium, the first after WWI, brought together the world's greatest scientific minds working on the topic "Atoms and Electrons". Invited but not present due to illness, Niels Bohr suggested his theoretical model of the atom, and Bohr also introduced the droplet model for the atom that was the input for the explanation by Lise Meitner and Otto Fritsch of nuclear fission of U^{235} in 1938.

The development was noticed all over the world; it was proof of $E=mc^2$ and suggested the capacity of tremendous energy release from the atomic nucleus.

Inspired by Eugene Paul Wigner and Leo Szilard, Albert Einstein addressed in the summer of 1939 a letter to U.S. President Roosevelt. Einstein pointed out the danger of uranium for making a nuclear bomb and drew the president's attention to the uranium deposits at the Congolese mine of Shinkolobwe. This mine, owned by the Belgian company Union Minière, was the largest uranium mine in the world, the most yielding one, and led, in the WWII situation, to the development of the nuclear bomb.

After the war, the US and the UK wanted to get exclusive right to the uranium supply in Congo and in return Belgium would get access to the nuclear know-how in non-military applications. When an agreement was found, the

Governor-General of Belgian Congo Pierre Ryckmans insisted on concentrating all universities' isolated nuclear insights in a dedicated knowledge centre that would allow to move forward at accelerated pace.

In **1952,** his vision became reality. The Belgian government established the Studiecentrum voor de Toepassingen van Kernenergie – Centre d'Études pour les Applications de l'Énergie Nucléaire, and Pierre Ryckmans became the first President of the Board of Governors. Here starts our history with a mission to pave the way for nuclear energy production in Belgium.

And yes, we did pave the way! I praise the pioneering spirit of our founders, the dedication of the early staff and their relentless ambition to strive to excel.

In **1956,** only four years after the creation of the research center, the first sustainable nuclear fission reaction on Belgian soil was realised in the Belgian Reactor 1.

Today difficult to grasp **but** a few years after this event, three additional research reactors were built:

- In 1962, the Belgian Reactor 2, one of the world's most powerful research reactors, today celebrating its 60th birthday, became operational.
- The same year, the Belgian Reactor 3, Europe's first pressurized water reactor and the first reactor connected to the Belgian electricity grid was started.
- And in 1964: VENUS, a 'zero' power reactor with only half the power consumption of a simple household vacuum cleaner, a reactor to mimic its big brothers.

Yes, while VENUS has the “power” to study optimal fuel configurations for various nuclear reactors, BR3 served as a prototype for Doel and Tihange, experimented on different fuels and was a training centre for the Belgian NPP’s. And BR2? The reactor tested fuels and materials to ensure safety of upcoming commercial NPP’s.

In 1974, Belgium's first commercial nuclear power reactor Doel 1/2 became operational, followed by five other NPP’s all operational by 1985.
So, together with the Belgian industry, we brought science to a turning point and, for some at least, brought humanity one step closer in its pursuit of technological progress.

But this pioneering research did not only put Belgium at the forefront of nuclear science and technology. From the very beginning, our research was done in an European framework. Our research, especially in BR2, was the basis for nuclear developments in entire Europe.

As time passed by, various questions arose and yes we tried to find answers. How can we protect our collaborators against ionizing radiation, how can we translate this to hospital care? How can we guarantee the safety of nuclear power plants? How do we look at non-proliferation of nuclear assets? How is radioactivity being transferred from flora to fauna and vice versa? How can we protect astronauts against detrimental effects of ionizing radiation in space? Can we control the food chain? Can we play a role in the fight against cancer? How do we organize the dismantling of NPP’s? How can we safely manage and optimise nuclear waste solutions?

Driven by the abiding belief that nuclear applications have the power to transform lives, we continuously expanded our research domains to respond to these new societal needs.

Where snakes shed their skin and crabs move beyond their shell, SCK CEN continuously gave birth to new identity. We started to diversify quite early.

And by doing so SCK CEN was able to tick off world firsts, allowing Belgium to strengthen its leading position in nuclear science and technology:

HADES, celebrating its 40th anniversary recently, was the first underground laboratory used to demonstrate the safety and feasibility of geological disposal in clay layers and this in collaboration with Niras/Ondraf;

BR3 became in 1987 the first European pilot project to demonstrate technical and economic feasibility of dismantling a pressurised water reactor. At the end of this academic session, you'll be offered a certified decontaminated piece of the BR3 reactor. But let us go on:

In 1990, we were the first to set up a research programme that integrated societal and ethical aspects in nuclear research.

In parallel, we launched the development of a unique research infrastructure MYRRHA: a nuclear research reactor driven by an accelerator. This multi-purpose project primarily concentrates on demonstrating optimised solutions for high-level radioactive waste.

In 2010, we inaugurated a world's first: GUINEVERE, the scale model of MYRRHA. For the first time in the history of nuclear science, a demonstration model of a reactor with a lead core and particle accelerator was operational.

In 2012, at the occasion of our 60th anniversary, we created the SCK CEN Academy of Nuclear Science and Technology. This Academy, today

internationally recognised, not only organises all teaching events internal or external to SCK CEN, and a Master after Master in nuclear Engineering in collaboration with the Belgian universities, but also guides our almost 100 PhD students. The work is performed at SCK CEN, the diploma given by mostly Belgian universities.

BR2: what a reactor! We were the basis for European development of NPP's, we guaranteed the life of foreign and Belgian NPP's. We saved Doel 3/Tihange 2 and reactors worldwide and we produced for decades basic medical radio isotopes for diagnostics but today, we stand in front of major developments in the field of cancer therapy. The production of medical radioisotopes, many times in collaboration with the IRE, became a top priority of BR2. Currently, the reactor covers up to 30% of the world's needs for Mo^{99}. The demand for Lu^{177}, a therapeutic isotope, is growing day by day - we expect exponential growth. This is why, with few operational research reactors left in the world and a long lead time to build them, we need to stay in good shape. This is why we renewed the Be-matrix, the beating heart of BR2, twice. With such general refurbishment, we prepare the reactor for a new era.

Over the years, our activities gave, directly or indirectly, rise to an entire ecosystem in nuclear. We were at the basis of EUROCHEMIC, IRE, Belgonucléaire, Belgoprocess, NIRAS, VITO, FANC. Also MAGICS saw the light of day thanks to our achievements.

Two institutions IRE and VITO, both 'political' spin–offs require particular attention:

- The IRE, created in 1971, celebrated its 50th anniversary last week, and is a worldwide provider of medical radio-isotopes. Today IRE is one of our partners in crime for the development of theranostic radioisotopes;

- The VITO, initially taking over all non-nuclear activities of SCK CEN in 1991, celebrated its 30th anniversary last year, and today evolves as a recognised multi-diversional player in the energy field.

But we also had a dark age with the transnuklear nuclear waste scandal in 1987. This scandal accelerated the creation of independent responsibilities of NIRAS/FANC/Belgoprocess and the creation of VITO.

To sum it up, we took the time to rewind, replay and fast-forward our history and we stopped at some key events in our journey. As Director-General, and supported by our Board of Governors and our tutors, I have the privilege of identifying the strengths that allowed us to break new ground in the past.

We broke new ground thanks to **our unique infrastructure**. By infrastructure, I do not only mean the ones mentioned before. We were able in the last 15 years to invest in new laboratories and equipment to expand our basic and applied research into dosimetry, radiobiology, radiochemistry, radioecology, astronautics and more.

We broke on a daily basis new ground thanks to **our experienced staff**. They know how to handle our technologies: they invent them! In view of major scientific achievements and societal importance.

We broke new ground thanks to **the extensive nuclear knowledge** we've built since the very beginning. We continuously rely on this knowledge, share it with colleagues within and outside of SCK CEN and pass it on to the new crop of scientists. We understand its value. That's why we have the SCK CEN Academy and we are proud to be a fishing pond of knowledge and well-trained professionals.

We broke new ground thanks to the **broad government support** and especially our tutors that allow us throughout time to realize challenging projects. We welcome, dear ministers, your accomplishment to secure financial means via the European Relief Fund for our medical activities and for the optimisation of nuclear waste forms.

And last but not least we acknowledge the guidance of our Board of Governors, SCK CEN's highest body. Their views assist in maximizing our impact in helping to meet the needs of society.

The American poet, Muriel Strode said:

"I will not follow where the path may lead, but I will go where there is no path and I will leave a trail." I repeat: we will leave a trail.

Our predecessors went regularly off the beaten track in order to innovate. They wanted to explore a better tomorrow and they left a trail behind in order to guide us towards the future. Seven decades later we changed trail many times towards long term innovating views. We always need to question ourselves to societal needs and see whether we should not change path.

With this I would like to introduce a book on 70 years of SCK CEN that will appear later this year. The book, written by Professor Geert van Paemel, present here today, will give a historical overview of SCK CEN and demonstrates that the trails we left behind led to what we are today.

Dear all, please cherish this institution and its collaborators that explore for a better tomorrow in all our endeavours. They are our strength and I would like to thank them for contributing to society and SCK CEN! An institute that serves the world, but above all, Belgium.