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IYNC BULLETIN

INTERNATIONAL YOUTH NUCLEAR CONGRESS



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IYNC2020: DIVERSITY IN NUCLEAR

HIGHLIGHTS: INNOVATION4NUCLEAR CONTEST 2020 WINNERS

FEATURE: TIME TO FACE INCONVENIENT TRUTHS: WHAT A GREAT OPPORTUNITY!



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IYNC Bulletin#19



IYNC2020: DIVERSITY IN NUCLEAR HIGHLIGHTS: INNOVATIO44NUCLEAR CONTEST 2020 WINNERS FEATURE: TIME TO FACE INCONVENIENT TRUTHS: WHAT A GREATO PPORTUNITY!

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WELCOME MESSAGE FROM THE INCOMING IYNC PRESIDENT

Dear IYNC community,

It is a great pleasure to welcome you to this novel issue of the IYNC bulletin, which also marks the -quite unusual - beginning of a new term.

Like many of us, I was unable to join you all in Sydney due to COVID-19 restrictions, to witness the success of the IYNC2020 conference. The congress was probably the last international event to take place before the global lockdown. Despite this, the theme Diversity in Nuclear was showcased at all levels: the conference brought together professionals from all generations, continents, and backgrounds with over 300 participants, in strict respect of the local health restrictions, and the true spirit of IYNC.

Many interesting and challenging discussions took place. One of the main outcomes of the conference was the unanimous recognition that we need to change the narrative around nuclear: We, as a young generation, need to succeed in communicating its benefits as part of a low carbon and balance energy mix to tackle global warming.

Changing the narrative is also one of the major priorities of this term: We have to communicate both inside and outside the nuclear field through the use of existing tools and the development of new ones, on the role of nuclear energy in a balanced, low carbon energy mix, as part of a global climate change solution. This will be achieved through the relentless efforts of the great team of officers that I'm delighted to work with, and especially through the newly created digital officer position. The further development of the IYNC App will help all YGN's worldwide to connect and interact, showcase their activities, and reach out to the public.

This term will also build on the strong partnerships which were set up over the past terms, seek to nurture the existing ones but also scout for new ones, which align with our mission. It will also be the opportunity to start implementing the mid-term strategy designed over the past 4 years by the strategy committee and the IYNC BoD, which will shape IYNC over the next decade. We already started this implementation with the creation of the knowledge transfer officer position. Of course, this term will also build on past successes, such as the Innovation 4 Nuclear contest, which we will seek to extend in all regions.

Finally, with the IYNC2022 conference planned in Russia, we will have the occasion to put humans in the focus again. A great occasion, considering that many of us were not able to meet in Sydney due to travel restrictions.

To conclude, I would like to take this opportunity to reiterate my thanks to the outgoing team of officers for their outstanding work over the past 2 years. I am looking forward to the fruitful discussions we will have during this term with the YGN's, the BoD, and the whole IYNC network and hope to meet you all again in Russia – this time, in person.

Stay safe and take care.

Lena Andriolo, Ph.D. IYNC President 2020-2022



IYNC 2020 - 2022 NETWORK OFFICERS

Lena Andriolo

President

Dr. Lena Andriolo is the newly elected president of the IYNC for the term 2020-2022.

She has been involved in IYNC since 2014 and has participated in many different activities within the network, including organizing 2 International Youth Nuclear Congresses (Hangzhou 2016 and Bariloche 2018). She is very passionate about IYNC and believes it is a unique opportunity for students and young professionals from all around the globe to acquire knowledge, network, and share experiences.

In her professional life, Lena has been a research engineer with EDF since 2016, in the field of severe accident modeling and simulations for light water and fast reactors. Before joining EDF, she worked for about 5 years as a scientist at the Karlsruhe Institute of Technology in Germany.

Lena holds a Ph.D. from the Université Grenoble Alpes, as well as a master of Research in Energy and Physics and a nuclear engineering degree from the Grenoble Institute of Technology.

She is excited to work with the new team for the 2020-2022 term to continue positioning IYNC as the global network for young professionals, promoting diversity, innovation and connecting the worldwide youth through new digital platforms to communicate the benefits of nuclear science and its role as part of a global climate change solution.

Cristian Vega

Vice President

MSc.Cristian Vega is the newly elected vice-president of the IYNC for the term 2020-2022. Cristian has been involved with IYNC since 2016. He is the former Argentine representative, former chair of YNG committee, and former General Co-Chair for the IYNCWIN18 hosted in Bariloche, Argentina. Cristian is the founder and past-president of the Argentina YNG. Also, he founded the young generation network in Latin-America.

In his professional life, Cristian worked in the core neutronic calculation for the Argentinean modular reactor (CAREM25) for the National Atomic Energy Commission. He also worked for the Argentina NPPs under the utility Nucleoeléctrica Argentina, in deterministic several accidents analysis and thermo-hydraulics calculations. During his time in France, he worked for EDF (Electricity of France) in the field of fluids mechanics at the R&D Department on simulation on passive heat extraction systems. Currently, he works performing thermal-hydraulic calculations, licensing activities, and safety analysis in Europe.

Cristian completed a five-year degree in nuclear engineer at Balseiro Institute in Bariloche, Argentina, and a master's degree (M2) in Engineering and Nuclear Reactor Physics at INSTN, Saclay, France.





Emmanuel Montwedi

Executive Secretary

Mr. Ontlametse Emmanuel Montwedi is the executive secretary of the International Young Nuclear Congress (IYNC) and deputy Chairperson of the South African Young Nuclear Professional Society (SAYNPS). He is employed by the South African Nuclear Energy Corporation (NECSA) as a Senior Nuclear Engineer in the Radiation and Reactor Theory department. Before this role, he worked as a Nuclear Safety Analyst in the Licensing department at NECSA. Emmanuel completed his advanced professional training at the Shanghai Nuclear Engineering Research and Design Institute in the People's Republic of China. He holds a Master's degree in Nuclear Engineering and did advanced Studies in Nuclear power plant engineering at Tsinghua University in China. He is currently a Nuclear Engineering Ph.D. candidate at Northwest University.

His vision is an inclusive and diverse IYNC which can help with the knowledge uptake of nuclear science around the world and in Africa. This could help grow the uses of applications of nuclear science and technology in the continent and unite networks of young nuclear professionals globally.

Luca Capriotti

Past President

Luca Capriotti obtained his master's degree, with honors, in Nuclear Engineering at the Politecnico di Milano, Italy with an experimental work on the high-temperature behavior of actinides dioxide performed at ex-Institute for Transuranium elements (European Commission, JRC-Karlsruhe). From 2013 to early 2016 he worked, as a grant holder, at the JRC-Karlsruhe on the topic of post-irradiation examination of fast reactor metallic fuel for transmutation. He is affiliated as a Ph.D. student at TU-München. From April 2016, he has been working as a nuclear fuel engineer at Idaho National Laboratory in the division of Advance Characterization & Post Irradiation Examination with particular involvement in the Advance Fuel Campaign.

Luca is passionate about energy and policy, building a strong network and young professional organization and societies in which he fulfills different leadership roles such as Vice President at International Youth Nuclear Congress (2016-2018), IYNC President 2018-2020 and now IYNC immediate Past President (2020-2022). He received the FCR&D Excellence Award 2017.





Steve Ward

Treasurer

Steve Ward is one of at least four former opera singers who switched careers to nuclear engineering. After 12 years working as a federal regulator and Principle Licensing Engineer at power plants in the US and the Middle East, Steve is making his next big jump into entrepreneurial ventures as President & CEO of a family of start-up companies.

He has lived in temperatures of -50 C in Russian Siberia and +50 C in his current home in Dubai, United Arab Emirates. Steve has cooked for groups of 250 people by himself, walks a marathon every day, and spent two years serving as a volunteer missionary for the Church of Jesus Christ of Latter-day Saints.

Marina Sara

External Relations

Marina is a dynamic Chemical Engineer with experience in radiopharmaceutical production, nuclear waste management and uranium mining and mineral processing.

She currently works at the Australian Nuclear Science and Technology Organisation (ANSTO), where she provides legal, government and commercial advice to support the organisation and its strategic objectives. Marina is a champion of diversity and inclusion and mentors young women looking to pursue a career in science or engineering. She is particularly passionate about increasing the engagement of women in nuclear related fields. Marina holds a Bachelor of Chemical Engineering with First Class Honours from the University of New South Wales in Australia and is currently completing a Juris Doctor at the same institution.

Andrea Quaini

Digital Officer

Andrea Quaini is the Digital Officer and after his MSc in Nuclear Engineering in 2012 at Politecnico di Milano (Italy), he moved to France to earn his PhD in Nuclear Materials Thermodynamics at CEA (France). Since 2015, he has been a research engineer at CEA, with an expertise in Materials Thermodynamics and radiative measurements. In parallel, he contributed in IYNCWiN18 as Digital Co-Chair and in IYNC2020 as Panel Co-Chair.







Gustavo Gimenez

Communication Officer

Gustavo works as Institutional & External Relations at Nucleoeléctrica Argentina, where he participated in several nuclear projects, including the construction and commissioning of Atucha II, the 3rd nuclear power plant of the country. He studied biochemistry at the National University of Misiones, before moving to Buenos Aires where he changed career to study communications and became a nuclear advocate.

Gustavo is the co-founder and current vice president of the Argentine Youth Nuclear Generation, and has traveled the world promoting the role of youth in the nuclear industry. Most recently he has successfully organized two International Youth Nuclear Congresses in Argentina in 2018 and Australia in 2020, where he was in charge of the local organizing committee (2018) and international organizations (2020).

Oona Nery

Liaison Officer

She graduated with degrees in Chemistry and Materials Science from the Ateneo de Manila University. She has been working as a Chemist at the Philippine Nuclear Research Institute (PNRI) since 2016 where her work focuses on the use of nuclear and isotopic techniques in nutrient management, soil erosion assessment, and plant mutation breeding. As one of the founding officers of the Philippine Young Generation in Nuclear, she is passionate about promoting non-power applications of nuclear science & Technology through interactive and engaging activities in various platforms.

She has played an active role in the organizing teams of pioneering projects such as the 4 the Philippine Nuclear Youth Summit, 1 st Philippine Nuclear Youth Forum, Stand Up for Nuclear – Manila, as well as several social media and video-making contests all aimed to promote the benefits of nuclear science & technology to the Filipino youth.





Alexander Gladtsin

Webmaster

Alexander graduated from the National Research Nuclear University «MEPhI» in Moscow, with a degree in physical engineering. After studying he remained at the MEPhI as a system administrator of Linux systems. Now he works at the Save Bank of Russia as a DevOPS engineer and plans to get a PhD.

Kelsy Green

Project Officer

Kelsy Green graduated from the University of California, Berkeley with a B.S. in Nuclear Engineering in 2017 and is currently a PhD student at the University of Michigan-Ann Arbor. Her research focuses on the radiation responses of novel alloys synthesized with additive manufacturing, with the goal of alloy development for advanced nuclear reactors. Her technical experience includes two internships at Oak Ridge National Laboratory. Kelsy is an advocate for nuclear energy and received the Walter Meyer Scholarship for Nuclear Information and Energy Policy in 2018 for her contributions to public awareness and policy. She has interned at the Nuclear Energy Institute and pro-clean energy political campaigns to push for a greener energy landscape. She is currently the Project Chair for climate change activities at IYNC where she interfaces with international governments and environmental organizations to plan events and campaigns that drive for localities to adopt diverse energy portfolios. She was also the founder and president of the UC Berkeley chapter of Women in Nuclear.

Kelsy grew up in California and knew from the time she was a teenager that she wanted to be a nuclear engineer.





Elsa Lemaitre

Innovation Officer

Elsa Lemaitre is currently a Chief Internal Auditor at CEA (key player in technological research in France) working on assessing the company's risks and the efficacy of its risk management efforts on a specific activity, process or project, especially on nuclear activities. Since 2014 she has been working as project engineer and then as deputy manager of the engineering design Team of projects at Andra (repositories for nuclear wastes). She holds a master of science in Nuclear Engineering from the University of Berkeley (California, USA) and a master of Engineering from Ecole Polytechnique in France. She has been an active member of the nuclear young generation network in France since 2015 and at an international level with IYNC since 2018. She is also a manager of a local investment club in Paris called CIGALES.

Kevin F. Cosials

Knowledge Transfer Officer

He is an Assistant Professor at the Technical University of Madrid, Spain; Specialist in Nuclear Safety and Severe Accident. He has been involved with IYNC since 2014 when the conference arrived in Burgos. He was the Technical Program chair of IYNC2020, on which he tried to return at least a part of what IYNC has given him.

Fidelma Di Lemma

Strategy & Impact

Dr. Fidelma Di Lemma is currently working as a Metallography Scientist at Idaho National Laboratory (INL), performing advanced characterization on cladding materials and fuel. In the past she worked at the Japan Atomic Energy Agency gaining expertise on the behavior of fission products during severe accidents and interaction of cladding, fuel and structural materials during accidents, and at the European Commission where she performed source term characterization from Radiological Dispersion Events.

She obtained a Ph.D. from TU Delft in 2015 and Master and Bachelor Diploma with honors in Nuclear Engineering from the University of Rome "La Sapienza" in 2011, 2009.





IYNC2020: DIVERSITY IN NUCLEAR

By Luca Capriotti, IYNC Immediate Past President & IYNC2020 General Co-Chair & Alexander Borovskis, IYNC2020 General Co-Chair



The International Youth Nuclear Congress (IYNC) was held in Sydney, Australia on 8-13 March 2020, and cohosted with the Australian Young Generation in Nuclear (AusYGN). IYNC and, AusYGN are organizations that are committed to ensuring that the youth is engaged and supported within the nuclear industry, and able to capitalize on the numerous professional opportunities for careers, networking, and development. Under the theme *Diversity in Nuclear*, the mission of the IYNC2020 conference was to promote and enable the diversity of people engaged in the many peaceful uses of nuclear science, technology and application.

Diversity comes in many forms, including gender, culture, educational background, professional experience, and geographical location. The conference successfully showcased the diversity in the peaceful uses and applications of nuclear science and technology by encouraging interactions between participants, particularly in the sharing of knowledge and ideas between professionals of different personal and professional backgrounds and different generations of nuclear experts.

This event was the first of its kind in Australia and not only showcased the breadth of nuclear technology applications, it celebrated the diversity of people who deliver these outcomes for society.

Despite all the challenges associated with the growing global pandemic and taking into consideration all the necessary safety measures, over 300 joined the Congress, with students, young professionals, and speakers from 43 countries in attendance.

The conference took place in the modern International Convention Center (ICC) located in beautiful Darling Harbour and consisted of a full schedule of technical programs, social activities, facility tours, and cultural events.



LUCA CAPRIOTTI WELCOMING PARTICIPANTS TO IVNC2020

IYNC is the perfect platform for young professionals to share their latest work and research with other participants from all around the world. Holding true to its theme, the IYNC2020 Congress had a variety of technical offerings to delegates including keynote sessions, plenaries, panels workshops, technical presentations, and posters, mentoring programs. Topics ranged from diagnosing cancer to improving agricultural production, all presenting nuclear science and

technology as a critical contributor to global sustainable development goals.

After the ceremonial welcome by the local and international organizer, Dr. Tom Verghese from Cultural Synergies helped the delegates to set the stage and expectations around the topic of the conference with an interactive and fascinating opening lecture on Unconscious Bias and which tools can be used to recognize and challenge unconscious bias in various situations and environments.

The keynote session opening the technical program highlighted not only diversity in application but gave an outlook on the people that makes up our industry.



ALEXANDER BOROVSKIS WELCOMING PARTICIPANTS TO IYNC2020

Various international organizations and companies leaders in the sector kindly joined IYNC2020 and expressed their enthusiasm and support for the growth of the young professional community (in person or virtual). Notably, Rosatom, ANSTO, USA Department of Energy, IAEA, WNA, WANO, NEA, Thomas Thor Associates, and many more were in attendance to participate in showcasing their take on Diversity in Nuclear.

Three plenary sessions were at the heart of each day with very diverse thematics, proposing the

During IYNC2020, we asked participants to tell us:

WHAT DOES DIVERSITY IN NUCLEAR <u>MEAN?</u>

They responded:

DIVERSITY IN NUCLEAR IS AN OPPORTUNITY

participants fresh insights on the different nuclear science and technology applications and global outlook from recognized leaders and experts.

Among the various technical sessions, the IYNC is also proud to have brought two initiatives to fruition. Following the success at IYNCWIN18 in Bariloche, Argentina, a mentoring program across two days was organized during IYNC2020 in Sydney. Enthusiastic mentors and mentees came together to discuss, give and receive feedback and advice. The mentoring is a unique opportunity for young professionals to connect with senior executives and/or international experts and build up a potential long-lasting relation beyond the conference.



Also building on the first edition at IYNCWIN18, another initiative that held its second edition was the Innovation for Nuclear contest (I4N) in which several students and young professional teams were pitching their ideas in front of an international jury of experts. In the last two years, I4N was able to reach more countries and continents, and IYNC has been partnering directly with local Africa and Asia young generation networks.

The energetic and vibrant atmosphere dominated

the whole week and transmitted the enthusiasm also on the rich social/cultural program that concluded each single day.

In conclusion, IYNC2020 was an enriching and enlightening event for the nuclear community as a whole. Posing and reflecting on an important and pressing topic like diversity from the youth perspective can be considered a unique opportunity for a more concrete and intergenerational discussion worldwide.

Somewhere something incredible

is waiting to be known.

Carl Sagan



Australian Government



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WHY ALMOST GETTING STUCK IN AUSTRALIA AFTER A NUCLEAR CONFERENCE WAS WORTH IT

A point of view by participant & organizer Osama Baig

Traveling over 20 hours of flight time and 15 000 km from Toronto to Sydney to attend the International Youth Nuclear Congress (IYNC) Conference, I was one of five delegates representing Canada, the North American Young Generation in Nuclear (NAYGN) and Ontariotech University. Hosting delegates from over 30 nations, the IYNC is a congregation of young nuclear professionals from various disciplines and industries which include Nuclear Energy, waste management, radioisotope production, and research/academia.



CANADIAN DELEGATES AT IYNC2020 (FROM LEFT TO RIGHT): DR.IGOR PIORO (ONTARIOTECH), OSAMA BAIG (NAYGN/ONTARIOTECH), RAGU SIVAKUMARAN (KINECTRICS), CELINE LI (KINECTRICS), STEFAN DOS SANTOS (KINECTRICS), MAYANK SOOD (KINECTRICS)

Coincidentally the start of the conference took part amid heavy rains that extinguished raging bushfires that were burning across Australia for several months. Natural habitats and endangered animal species have been victims of the effects of climate change, and the rains represented a sign of hope. A future of clean energy production, in a nation with a ban on nuclear energy. I believe the collective impact of bringing together nuclear experts from across the world and support from Australia's Members of Parliament publicly acknowledging support for nuclear energy presents prospects and hope for the ban to be lifted in the near future.

I became involved with the IYNC2020 as early as the fall of 2019, contributing as a workshop manager for the "Inspiring future generations into Nuclear Science and STEM" workshop. The journey began with the search for a speaker for the workshop and with the help of Lisa McBride (WiN Canada President), I connected to Dr. Joanne Lackenby, a researcher at ANSTO in Sydney and President of Women in Nuclear Australia. Supporting activities were organized alongside fellow co-manager Vice President of the Spanish Young Generation in Nuclear Francisco Suarez, Valentina, and Matthias (Workshop Co-chairs).

Our shared values of gender equality, diversity, and the importance of advocating for nuclear brought us together. It is remarkable to come from completely different backgrounds and cultures but to be passionate about a common goal. Representing three different continents, from three different nations working together to share this message is truly inspiring.



AWARD WINNERS AT THE WORKSHOP. SPEAKER JO LACKENBY, AND WORKSHOP MANAGERS OSAMA BAIG & FRANCISCO (PACO) SUAREZ.

Dr. Lackenby led a remarkable workshop session, which provided an in-depth analysis of factors and world views that can influence an individual to nuclear support energy and understanding the social, political, and economic factors that can influence a person's opinions of nuclear energy. Attendees were tasked to develop an idea which can overcome these innate obstacles and inspire a future generation toward Nuclear Science and STEM.

At IYNC2020, I was extremely happy to see NAYGN win "The Juan Alberto Gonzalez Garrido award", which is given to a National (or continental) Young Generation Network that has given outstanding service to the benefit of the young generation, enjoys great bottom-up support from its members or offers a big variety of interesting events. I have been involved in the NAYGN for the past six years, and I continue to be part of the organization. I have also been heavily involved with initiatives at a continental level, and thus the IYNC was a chance to embrace the nuclear community at an international level. I am passionate about cultural diversity, and in my search to learn how nuclear industries across the world operate, IYNC was the best place to get that experience.

As part of the Congress, multiple tours of facilities across Australia took place of which I had the chance to visit the Australian National University located in Canberra alongside a group of delegates. Getting a tour of the particle accelerator, stellarator-type fusion reactor, and learning about the various programs offered by the ANU institution.

At the conference, I attended a wide range of technical seminars and panel discussions. Also, it served as a phenomenal opportunity to meet young professionals and leaders from all around the world. We discussed collaborations and mutual efforts to promote the peaceful uses of nuclear energy within our countries. This international congregation is very important, as unity within nuclear communities on a global level provides a catalyst for continuous innovation and collaboration.

I look forward to staying involved with the IYNC Organization.

INNOVATION FOR NUCLEAR (I4N): A SUCCESS STORY IN SYDNEY

By Elsa Lemaitre

Despite the complicated global pandemic concerns, the International Youth Nuclear Congress (IYNC) was able to have five teams join us from around the world, physically or virtually, to compete for the second edition of the Innovation for Nuclear (I4N) contest at IYNC2020 in Sydney, Australia.



The I4N contest aims to be the world-wide competition among winners of national regional innovation or contests, focused on the peaceful use of nuclear technologies It offers a platform to bring visibility for the ideas of young nuclear professionals and serves as a catalyst for young energy into thinking and about creating innovative solutions.

For this contest, IYNC had the honor to have four distinguished jury members with a diverse background:

PARTICIPANTS OF 14N 2020, MEMBERS OF JURY AND MEMBERS OF THE ORGANIZATION TEAM.

August Fern (Managing Director of August Fern Consulting in the US), Bernard Ochieng (Medical Physicist and Head of Radiotherapy at Equra Health in South Africa), Vadim Titov (President of Rosatom International Network in Russia), Saraly Thomas (Senior Consultant at Abbott Risk Consulting in the UK).

The five teams competing were:

- *Glacial Melt Mitigation Services* from the 2019 Nuclear Innovation Bootcamp;
- *Eco-Fresh Project* from the 2019 I4N- AYGN (African Young Generation in Nuclear) Contest;
- Aerospace Energy Star and Saving Oceanian Crisis from the 2019 I4N-Asia Pacific Contest;

• Socio-legal challenges of Nuclear Energy from YGE- SFM (Spent Fuel Management) 2019 Challenge.

To learn more about these competing teams and the different partnering innovation contests please read the related I4N article in the previous <u>IYNC bulletin</u>.

The jury announced the winners of the 2020 competition cycle:

From the Technological Research or Project Category:

The Glacial Melt Mitigation Services (GMMS) team from the *Nuclear Innovation Bootcamp 2019*

From the Organizational or Societal Research Project Category:

NUCLEAR INNOVATION BOOTCAMP Atoms in Action From our partners at the Nuclear Innovation Bootcamp 2019, the GMMS team is composed of Adnan Wisudhaputra (undergraduate student in Indonesia), Ajit Bastola (Ph.D. student in England), Bianca Carpinelli (young professional in Argentina), Dinara Ermakova (Ph.D. student in the US), Jake Littlepage (young professional in the US), Sara Ferry (Post-doc in the US), Sree Harsha Bandaru (Ph.D. student in England), and Viljami Yli-Hemminki (Master student in England).

GMMS is a consulting company that helps national governments, NGOs, and

nuclear vendors harness nuclear power to avoid the catastrophic consequences of climate-change induced glacial melt. In the next decade, the Arctic ice sheet will be significantly depleted, and glacial melt mitigation technology will become a major growth sector, because the consequences of inaction are just too costly: up to 187 million people will be displaced, which will cause major upheaval, unrest, and refugee crises.

Frozen desalinated water can be pumped into glaciers to stop the melting process but these technologies require massive amounts of energy. The current proposals commonly assume that diesel gas will be used to power the required pumps.

GMMS believe that SMRs are the cleanest and most cost-effective choice to meet these energy needs.

From our partner *IAN Asia-Pacific 2019*, the Saving Oceanian Crisis is the winning team and is composed of young professionals from Japan (Mitsubishi Research Institute): Kota Kawai, Masaki Kawai, and Shono Fujiyama. Usually after a natural disaster in the Asia-Pacific Region (earthquakes, floods, tornadoes), tens to hundreds of thousands people may need to be evacuated. However proper



solutions to offer these refugees new living conditions lack. A fleet of Nuclear-Driven-Moving-Ship-Island (NuDriMS-Island) operated for instance by the Asia-Pacific Union would be the solution. The concept is first to rescue the refugees and then to offer them the possibility to start a new life on these nuclear-powered autonomous habitable islands.

After this, Lena Andriolo the newly elected president of IYNC will continue the development of I4N with the ambition for 2022 to have even more innovation contests as partners! If your organization is interested to be a partner of I4N, please contact Elsa Lemaitre, the Innovation Officer of IYNC at i4n@iync.org.



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TIME TO FACE INCONVENIENT TRUTHS: WHAT A GREAT OPPORTUNITY!

A point of view by Cristian Vega

There is one truth that every investor knows very well: in every great crisis there are great opportunities. The global COVID-19 pandemic has produced a global crisis with economic, political, and social consequences, which are still hard to predict. It presents challenges to our simplest daily activities, as well as to globalization and international commerce. Long-term changes in our way of living are expected and millions of people are looking forward to going to the 'new normal'.

COVID-19 has shown its capacity for causing death and suffering worldwide and has forced most economical, cultural, and recreational activities to grind to a halt in many countries around the alobe.

COVID-19 has shown its capacity for causing death and suffering worldwide and has forced most economical, cultural, and recreational activities to grind to a halt in many countries around the globe. This unexpected (but not unknown) scenario comes at a moment where humanity is facing real unprecedented challenges like the fourth industrial revolution, the powerful growth of tech giants and the role of social media in modern democracy.

Nonetheless, the biggest challenge of our generations worldwide is undoubtedly climate change, a direct consequence of human-led activities which release greenhouse gases resulting in global warming. This causes many challenges for humans to cope with, such as extreme flooding, droughts and storms, reduction of habitable land, large migration waves, and an evident worsening of the situation of the most vulnerable populations.

Climate Change - the greatest challenge for humanity

While the global pandemic has greatly affected humans, when it comes to climate change important activities such as agriculture and biodiversity are endangered: crop yields could be reduced, and millions of species could disappear, threatening human life as we know it. These are only a few of the many impacts and expected consequences of rising global temperatures if we continue on the same pathways and business, as usual, ignoring the inevitable which draws ever closer.



Nonetheless, overcoming challenges is what humanity has always done; and what makes humanity astonishing. The complexity and capacity of the human mind make it highly unique and magnificent, with greatness and miseries, but still amazing. Even if current challenges seem huge and hard to overcome, from a species perspective, it is not different from what the first humans overcame thousands of years ago like figuring out how to shelter from wild beasts or storms, and how to find food during long droughts and floods. Throughout history, humans were able to find their way through crises by evolving, learning, changing, developing, and adapting.

During the last hundred years, humanity has made astonishing improvements in wealth and well-being. Economic growth and social policies have enabled millions of people to be lifted out of poverty. Only in the last 30 years, 1 billion people were lifted out of extreme poverty (families living with less than 1.25 USD per day) [1]. Also, even when there is still much to do, society has shown efforts to reduce CO_2 emissions, to increase efficiency on energy consumption and the sensitive use of natural resources.

Within this context, COVID-19 is a slap in the face of modern life. The biggest economies in history were shut-down by a tiny organism showing the brutal consequences of inequality and interdependence in our globalized societies.



Source: World Poverty in absolute numbers – OWID based on World Bank

COVID-19 has exposed our biggest inconvenient truth: We cannot succeed without the environment and we can no longer accept such high socio-economic inequality. This means, we cannot continue with our current anti-sustainable economic growth but at the same time we still need to find a way to solve unacceptable situations.

According to UNICEF, 68 million children under five years old will die from preventable causes during the next 10 years. 119 million will remain chronically malnourished and 500 million will continue without access to proper sanitation, causing significant health risks. 736 million people still lack food, clean drinking water, and sanitation and women are more likely to be poor than men because they have less paid work and education [2]. The numbers are so big that is hard to comprehend. Despite the huge improvements achieved, the lack of access to water, energy, and minimum infrastructure, leave millions of people out of the equation.

The same species capable of developing machines to go into space or releasing the energy of the atom in a controlled manner is not yet capable of developing sustainable systems allowing us to meet the basic needs of every human on the planet.

In 2015, the United Nation adopted 17 sustainable development goals, establishing among them; gender equality and empowerment of all women and girls, ensuring availability and sustainability of water and sanitation for all and the end of poverty in all forms and dimensions by 2030 [1]. Such goals are not feasible through economic growth per se; adequate infrastructure, access to energy and clean water, and social policies allowing access to education and health care are required and shall be reached sustainably. These are strongly correlated with energy consumption, expected to grow 45% by 2040.



The COVID-19 Crisis is the Opportunity for Humanity

My home country of Argentina has a lot of habitable lands and high inequality; thus, a country where many realities coexist. Within some regions distant from urban centers, families live in small farms, mainly working for self-consumption. These families usually struggle to keep the farm and animals alive, as they do not depend on adequate access to electricity and water. On average, women walk more than four hours per day to get water for sustenance, household duties, and family agriculture. This task is usually performed by women accompanied by children, as men are normally gone for the day to work in the closest villages. Thus, women and children are especially vulnerable because they have less access to assets, money, and carry the weight of many tasks for maintaining the family.

This is the perfect picture of a vicious cycle that can only be broken with proper public investment in infrastructure and the quality provision of basic services such as access to energy, water, adequate coverage of social security. Gender equality cannot be achieved in these circumstances and children cannot study without electricity, learn or grow when their main concern and focus is on solving basic needs on a daily basis.



Global CO2 emissions, 1900-present

Billion tonnes of CO2 per year

Source: Global Carbon Project, CDIAC & IEA

Thus implementing sustainable ways to provide energy for these basic services is required to achieve development goals and of paramount importance to overcome many of our current challenges. However, in 2017, energy generation from combustible fuels accounted for 66.8% of total world gross electricity production and global energy-related CO2 emissions increased in the two following years [3].

This can no longer continue if we want to survive as human beings. Data on global warming shows there is a clear necessity for a change. And the COVID-19 pandemic is a unique opportunity to contribute to the world's targets to cut emissions by over 45% if we want to succeed in limiting the global temperature increase to 1.5 degrees Celsius. Maybe the last great opportunity.

During the first months of 2020, several countries have been developing wide stimulus plans to rebuild their economies after the deep damage caused by COVID-19. These plans will shape economies and societies for decades to come. Therefore, the COVID-19 recovery is a chance to redesign a sustainable, inclusive economy, enforcing and revitalizing industry but also preserving biodiversity, redoubling efforts to meet sustainable development goals, realizing the Paris Agreement and thus, avoiding the point of no return.

Nuclear Energy – the key to the future

Nuclear technology for energy generation can play a vital role in climate change solutions and the green recovery plan. Achieving the required reduction in carbon emissions seems highly difficult and costly unless nuclear energy is significantly incorporated in the global energy system.

Nuclear generation technology has overcome significant challenges in the past, by creating and strengthening adequate international institutions, allowing international cooperation, and developing conceptual frameworks towards safety. These efforts triggered changes in design paradigms from Generation-I/II to Generation-III, developing passive safety systems that have significantly reduced the risk for severe accidents while mitigating the consequences in the unlikely event of an accident.

These efforts turned nuclear energy generation into the safest and cleanest energy source currently available [4].

Nonetheless, the nuclear industry needs to intensify efforts towards the development of new business models, design standardization and construction methods, making nuclear energy plants less costly and reducing construction time, budget extensions, and delays. Achieving this without compromising safety, will turn nuclear energy into an essential component of the energy generation mix for many countries around the world, contributing to meet the growing global energy demand while decreasing emissions.

In order to turn nuclear energy into a viable component of any country's energy mix, governmental involvement is essential. Countries need to develop CO2 reduction policies and include incentives plans, and allocate funds for tests and business development of reactor designs. The COVID-19 crisis recovery plan is an opportunity to enhance the needed support and achieve the required carbon emissions to reduce the impact of climate change in the middle-term.

Let's Overcome the Challenge Together!

COVID-19 was a hard blow for modern economies but it is part of our nature as human beings to overcome enormous challenges and come out stronger. There are several reasons to remain optimistic and keep on working towards a sustainable and inclusive world. As part of the young nuclear generation, we cannot remain silent. We shall work for the inclusion of nuclear energy in a green recovery plan focusing on the gaps needed to optimize the complete nuclear cycle while ensuring that the remarkable achievements on safety over the last decades continue.

We should persist in the path of keeping nuclear energy as the safest, clean, and most reliable source of energy available. The world and future generations need our enrolment and active participation to do this. We are counting on you!



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THE PHILIPPINE YOUNG GENERATION IN NUCLEAR (PYGN) ORGANIZED NU-CLEAR: WEBINAR SERIES ON NUCLEAR POWER

By Oona Nery

Due to the COVID-19 pandemic, the Philippines was put under community quarantine and large forums or events are still not allowed. Webinars are a great way to perform educational campaigns with minimum funding involved. The conduct of webinars through Facebook Live also proved to be a good way to reach thousands of Filipino youth as approximately 6,000 students and young professionals signed up through the online registration form.

This series was organized by the Philippine Young Generation in Nuclear in collaboration with the Philippine Nuclear Research Institute (PNRI). The two-part webinar series aimed to promote the peaceful and beneficial applications of nuclear power, as well as correct myths and misconceptions on nuclear power. The webinar series was also timely with the signing of Executive Order No. 116, which led to a creation of an inter-agency task force tasked to study the feasibility of including nuclear power in the Philippines' energy mix.



The PYGN hopes that this webinar will result to more public acceptance for nuclear power, as well as the possible inclusion of nuclear power in the Philippine energy mix.

For more information, you may contact: Oona Nery Project Lead, NU-CLEAR: Webinar Series on Nuclear Power Email: oona.nery@iync.org

IYNC ON GENDER EQUALITY AND INCLUSION AT THE **64TH** GENERAL CONFERENCE OF THE **IAEA**

By Gustavo Gimenez

The 2020 General Conference of the International Atomic Energy Agency was held in a hybrid physical/online version for the first time ever, due to the restrictions caused by the COVID-19 pandemic. This however did not stop it from being a busy week to join peers, virtually this time, from all over the world to discuss the hot topics in industry today.

As in past years, IYNC had a strong presence in the General Conference to represent the young generation in the industry and was invited to give two magnificents points of view. IYNC president, Lena Andriolo was invited to give a speech at the side event "Gender Balance and Inclusion in Nuclear Energy" hosted by the Russia Federation, where she shared the panel with the IAEA DDGA Mary Alice Hayward, and former WNA Director Agneta Rising, meanwhile Fabricia Piñeiro participated at the closing session of the Scientific Forum, that counted with the presence of very important figures of the industry, including the Director General of the IAEA, Rafael Grossi.



LENA ANDRIOLO AT THE SIDE EVENT "GENDER BALANCE AND INCLUSION IN NUCLEAR ENERGY" OF THE 64TH IAEA GENERAL CONFERENCE.

Lena Andriolo spoke about the importance of diversity, gender balance, and inclusion in the nuclear field and how the young generation has a crucial role to play in this matter. She highlighted that there has been an increasing topic around gender balance and inclusion with the objective of having equal rights for men and women in the industry. In this sense, she explained that all activities carried out by IYNC are aimed to support gender balance and inclusion in the nuclear field, through e.g. STEM activities, and that the events themselves strive to have gender balance. A strong example of this was that the last two international Youth Nuclear Congress, IYNCWiN18 and IYNC2020, were strongly focused on gender balance and diversity.



FABRICIA PINEIRO AT THE CLOSING SESSION OF THE SCIENTIFIC FORUM OF THE 64^{TH} IAEA GENERAL CONFERENCE.

Fabricia Piñeiro also delivered an important message at the closing session of the Scientific Forum. In her intervention, she highlighted that diversity is fundamental in order to effectively communicate and interact with the general public. This creates an inclusive environment where creativity flourishes and perspectives are broadened. Non-for- profit organizations such as IYNC and Women in Nuclear have a tremendous role to play to foster this diversity and to create unbiased links between the general public and industry. She also acknowledged that organizations like the IAEA, are also doing their part through powerful campaigns like the Marie Sklodowska-Curie Fellowship Program, which recognizes the importance of including women in STEM and the paramount role that diversity plays to drive global scientific and technological innovation.

This year, around 500 delegates registered to attend the General Conference, including 141 from the 171 member states, international organizations, non-governmental organizations and the press.

The 65th regular session of the IAEA General Conference will be held from 20 to 24 September 2021 at the IAEA's headquarters in Vienna, Austria.



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