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Country Report of China

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Respected Mr. Chairman, ladies and gentlemen, good morning!

Entrusted by Chairman ZHANG Kejian of CAEA, I'm very pleased to head the delegation to attend this FNCA Ministerial Meeting. This year marks the 20th anniversary of the Forum of Nuclear Cooperation in Asia (FNCA). Over the past 20 years, the FNCA has provided a very good platform for promoting the international cooperation and exchanges in the use of nuclear energy and technology in Asia. China appreciates this, and is willing to continuously take an active part in the activities under this mechanism, contribute our wisdom, and jointly make positive contributions to the peaceful, safe and sustainable development of nuclear energy in the region.

This year coincides with the 70th anniversary of the founding of the People's Republic of China. Through more than half a century of hard work, China has established a complete nuclear industry development system, formed an internationally competitive nuclear equipment manufacturing capability, and built a relatively sound management system and experienced talent team. China adheres to the development concept of innovation, coordination, green, open and sharing, and explored a road of nuclear energy development with Chinese characteristics. I would like to take this opportunity to share with you the latest progress made by China in the use of nuclear energy and technology.

I. Building a complete industrial chain, and promoting the coordinated development of nuclear energy

Affected by the Fukushima nuclear accident and the global economic slowdown, China's nuclear power development has slowed down in recent years, but the growth momentum has not changed. The advanced third-generation nuclear power technologies have gradually realized large-scale application in China. Fuqing 5, the first HPR1000, has started system commissioning, and the first four AP1000 units and two EPR units have been put into operation successively. So far, there are 47 operating nuclear power plants in mainland China, and 12 are under construction. China attaches great importance to building the basic capability of nuclear scientific research, and has established a nuclear energy scientific research system, including nuclear basic research, applied research, and engineering research, and a number of advanced large-scale nuclear research bases. A great deal of basic and engineering researches have been carried out in the fields of nuclear reactor, nuclear fuel cycle, accelerator, and nuclear fusion, and outstanding achievements have been made.

II. Vigorously promoting the application of non-nuclear power technologies to serve the well-being of the people

At present, more than 400 organizations in China are engaged in the R&D and production of

nuclear science and technology, and thousands of organizations have participated in their application, forming a relatively complete industrial system. The annual output value has exceeded CNY 300 billion, and the annual growth rate has been maintained at about 20 percent. Nuclear technology is widely used in industry, agriculture, medical care, public safety and other fields, and some representative nuclear technology application products also emerged, which has had a positive impact worldwide.

In nuclear agronomy, the mutant plant varieties cultivated by Chinese scientists account for nearly 1/3 of the total number in the world; the total amount of radiation processing of agricultural products is roughly 500 thousand tons, accounting for about 1/2 of the global total; **In safety and security**, the nuclear detection technique is widely used. The large container/vehicle inspection equipment developed by Nuctech Company Limited (Nuctech) has been exported to more than 160 countries and regions, which has won a very good reputation. **In environmental protection**, China has built the world's largest accelerator project for wastewater treatment, with a daily treatment capacity of 30000 m^3/d, which fully shows the good application prospect of nuclear technology in the field of environmental protection. **In the field of human health**, the application of medical linear accelerators in China is rapidly popularizing. At present, nearly 2000 accelerators have been used. Important progress has been made in proton and heavy ion therapy techniques and high current proton cyclotron. Radiotherapy has become one of the three main clinical treatments for tumor patients in China. In addition, Sun Yat-sen University in China has made breakthroughs in insect incompatible technique and insect sterilization technique, and its research findings and application results have been reported as a long paper in the NATURE magazine. The combination of insect incompatible technique and insect sterilization technique (IIT-SIT) is currently the most safe and effective mosquito-borne biological control technology, which can effectively eliminate mosquito-borne populations, so as to reduce the prevalence of mosquito-borne infectious diseases such as malaria, dengue fever and Zika fever, and improve people's health.

III. Building an in-depth protection for nuclear safety and security to ensure the sustainable development of nuclear energy

China has always adhered to the view of "rationality, coordination and joint progress" on nuclear safety and security, and the principle of "Safety First". China has also maintained a good record of nuclear safety and security. The first white paper on nuclear safety, Nuclear Safety in China, was published on September 3, 2019, which expounded the fundamental principles and policy propositions on nuclear safety, shared the concept and practice of nuclear safety regulation, and effectively responded to the public concerns over nuclear safety. In terms of nuclear security, China has implemented a strict licensing system for nuclear materials and radioactive sources, formed an effective regulatory system, and regularly carried out nuclear security exercises to enhance the capability in response to nuclear terrorism threat. China places a high value on international cooperation in nuclear security. Since the establishment of the Center of Excellence on Nuclear Security in 2016 in Beijing, more than 160 international and regional training workshops and seminars were hosted, and

nearly 3000 domestic and foreign trainees were trained. In September 2019, the Cooperation Agreement on IAEA Collaborating Center for Nuclear Security Technologies was signed between CAEA and IAEA. China is willing to make the best of the cooperation center to make a greater contribution to promoting the cooperation and exchanges, and improving the capability for nuclear security in the region.

IV. Paying much attention to the cultivation of professional personnel to build a highly qualified personnel team

China has established an education and training mechanism for nuclear professionals through the interconnection of higher learning institutions, scientific research institutes and enterprises, so as to constantly improve the technical capability and professional attainment of nuclear professionals. In order to help developing countries train nuclear professionals, the “Chinese Government Atomic Energy Scholarship” was established by CAEA in cooperation with IAEA. In the past two years, nearly 80 master and doctoral student vacancies of nuclear engineering were provided for developing countries concerned in Asia and Africa.

V. Strengthening international cooperation and exchanges, and jointly building a nuclear community with shared future

As the largest developing country in the world, the development of nuclear industry in China is still unbalanced and inadequate. Therefore, the Chinese government places emphasis on carrying out technical cooperation and exchanges with countries around the world and international organizations. We are not only carrying out technological exchanges with advanced countries in nuclear energy, but also willing to share experiences in nuclear energy development with the vast number of developing countries. With the help of multilateral and bilateral cooperation platform, and other mechanisms such as the Belt and the Road initiative, we can share China's the capability and experience in equipment manufacturing and engineering construction for the nuclear power technologies with intellectual properties such as HPR1000 and HTGR projects, so as to provide China's solution for the development of nuclear energy and application of nuclear technologies in the region.

Dear colleagues, ladies and gentlemen,

The FNCA has gone through an extraordinary course of 20 years. Looking back on the past, we trusted and helped each other, actively carried out cooperation and exchanges to meet the needs of various countries, and made important contributions to promoting the economic and social development of the Asian region. Looking out for the future, Asia will still be the most active region full of vigor and vitality for nuclear energy development in the world. The FNCA will have a brilliant future. China is willing to work with all member states to continue to do a good job in the following areas:

Firstly, adhering to win-win cooperation with a more open and sharing attitude

The development of nuclear energy shares common interests of all mankind. No country can do it alone. Only by working together can we effectively combat the global and regional issues such as the climate change, ecological protection, and nuclear non-proliferation, achieve the UN's sustainable development goals in 2030, and jointly discussing and building a

nuclear community with a shared future. We should further expand the opening and sharing of nuclear science and technology in the region, promote the technology transfer in the field of nuclear technology applications, and jointly open up a new situation for the sustainable development of nuclear energy.

Secondly, strictly abiding by the lifeline of nuclear safety and security

The experience and lessons of the Fukushima accident shows us that it will seriously endanger the development of global nuclear energy industry in the event of a nuclear safety accident. The current increasingly serious situation of terrorism threat also makes strengthening nuclear security to combat nuclear terrorism a common consensus of the international community. We should always maintain a sense of crisis, strengthen the state responsibility, strictly fulfill the international obligations, and take effective measures to improve the level of nuclear safety and security, so as to ensure that everything is foolproof.

Thirdly, strengthening public communication, and improving public acceptance

Public acceptance of nuclear energy is a problem that cannot be ignored in formulating the nuclear energy development strategy. Therefore, while improving the economy and safety of nuclear energy systems, it is necessary to further strengthen the communication with and science popularization and publicity for the public, reverse the social ideological trend of anti-nuclear, fear of nuclear, and turning pale at the mention of nuclear, and create a good public opinion environment for the sustainable development of the nuclear energy industry.

Ladies and gentlemen,

The wide use of nuclear energy and technologies for the benefit of the public is a long lasting dream and expectation of the mankind. Someday, our common dream will certainly come true, with the booming of nuclear energy. China is willing to constantly share our achievements and experiences of in the application and development of nuclear energy and technology with other member states, carry out practical cooperation, and make greater contributions to the development and peaceful uses of nuclear energy in the Asian region.

Thanks for your attention!