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**Address Climate Change Hand in Hand and Accelerate the Creation
of a Community of Life for Man and Nature**

Editor’s Note: 2021 Pujiang Innovation Forum – The Future (Science) Forum with the theme of “Climate Change and One Health” was held in the Convention Center of DongJiao State Guest Hotel on June 4. The Forum invited about 20 experts and scholars¹ at home and abroad to deliver keynote speeches and have interactive discussions on topics including global climate change and the disaster risk it presents, the climate action and sustainable development supported by the Big Earth Data, global ecological environment and public health, and new strategies for One Health. The informed opinions and core contents presented by the experts are hereby extracted and compiled for reference.

¹ Reduction, Public Health England, and Co-Chair of WHO Thematic Platform for Health Emergency and Disaster Risk Management Research Network; SHI Xiaoming, Director of National Institute of Environmental Health, Chinese Center for Disease Control and Prevention; LU Jiahai, Director of One Health Research Center, School of Public Health, Sun Yat-sen University; ZHOU Xiaonong, Director of National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, and Deputy Dean of School of Global Health, Chinese Center for Tropical Diseases Research, Shanghai Jiao Tong University School of Medicine; ZHAI Panmao, Chief Scientist of Chinese Academy of Meteorological Sciences, and Co-Chair of Working Group I of IPCC; Gretchen Kalonji, Former ADG for Natural Sciences of UNESCO, Director of IDMR, Sichuan University-the Hong Kong Polytechnic University; YE Qian, Executive Director of Integrated Risk Governance Project (IRGP), Beijing Normal University; HAN Qunli, Executive Director of Integrated Research on Disaster Risk International Programme Office (IRDR-IPO); TANG Xu, Former Director of Weather and DRR Services Department, WMO, and Executive Director of IRDR ICoE at Fudan University; LUO Yong, Deputy Dean of School of Science, Chair of Department of Earth System Science, Tsinghua University; CHEN Jianmin, Executive Dean of Institute of Atmospheric Sciences, Fudan University; KAN Haidong, Associate Dean of School of Public Health, Fudan University; CAI Wenjia, Director of Lancet Countdown Regional Centre for Asia, Tsinghua University.

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Climate change is the biggest threat to the mankind in the 21st century, and an unparalleled challenge for the international society. Close attention to the major scientific issues concerning climate change and One Health, and the scientific grasp of the interconnected nature of systematic risks play a crucial role in addressing risks, building a resilient society, and realizing sustainable development in the post-pandemic era and the era of peak carbon dioxide emissions and carbon neutrality. The Forum focused on the threats of climate change and One Health risks to scientifically describe the impacts of human activities on One Health, including ecological safety, and explored new paths to scientific governance for green, low-carbon and sustainable development.

I. Transformation of the Relationship between Humans and Nature Plays a Crucial Role in Sustainable Development

As President XI Jinping stressed, climate change poses real, serious, and long-term challenges to humans. Facing the unprecedented difficulties in global environmental governance, the international society shall build a community of life for man and nature with unparalleled determination and actions.

Firstly, we shall not gradually transform the relationship between humans and nature, but make in-depth transformation and reform. As pointed out by **XU Ningsheng, President of Fudan University, and Academician of Chinese Academy of Sciences**, since we humans entered the era of industrial civilization, we have been boosting the consumption of natural resources while creating great material wealth, resulting in the increasingly apparent deep-rooted conflicts between humans and nature, with climate change, biodiversity loss, higher exposure of weather/climate extremes, ocean acidification and other threats posing serious challenges to the existence and development of mankind. In the opinion of **LIU Jian, Director of the Science Division, UNEP**, to transform the relationship between humans and nature, and coordinate the development of humanity and the capability of the planet to support lives, offer resources, digest waste, and recover, we shall make fundamental changes in technology, economy, social organization, governance structure, etc., as time is inadequate for gradual change, and transformation and reform are a must.

Secondly, we shall translate the concept of zero carbon and sustainable development into practical actions. As pointed out by **Hoesung Lee, Chair of the Intergovernmental Panel on Climate Change (IPCC)**, many countries have established the goal of achieving net-zero emissions by 2050 but without specific measures. Some critics call such goals as “empty promises”, which is a justifiable criticism. Very positive and important, the national commitment to achieving net-zero

carbon emissions by 2050 is our first step towards global cooperation. We shall take actions instead of making empty promises, and continue to complete the subsequent work step by step, being in line with the goal of the *Kyoto Protocol* to limit global warming to 1.5°C.

Thirdly, we shall stick to inclusive development. In the opinion of **LIU Jian**, we shall no longer hold the opinion that “The fight against nature and the planet would bring boundless joy, and human wisdom can prevail over nature”, as it will put the well-being of humanity and the sustainability of the planet at risk. As pointed out by **Martin Visbeck, Member of the International Science Council Governing Board and Chair of the Committee for Outreach and Engagement**, we hope that the next generation of children have greater knowledge and design capabilities to shape the future community, society and world. To support the next generation step towards this goal, we may provide children with more opportunities and help them learn more knowledge and skills, and propose better models through the collaborative projects of the United Nations and other relevant institutions.

Fourthly, we shall intensify regulation and joint actions to boost the overall strength to address climate change. In the opinion of **Hoesung Lee**, we are both victims and the cause of climate change. Climate change and other kinds of damage on the planet reinforce each other. The customary lifestyle of humanity is damaging the life support system and attacking our lives and well-being, and such conflicts and

mutual destruction are going on and on. To end mutual attack and the activities damaging the planet, we need regulation, mechanisms and combined global actions. As pointed out by **LIU Jian**, currently, we have many international conventions, and one convention only concerns one issue in general. For example, the *United Nations Framework Convention on Climate Change* directs at climate change, and the *Convention on Biological Diversity* centers on biodiversity. In fact, however, such issues are interconnected and inseparable to some extent in a city, a rural area or a river basin, which means cooperation among these conventions are also needed.

II. Pay Attention to Human Health and Further Improve the Public Health and Disease Prevention and Control Systems

After the outbreak of the COVID-19 pandemic, we didn't spend much time before we change the pattern from passive response in the initial stage to proactive control, but problems such as late and inappropriate public notification of the major national health crisis and pandemic, lack of scientific pandemic prevention and control plans in the initial stage, and the inconsistency between the public health and disease prevention and control systems and the current economic development also emerged, requiring to be further addressed.

Firstly, we shall strengthen top-level design on the national and

international levels, in which every subject shall play an active role. As suggested by **TANG Xu, Executive Director of IRDR ICoE at Fudan University, and Former Director of Weather and DRR Services Department, WMO,** we shall have systems and mechanisms, cooperation platforms and cooperation networks on the national and international levels, as well as long-term scientific plans and arrangements for major projects, and establish a complete set of governance systems and countermeasures comprised of a set of technological systems for the acquisition, modeling and corresponding predictions of linked data that addresses the root causes and mitigates specific risks. In the opinion of **LIU Jian,** the government shall take the leading role, the international organizations shall be a promoter, the science and education departments shall produce knowledge and offer policy consultation, the financial departments shall make investments, private sectors shall be the main force for innovation and implementation, and NGOs shall help raise awareness – everyone shall do his or her bit as a resident of the planet, such as implementing waste sorting and avoiding excessive packaging in the delivery industry.

Secondly, we shall intensify comprehensive monitoring and prevention at the outset. As suggested by **LU Jiahai, Director of One Health Research Center, School of Public Health, Sun Yat-sen University,** we shall collect data on the fulminant diseases caused by the contact between humans and animals, identify pathogenic factors or risk factors through investigations and researches, design and inspect control

strategies, lay evidence base, and finally consider and propose policies and measures. In this process, risk assessments covering different disciplines and the transformation of emergency response into prevention at the outset are quite crucial. According to **ZHOU Xiaonong, Director of National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention, and Deputy Dean of School of Global Health, Chinese Center for Tropical Diseases Research, Shanghai Jiao Tong University School of Medicine**, climate and environmental changes will bring some infectious diseases. For example, vector-borne diseases bring many global hazards, and may even kill millions of people. Therefore, we shall intensify comprehensive monitoring (such as comprehensive monitoring from doctors, veterinarians and the environmental departments), early warning and international cooperation to contain the future pandemics and epidemics.

Thirdly, we shall intensify the assessments of the health impacts of climate change and pay attention to health benefits. As pointed out by **CAI Wenjia, Director of Lancet Countdown Regional Centre for Asia, Tsinghua University, China** and some less-developed countries lack technical guidance on and standard operation paths to the assessments of the health risks posed by climate change. We shall encourage local governments to carry out their own risk assessments in combination with the realities, adopt different countermeasures, and integrate the synergistic health effects into the path design for our current goals of achieving peak carbon dioxide emissions and carbon neutrality,

so as to ensure the realization of healthy and beautiful China. As pointed out by **KAN Haidong, Associate Dean of School of Public Health, Fudan University**, the World Bank estimated that the annual economic cost of health impacts from air pollution in China is about USD 1.5 trillion. It would be very helpful to the realization of carbon neutrality and peak carbon dioxide emissions to take the synergistic health effects resulting from air pollution into consideration.

Fourthly, we shall further optimize the disaster and crisis management pattern. According to **Virginia Murray, Head of Global Disaster Risk Reduction, Public Health England, and Co-Chair of WHO Thematic Platform for Health Emergency and Disaster Risk Management Research Network**, the *International Health Regulations* alone is not enough to help countries fully achieve their disaster reduction and prevention goals, in which the national ministries and commissions shall all play an important role. The management of emergencies, disaster risks and crises shall complete the pattern transformation from fact-based to hazard-based, from passive to proactive, and from specific to general. Meanwhile, we shall also intensify the cooperation with communities, stepping from simple response to the management of the whole crisis.

III. Proactively Address the Climate Change Risks with the One Health Strategy

It is a consensus within the participating guests that the health of

humans, animals and plants is closely tied to the environment, and human behaviors are the cause of environmental degradation and environmental pollution that damage human, animal and plant health. To address the health challenges in China with the One Health strategy is an effective measure to satisfy the public health requirements in the new era.

Firstly, interdisciplinary integration and multi-departmental cooperation are crucial to establishing a regular work mechanism featuring joint prevention, control and governance. As pointed out by **LU Jiahai**, no disciplines or organizations are able to solve the complex health issues alone. We shall follow the One Health philosophy, i.e., ensure the health of humans, animals and the environment through interdisciplinary, cross-departmental and cross-regional (national) cooperation and communication. As pointed out by **SHI Xiaoming, Director of National Institute of Environmental Health, Chinese Center for Disease Control and Prevention**, there are still weaknesses in our current ecological prevention and control strategies. For example, while ecological problems are generally chain-based, our control strategies are still fragmented. Different departments still show deficiencies in coordination and junction. For example, the monitoring systems concerning agriculture, animals and plants, health and other fields require further coordination.

Secondly, with science and technology innovation as the core, we shall fully tap technologies such as AI, big data, and cloud computing.

As pointed out by **GUO Huadong, Member of the UN 10-Member Group to support the Technology Facilitation Mechanism for the SDGs (2018-2021), and Academician of Chinese Academy of Sciences,** with the powerful Big Earth Data system, we may make decisions about and responses to climate change and climate action, and find solutions to carbon neutrality, peak carbon dioxide emissions, and food safety issues on the basis of data. For example, we may conduct data analysis, monitoring and assessments through the cloud platform CASEarth to support the monitoring of resources, the environment and climate change, and even manage a city. We shall intensify the cooperation among different departments on the development of technologies. As suggested by **SHI Xiaoming,** in face of prominent global issues such as climate change, departments shall work together to intensify scientific development and project arrangement to solve the environmental health problem.

Thirdly, as talent cultivation is the foundation, we shall establish a health-centered talent cultivation system. In the opinion of **YE Qian, Executive Director of Integrated Risk Governance Project (IRGP), Beijing Normal University,** the issues we currently face are related to multiple disciplines, fields, departments, and regions; so, we need new scientific theories, technologies and platforms to support our development. “People” are the core of the solutions, and universities shall take the responsibility to cultivate talents, making the young engage more in multidisciplinary and interdisciplinary fields and capable of

doing a lot of work. In the opinion of **LU Jiahai**, talents are essential for addressing the health challenges in China, and we shall establish a health-centered talent cultivation system. As suggested by **TANG Xu**, we shall have an interdisciplinary research team to hold the knowledge about climate change, ecological environment and One Health.

Fourthly, we shall intensify resource sharing and straddle the data divide. As pointed out by **Guo Huadong**, data divide has become a huge obstacle to UN SDG 13 (climate change). We shall make data a host, share it with everyone and make it accessible to all. However, data sharing is currently an issue hard to deal with, as while people are willing to use others' data, they are reluctant to provide others with their own data, which is a worldwide problem. Apart from technical and methodological problems, we also have many problems concerning the intergovernmental and interpersonal conceptual differences. As suggested **SHI Xiaoming**, we shall establish interdisciplinary data application platforms, unify the standards for data on the basis of the One Health concept, regularly release white papers, intensify international communication and cooperation, and implement integrative promotion from the globe to regions, to nations, to communities, and to individuals.

Summarized by ZHANG Hong