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Contribution by Japan

to the CSTD 2019-2020 priority theme on "Exploring space technologies for sustainable development and the benefits of international research collaboration in this context

Outline on Japan's initiatives concerning exploring space technologies for sustainable development and the benefits of international research collaboration in this context

- Japan's position on the SDGs in terms of the space technology

Japan acknowledges that the space technology and international cooperation are indispensable for the achievement of the SDGs. By using space technology, Japan is determined to take the bold and transformative steps which are urgently needed to shift the world onto a sustainable and resilient path. This June, Japan published the "Expanded SDGs Action Plan 2019" which addresses the detailed governmental initiatives for achieving the SDGs. Japan regards space technology as one of the key contributors to the SDGs, and has distinguished several space related initiatives in the Action Plan.

- Achievement of Good Health and Longevity

One of Japan's priority areas related to space technology for achieving the SDGs is "Achievement of Good Health and Longevity." Japan will contribute to health issues on ground through various medical research and experiments aboard the Japanese Experiment Module "Kibo" of the International Space Station. For example, the microgravity environment of space makes it possible to crystallize high-quality protein, which is necessary to analyze the protein crystal precisely and to unravel molecular structures that affect diseases. Through the protein crystal growth experiment, Japan will contribute to the design of drugs such as influenza, cancer, and muscular dystrophy.

- Capacity Building

Japan has been making efforts to contribute to the technological innovation and capacity building of space developing and emerging countries. One example is the cooperation program between United Nations Office for Outer Space Affairs (UNOOSA) and Japan Aerospace Exploration Agency (JAXA) known as "KiboCUBE" which offers developing countries the opportunity to deploy CubeSats from "Kibo."

- Sustainable and Resilient Land Use and Development of High-Quality Infrastructure

Earth observation using satellites is an effective way for disaster management, and JAXA is facilitating "Sentinel Asia" in cooperation with space agencies, disaster management organizations and international organizations for the disaster management in Asia-Pacific region. JAXA has responded to more than 280 requests in Asia by providing satellite data using its Advanced Land Observing Satellite-2 (ALOS-2), and

will further contribute to the sustainable and resilient land use with the international partners.

- Environmental Protection

Observation data from satellites are also used to overcome various global challenges such as water management, air pollution, and forest preservation. One example is the observation of precipitation, which is useful for tackling water related disasters such as flood, typhoon, and landslide. JAXA has developed a precipitation monitoring system known as GSMaP, which offers global rainfall maps using satellite data such as the Global Precipitation Measurement (GPM) mission and Global Change Observation Mission (GCOM-W). In cooperation with international partners such as Asian Development Bank and UNESCO, Japan contributes to the reduction of damage from water related disasters. Second is the atmospheric observation such as GHG and aerosol for tackling climate change issues. Ministry of the Environment (MOE), the National Institute for Environmental Studies (NIES) and JAXA have launched Greenhouse gases Observing Satellite (GOSAT) series—GOSAT in 2009 as the world's first satellite, dedicated to monitoring greenhouse gases such as carbon dioxide (CO2) and methane (CH4), and GOSAT-2 last year with an enhanced capability of observing Carbon Monoxide in addition to CO2 and CH4 for the try of the anthropogenic emission estimation. Third is the monitoring of forests for environmental protection and effective forest governance. JAXA is cooperating with the Japan International Cooperation Agency (JICA) and has initiated the forest monitoring system, "JJ-FAST," by using satellite data from ALOS-2. "JJ-FAST" is now monitoring the forests of more than 70 countries. Last year, "JJ-FAST" has contributed to detecting illegal deforestation in Brazil in cooperation with local authorities.

Japan will continue these activities to contribute to achieving the SDGs through space-based technology.