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High Level Political Forum on Sustainable Development, July 2020
Preparatory process

Session: Protecting the planet and building resilience

Pursuing policies, investments and innovation to address disaster risk reduction and protect the planet from degradation

Introduction

The 2030 Agenda is rooted in the idea that human development and wellbeing cannot be achieved without simultaneously safeguarding and investing in nature and managing disaster risk in a systemic manner—otherwise development gains will be short lived and unequally distributed. Biodiversity loss, land and forest degradation, climate change, and disasters are threatening progress toward sustainable development. Actions to advance economic and social development need to address these threats and build resilience including through nature-based solutions, sustainable consumption and production practices and accounting for the true value of nature.

The past decade—in particular the COVID-19 crisis—has revealed the systemic nature of risk and the cascading impact of disasters across all three dimensions of sustainable development. The natural environment is humanity's first line of defense against many hazards, and nature-based solutions must be scaled up to manage disaster risks, build resilience and leave no one behind. These issues are addressed directly in SDGs 12, 13, 14, and 15, but they are foundational to the entire 2030 Agenda, including poverty eradication, health, food security and inclusive economic growth and sustainable livelihoods. The current session will highlight opportunities and innovations that can build resilience and manage risk while securing livelihoods and safeguarding the planet.

Guiding questions

Please consider the 4 questions below and submit written responses totaling **2000 words or less.** (Though the average should be 500 words per question, it is fine to use more words on one question and fewer on another, to total 2000.) Please draw from your field of expertise and experience and be as concrete and tangible as possible. Please provide your responses in a Word document by **12 May** to rambler@un.org.

1. ***Systems transformation***
   What are the fundamental systems transformations needed to halt nature degradation, reverse loss and manage risk, while eradicating poverty, ensuring food security for a growing population, securing livelihoods and promoting resilience?

- *In the six decades of the space era, satellites have transformed the society as we know it in virtually every sector. Today, around 40 percent of the SDG targets are benefiting greatly from geolocation and Earth observation and monitoring more than half of the Essential Climate Variables is dependent on space infrastructure.*

- *From transformations in the health sector through tele-epidemiology, telemedicine and space spinoffs, increase in the food production via precision farming and aid in combating food shortages and famines, reduction of waste, use of harmful substances and emissions though greater efficiency in transport, agriculture and supply chains, to global climate mitigation, resilience and adaptation efforts as well as disaster risk management – satellite contribute to all of these critical aspects of our daily lives and many more.*
- *Space assets are also integral for understanding of the progress achieved in the quest to sustainable development through monitoring SDG indicators and targets, helping to identify success and gaps where intensified action is necessary.*
- *Achieving just and sustainable societies requires enhanced effort in combating illegal and criminal activities. Satellite data, services and applications are contributing to verification of treaties and agreements, helping us tackle human and wildlife trafficking, poaching, illegal fishing, smuggling, illegal waste dumps and alike.*
- *STI in general, but certainly space in particular, offer a source of inspiration for innovation and development of new technology which occasionally finds its way to commercial gadgets and tools. Hundreds of technologies developed from the space programme are now widely used in other sectors around the world.*

2. *Specific actions to drive transformation*

Please describe 2-3 specific, promising actions at different levels that can drive these systems transformations. These actions could relate for instance to scaling up the use of nature-based solutions, sustainable consumption and production, or other approaches. How have these actions helped (or how *could* they help) break down siloes, support the systemic management of risk, and trigger positive changes in society? How can co-benefits between actions be maximized and the risk in trade-offs stemming from these actions (i.e. negative impacts on other aspects of the 2030 Agenda) managed?

Space solutions to support disaster risk reduction:

Space-based technologies, such as remote sensing for Earth observation, satellite-based telecommunication and global navigation satellite systems, contribute to disaster risk management and emergency response efforts. Since the establishment in 2006 of UN-SPIDER, the Office for Outer Space Affairs has supported countries in their use of all types of space-based information in all phases of the disaster management cycle, including prevention, preparedness, early warning, response and reconstruction. In particular, and as a special example:
From 2010 to 2018, the Office worked with the Government of the Dominican Republic on the use of space-based solutions for disaster risk reduction, strengthening its institutions and providing technical advice on incorporating the use of space-based information into its activities. The Dominican Republic regularly faces extreme weather events, including hurricanes and tropical storms, which have caused floods, landslides and storm surges that result in the loss of life, the displacement of affected communities and the destruction of property. Since 2016, the country has faced three devastating hurricanes: Matthew in 2016, and Irma and Maria in 2017.

With the integration of space science and technology and its applications into decision-making by planning authorities and improved access to reliable, accurate and timely information by emergency, rescue and relief organizations as led to the fact that the Dominican Republic now has the ability to obtain up-to-date satellite imagery for the elaboration of maps to be used by responders. In July 2018 the Dominican Republic launched of a national integrated information system which is a decision-making tool for disaster risk reduction and emergency response that uses space-based data to analyse, visualize and disseminate information. By coordinating its planning and response to disasters, and producing maps autonomously, the Dominican Republic is able to reduce the impacts of hazards and, going forward, to support planners and responders in neighbouring countries, in particular Haiti.

Space for Climate Action

When it comes to coordinated global climate actions, it is essential to share the same diagnosis worldwide on the causes, effects and evolution of climate change. In this respect, satellite applications and technologies are key elements to provide observations and data that are global, uniform, sustained over years and regularly repeated. Satellite data and applications offer high resolution, as well as broad-scale, monitoring of our planet to facilitate an informed decision making, awareness raising, depiction of changes and evolution to help us visualizing impacts and create an understanding of the threat to our planet.

Through a number of programs, the international community dedicates strong efforts to the objective of structuring, coordinating and securing data and information provision for all the systems needed to monitor Climate Change, such as the Essential Climate Variables (ECVs) as defined by the Global Climate Observing System (GCOS). This monitoring allows anticipation of changes likely to occur at short, medium and long terms. At the same time there is a need to coordinate and support initiatives aiming at monitoring Climate Change Impacts at population scale so that the collective effort can benefit to the larger number and the broader area. Monitoring Climate Change impacts requires a whole range of long-term data that must be associated to other sources of data.

Space technology combined with in-situ and local data is essential to:

- Highlight the impacts of climate change to stimulate the definition and implementation of mitigation and adaptation actions at regional/national/local scales by policy makers.
- Provide information to monitor climate change impacts at regional national, and local (territorial) scale
- Help decision-makers to better understand climate change impacts, define and implement mitigation measures and find solutions to adapt to climate change.
- Contribute to tracking the impacts of climate change, at different levels: environment and biodiversity impacts, human, social and economic impacts.

3. ***Means of implementation and the global partnership for development (SDG 17):***
Achieving the 2030 Agenda relies on a combination of means of implementation to catalyse action and engagement, harness synergies and reduce tradeoffs. Please discuss the means of implementation, including finance, partnerships, and capacity building, needed to make the necessary transformations. How can science, technology and innovation (STI), including social

innovation and local and indigenous knowledge, be mobilized to advance these transformations?

Access to Space for All

The United Nations Office for Outer Space Affairs strives to provide opportunities under Access to Space for All initiative. This initiative aims at assisting countries to access outer space, starting from developing experiments in microgravity conditions and understanding the implications of these conditions, with projects as Zero Gravity Instrument Project (ZGIP) which provided clinostats that can simulate the effect of microgravity along one one axis by rotation.

The Office offers access thanks to partnerships to different opportunities, such as KiboCUBE, a partnership with the Japanese Aerospace Exploration Agency (JAXA) to deploy cubesats from the International Space Station, the Chinese Space Station, a partnership with the Chinese Space Manned Agency which offers hosting payloads in the upcoming Chinese Space Station, DropTES, a partnership with the Center of Applied Space Technology and Microgravity (ZARM), or a partnership with the European Space Agency on the use of the Large Diameter Centrifuge.

This successful collaboration model has provided, and continues to provide, capacity-building opportunities to educational institutions for the design, construction and deployment of microgravity experiments, resulting in high skilled individuals and know how, which truly demonstrate the benefits of space to society. Innovation derived from space exploration endeavours is also a key driver of socioeconomic development and technical progress on Earth for the benefit of all humankind, providing growth, jobs and long-term returns. The Office has played a crucial role in channelling appropriate opportunities generously donated by countries having space capabilities, to institutions in developing countries that would otherwise have little no prospect of carrying out space related scientific research.

4. ***Covid-19 crisis***

What does the Covid-19 crisis reveal about the human-nature relationship and systemic risk creation? How can nature-based solutions contribute to a post-COVID-19 economic and social recovery that is more sustainable, equitable and resilient? What immediate and medium-term steps are needed to ensure that the post-COVID-19 economic and social recovery is sustainable, equitable and resilient. How can we redirect financial flows and direct recovery efforts to create better outcomes for people, prosperity and planet?

Space Economy for Humanity Challenges

Space and satellite technology have become the pillar of modern digital life. They help people connect with each other, know where they are and use online services. Space technologies also monitor the Earth for changes that could help or harm the environment and society. They provide policy makers with invaluable data and information, helping make effective decisions across a range of policy areas – from urbanisation to national crisis, with the COVID-19 outbreak being the most recent example.

Supporting the development of space economies in non and emerging space faring nations is an integral part of UNOOSA's work to bring the benefits of space to everyone, everywhere.

The space economy includes the development and provision of space-enabled products and services, by the public and private sector. It includes two segments: downstream and upstream. The downstream segment includes all activities based on space technology or using a space-derived system that may result in an application, product or service to the benefit of the economy or society here on Earth. The upstream segment instead includes all activities that focus on the design, manufacture, assembly, launch, functioning, maintenance, monitoring and repair of spacecraft destined to be sent out to space as well as the products and services related to them.

The downstream market is incredibly valuable when it comes to innovation, job and revenue creation, and the provision of other services that strongly benefit society. The global revenue generated by the GNSS downstream market was around EUR 150 billion in 2019 and is forecasted to increase to EUR 325 billion in 2029.

As humanity faces one of the biggest ever worldwide health threats, it is necessary to both solve and then recover from this crisis, and of course to build back better for similar situations in the future. Satellite technologies and data can help preventing the loss of more lives. A better understanding and sharing of these valuable public health tools must benefit all countries, more specifically emerging space-faring nations and developing countries.

In this framework, boosting the downstream segment of the space economy in these countries is a long-term investment. It is essential to transfer expertise to national authorities to ensure that they are aware of the potential of public and commercial space-based services.