UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

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EXPLORING SPACE TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT

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NOTE

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This series of publications seeks to contribute to exploring current issues in science, technology and innovation, with particular emphasis on their impact on developing countries.

The term “dollars” ($) refers to United States dollars unless otherwise specified.

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I. INTRODUCTION

The United Nations has a long history of promoting greater international collaboration in outer space and the use of space technologies for sustainable development. The United Nations Office for Outer Space Affairs was created in 1958 and in 2019 the international community celebrated the fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space. In recent years, there has been increasing interest among countries in the use of space applications for sustainable development, especially to achieve the Sustainable Development Goals. In this context, in May 2019, the United Nations Commission on Science and Technology for Development selected as one of its priority themes for its twenty-third session the topic of exploring space technologies for sustainable development and the benefits of international research collaboration in this context.

Space science, technology and data have the potential to contribute in direct or indirect ways to all of the Sustainable Development Goals.[1] Space science incorporates scientific disciplines involved in space exploration and the study of outer space natural phenomena and physical bodies, and often includes disciplines such as astronomy, aerospace engineering, space medicine and astrobiology. Space technologies often refer to satellite Earth observation, satellite communication and satellite positioning. Technologies like weather forecasting, remote sensing, global positioning systems, satellite television and communications systems, as well as wider scientific fields such as astronomy and Earth sciences, all rely on space science and technology. They support policy decisions by providing real-time information as well as time-series data from any central

Some of the least developed countries like Bangladesh, Bhutan and the Lao People's Democratic Republic have recently launched their own satellites (Union of Concerned Scientists Satellite Database, 2019). Furthermore, research in space technologies can have spillover effects in other areas: space technologies designed for space operations can be redesigned for applications on Earth, while investing in space research and education can contribute to bringing scientific knowledge to more people, as well as creating new opportunities for innovation and infrastructure (Wood and Stober, 2018).

This report highlights the potential opportunities of space-enabled technologies for delivering on the Sustainable Development Goals and proposes science, technology and innovation policy options for harnessing space technology for sustainable development. The report also discusses the role of regional and international research collaboration to support such efforts. The achievement of ambitious global goals in widely differing local contexts requires the combination of space capabilities with detailed local knowledge. Global research collaboration offers great potential to contribute to this process, providing opportunities to both create new knowledge and increase the impact of research by diffusing existing knowledge.

The report comprises six main sections that are structured as follows: chapter II reviews the different applications of space technologies for sustainable development, including in ensuring food security, health applications, access to telecommunications, reducing disaster risks, preventing humanitarian crises, monitoring natural resources and reducing