The challenges that we are facing can be addressed only through stronger international cooperation. The Summit of the Future, to be held in 2024, is an opportunity to agree on multilateral solutions for a better tomorrow, strengthening global governance for both present and future generations (General Assembly resolution 76/307). In my capacity as Secretary-General, I have been invited to provide inputs to the preparations for the Summit in the form of action-oriented recommendations, build-inS.15.7 (n)-.15.7 (n2u)-19 (8 (h p)-12.6[f)5.5 (o)-12.5 (p)-12.46)-7.1 (s)-1.3 (a)-4.33(n)-4.c.2 (i7)-5.9 (o)-10.7 (n)-12.8 (t)-6.24(t)1

Emerging risks, driven by increased congestion of the low Earth orbit and competition in space, need to be addressed in concert with the full

This rate of increase has been driven largely by the launch of small satellite networks by pri-

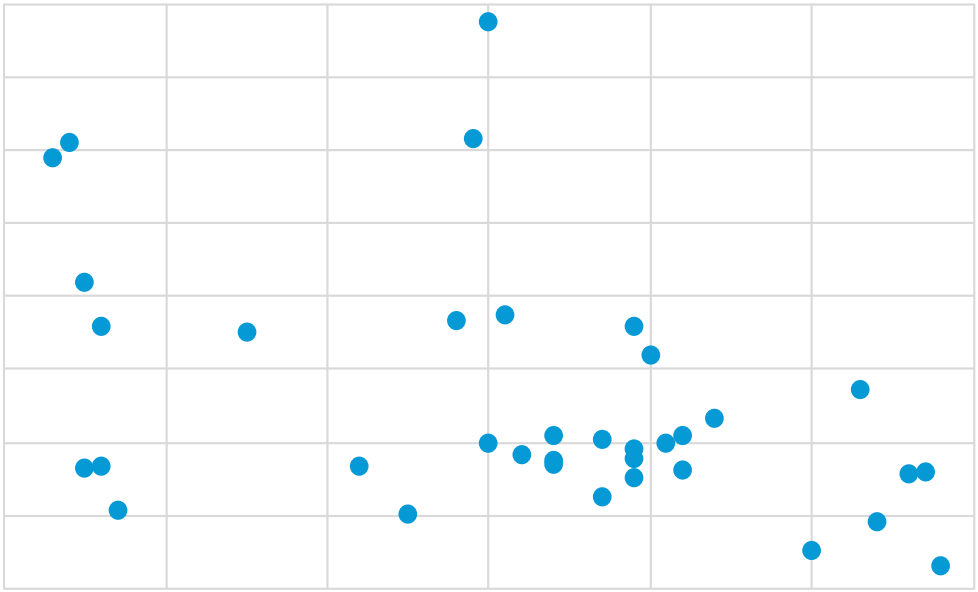
increase in the number of satellites registered in the Register of Objects Launched into Outer

International Telecommunication Union (ITU), a specialized agency of the United Nations, and recorded in the Master International Frequency Register indicate that this trend is likely to continue in the future. To date, States have registered radio frequencies with ITU for more than 1.7 million non-geostationary satellites that may be launched into orbit by the beginning of 2030

This rapid increase in the launch of objects into orbit is being driven by technology breakthroughs in both rockets and satellites. Rocket reusability and new manufacturing techniques have reduced

development could reduce these costs even further.

Mean average by decade



Center for Strategic and International Studies, Aerospace Security Project (2022).

Small vehicles carry up to 2,000 kg to low Earth orbit, medium vehicles from 2,000 to 20,000 kg, and heavy vehicles more than 20,000 kg. Low Earth orbit: a low Earth orbit is an orbit around Earth with a period of 128 minutes or less (making at least 11.25 orbits per day). Most

Beginning in 1959, just two years after the launch

Members of the United Nations established the

Another set of treaties relating to space security (see annex I) were agreed through various processes to prohibit the testing of nuclear weapons in outer space (1963) and the prohibition against the alteration of the environment as a weapon (1977). Efforts to ensure space security continue, in particular through the work of the First Committee of the General Assembly, the Conference on Disarmament and the United Nations Disarmament Commission.

In parallel, States Members of ITU agreed in 1963 to include provisions related to radio frequencies and associated satellite orbits in outer space in one of its treaties, the Radio Regulations (see annex I). This treaty is complemented by governance meetings (the World Radiocommunication Conferences) that update its provisions in order to keep pace with the advances in satellite technologies.

Advances in technology necessitated the development of a set of principles and declarations (annex II.) to support the earlier treaties. These agreements, negotiated from 1982 to 1996, dealt with a disparate range of technical issues, from television broadcasting to nuclear power in space.

Several of these treaties are close to achieving universal participation by space-faring nations and have served the international community well, in

safe and sustainable space activities.

More recently, a series of guidelines, frameworks and recommendations (see annex III) have been agreed on issues of space debris mitigation, nuclear power source safety, the long-term sustainability of

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dence-building measures in outer space activities. These new measures, together with the growing number of Member States that have joined the Committee on the Peaceful Uses of Outer Space

The Committee on the Peaceful Uses of Outer

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date to address space situational awareness, space debris and resource activities, while processes such as the ongoing open-ended working group on reducing space threats and the forthcoming group of government experts on the prevention of an arms race in outer space can mitigate risks associated with space security. Similarly, ITU has the institutional mechanisms in place to address the communications requirements of future space missions.

Issues relating to security, safety and sustainability have distinct considerations and have historically been taken up in separate intergovernmental bodies, but there remains a degree of overlap between their work. Some action has been taken to address this, including the innovative practice of joint meetings of the First and Fourth Committees on outer space, which underscores the cross-cutting nature of these issues. Such practices should continue and be explored for application across relevant forums.

Looking towards broader governance challenges, in April 2023 the High-level Advisory Board on Effective Multilateralism released a report[5] in

ellites to the cutting-edge science laboratories and observatories currently in orbit, humanity has sought to apply the opportunities presented by outer space to accelerate development. So much so that today, nearly 40 per cent of the targets underpinning the Sustainable Development Goals leverage Earth observation and global navigation satellite systems. This important link between outer space and the 2030 Agenda for Sustainable Development was agreed by Member States through the General Assembly in 2021 with the adoption of the “Space2030” Agenda, as resolu-

[7] that connecting villages to the Internet can

Over the past decade, major new trends have impacted the outer space environment. These include the number of space objects, the increasing number of private sector actors, the decreasing costs of launching objects into orbit and planned human missions to deep space. They have the potential to unlock enormous opportunity for humanity but they also exacerbate risks. It is essential for the international community to have a thorough understanding of these risks and to mitigate them.

dinate space tra f c with different sets of stand
ards, best practices, de f nitions, languages and

coordination widens the gap for countries with

operational domain. These are not just theoretical concepts, they are being backed by the development of military capabilities to deny, disrupt, degrade or destroy the space systems of adversaries. This can include direct-ascent missiles, manoeuvrable satellites, Earth or space-based laser systems, electromagnetic and cyber capabilities or even the use of nuclear weapons.

A major challenge in space security is the dual-use nature of many capabilities. Any satellite capable of manoeuvring to change its orbit or to avoid a collision is also capable of manoeuvring

To harness the potential of outer space for the achievement of the Sustainable Development Goals, and to mitigate the risks posed by a rapidly changing space environment, I present the following set of recommendations:

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sustainability. Such a regime, developed in cooperation with relevant bodies of the United Nations system, would foster transparency, con-

Over the past decade we have witnessed a fundamental change in the actors, ambitions and opportunities in outer space, and a new era of space exploration has come rapidly upon the multilateral system. It is our shared responsibility to ensure that existing international space law is fully implemented, and that effective governance is in place to propel innovation and mitigate risks.

	Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water
	Radio Regulations (ITU – last updated in 2019)
	Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies
	Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space
	Convention on International Liability for Damage Caused by Space Objects

SpaceX has published a potential cost-to-orbit price of $10 per kilogram for its reusable heavy-lift Starship rocket system. The system is under testing currently, but if realized, this could be up to 100 times less expensive than existing systems.