ASTRA CARTA

To Care For The Infinite Wonders Of The Universe

ZERO DRAFT

INTRODUCTION

In the grand tapestry of human history, we have always sought to push the boundaries of our knowledge, to unravel the mysteries that lie beyond our grasp. Our insatiable curiosity and relentless pursuit of discovery have led us to the threshold of the next frontier. Within the last decades of space exploration, we have seen extraordinary technological advances with benefits that reach far beyond the space domain. As humanity stands on the precipice of this new era of space exploration and development, it is of utmost importance that we approach this endeavour with a profound sense of responsibility and care.

The Astra Carta is a collective call to action that seeks to unite nations, organizations, the private sector and stakeholders in a shared commitment to the responsible and sustainable use of outer space. As we embark on this journey we must not forget to preserve and protect our origins on Earth. Inspired by the original Terra Carta, which continues to chart a path towards a more sustainable future for nature, people and planet, this transformative document extends those principles to the realms beyond our world. It harnesses the power of collective will, scientific discovery, sustainability and ethical stewardship to guide us in this new frontier of possibilities and, above all, avoid the law of unintended consequences.

Necessity has repeatedly proven to be the mother of invention; as we encounter hurdles in our efforts to extend life to the Moon, Mars, and beyond, what marvellous solutions will humanity develop to overcome them? Advances in propulsion to speed our voyages, advances in communication to maintain a human connection, resilient and bio-available nutrition to sustain our pioneers, or in artificial intelligence to extend our capacity to comprehend the vastness of space. Solving these problems, among others, will have profound effects on our ambitions in space, but each also has the compounding potential to improve the human condition and quality of life here on Earth.

The Astra Carta stands as a testament to our collective commitment, to preserve the sanctity of the universe and uphold the principles that will safeguard its boundless marvels for generations to come. It is critical to acknowledge that the universe, with its vast cosmic landscapes and near infinite number of celestial bodies, is itself a fragile interconnected ecosystem. Just as we are beginning to care for and nurture our own planet, we must extend these lessons to the ultimate cosmic mystery that surrounds us. In the absence of evidence to the contrary, we remain the sole custodians of the cosmos; as we seek to preserve our spark of life in the vastness of space, we must strive to protect the delicate balance of the unknown.

The exploration and development of space are endeavours that belong to all of humanity and transcend traditional borders. As one people, sharing one planet and pursuing one voyage, we must leverage the collective wisdom and resources of our diverse nations, cultures and industries. The principles enshrined within the Astra Carta serve as our North Star, guiding our path toward a future of genuinely responsible exploration, development and cooperation in space.

If achieving a sustainable future is the growth story of our time, our sustainability-aligned ventures into space offer infinite possibilities. The Astra Carta is our pledge to future generations – a promise that we will navigate the celestial realms with wisdom, foresight, and responsibility; let it be a testament to our shared commitment to preserve the beauty and wonder of outer space, while harnessing its potential to help us unite for the betterment of humanity.

As we embark on this next giant leap, let us be united and resolute in our commitment to care for the infinite wonders and mysterious purpose of the universe.

PREFACE
The supporters of the Astra Carta

Recognize the need to be diligent stewards of the universe, striving always to minimize our footprint and nurture the delicate ecosystems we encounter; ever mindful of the profound interconnectedness that binds us to the celestial tapestry.

Seek to foster scientific research partnerships and technological innovations that not only deepen our understanding and access to the cosmos, but also support the sustainable and responsible practices in space exploration as a human imperative, wherever we may be.

Recognize the import of rigorous inquiry and knowledge-sharing as the key that will unlock the mysteries of the universe, while safeguarding its integrity.

Acknowledge the imperative of sustainable development in space – the harmonious integration of human progress and environmental protection are essential to ensure the wonders of the universe remain bountiful and resilient for future generations.

Recognize that space exploration is a global endeavour that transcends national boundaries and should be in the interest of all of humanity.

Strive to form robust partnerships and collaborations, with sharing of resources and expertise, we can advance our collective understanding of the universe while promoting peace and harmony among all nations.

Seek to foster partnerships with indigenous and local communities that promote mutual understanding, respect and cooperation in space activities; taking into account centuries of traditional knowledge, wisdom on coexistence with Nature, cultural practices and spiritual beliefs.

Embrace a culture of peace and cooperation in space that builds upon the proven successes of collaborative research, exploration and discovery, even in times of terrestrial tension.

Strive to reduce the barrier to space access, such that peoples of all nations, regardless of economic or political status, can benefit from the unique opportunities and perspectives it offers – diversity of experience and opinion will be essential to a truly global effort in the open pursuit of knowledge.

Recognize the importance of inspiring future generations to explore the unknown and cultivate a deep appreciation for the beauty and significance of the universe – using education to nurture a sense of wonder, curiosity and respect for the next frontier, and the discoveries that await.

Acknowledge the value of developing and upholding transparent and accountable global governance frameworks for space that prevent exploitation, maintain ethical standards and safeguard the interests of all.

STATEMENT OF INTENT

1. As we embark on this next great chapter, moving from the Earth to the stars, the Astra Carta builds on the foundation of the Terra Carta to shape a future of responsible and sustainable space exploration, development and cooperation.

2. The Astra Carta aims to promote the peaceful expansion of humanity into the solar system and beyond by providing a roadmap of ethical and sustainable ambition, cooperation and innovation. Success depends on our commitment to ensure that we take a genuinely sustainable approach, and that all of humanity benefits from the discoveries and technological advances that will inevitably be derived from our efforts.

3. The Astra Carta aims to serve as a roadmap for the global private sector to align their space-related activities with sustainability goals, approaches and standards in partnership with governments, international organizations and other stakeholders.

4. The aims of the Astra Carta will be met by:

    i. *Aligning with the Terra Carta, existing global sustainability frameworks and recognized space agreements* including: the Paris Climate Agreement, the Sustainable Development Goals, the Convention on Biological Diversity, the UN Convention on the Law of the Sea, the UN Declaration on the Rights of Indigenous Peoples, the UN Outer Space Treaty, the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS) Guidelines on the Long-term Sustainability of Outer Space Activities and the Artemis Accords.
    ii. *Upholding the sanctity of the universe* by respecting the cosmic realm as a precious interconnected ecosystem. Our actions will be guided by a deep respect for the universe's intrinsic value and the diverse life it may hold.
    iii. *Advancing sustainable practices* by pioneering within industries for space exploration, where every endeavour is founded upon principles of ecological harmony and long-term viability. Through innovative technologies, responsible resource management and regenerative practices, we will ensure that our cosmic ventures leave a minimal footprint.
    iv. *Creating incentives for sustainable growth* by creating markets that reward sustainable practices and propel sustainable markets for space. By aligning economic interests with responsible development, we will catalyze a thriving and environmentally conscious space industry.
    v. *Pursuing collaborative endeavours and equitable access* by fostering international partnerships and knowledge-sharing initiatives, transcending borders to harness the collective wisdom and resources of diverse nations and sectors.
    vi. *Cultivating cosmic innovation* by embracing the spirit of scientific inquiry, technological innovation and human creativity to push the boundaries of our understanding of the universe. By fostering a culture of innovation and inspiration, we will unlock the vast potential of the cosmic frontier.

STATEMENT OF INTENT

5. Designed with the private sector in mind, the Astra Carta recognizes that each industry, business, and investor needs to chart their own course to a more sustainable approach to space exploration, and that global, regional, local and industry variance exists; it aims to encourage and provide a voluntary framework for each participant to accelerate their respective sustainability journeys.
6. Reaching a sustainable future amongst the stars necessitates a systems-level approach; one that is reliant on the leadership, resourcefulness and synergy of a diverse range of global, regional, and local actors. A truly collective effort will be required to drive the necessary pace of technological advancement.
7. The Astra Carta is to be a living document that will be reported on and updated annually to keep up with global progress, technological evolution and a shifting investment landscape.

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Article 1
Nature & Life Beyond Earth

As we venture into space and explore celestial bodies, we have a unique opportunity to encounter environments and ecosystems that are fundamentally different from our own. These extraterrestrial realms hold the potential for scientific discoveries and insights into the origins of life and the vastness of the universe. By safeguarding these pristine environments and the potential for life beyond Earth, we ensure the preservation of invaluable knowledge and the possibility of finding answers to fundamental questions about our place in the cosmos. As stewards of Earth, it is our responsibility to apply the lessons we have learned about the fragility of ecosystems and the interconnectedness of life to our interactions with beyond Earth environments.

By approaching space exploration and utilization with a mindset of conservation and protection, we can prevent inadvertent contamination, preserve the integrity of celestial bodies, and maintain the integrity of future scientific endeavours.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Developing* and deploying space-based sensors and monitoring systems around the Moons and planets we intend to explore, to assess and track changes in celestial bodies' environments, enabling informed conservation strategies and ensuring the long-term preservation of Nature beyond Earth.
2. *Supporting* and investing in astrobiology research to deepen our understanding of potential extraterrestrial life forms and ecosystems, informing conservation strategies and ensuring their protection.
3. *Encouraging* open data sharing and international collaboration in scientific research and exploration, fostering collective efforts to protect and value Nature beyond Earth.
4. *Fostering* international cooperation among spacefaring nations and international bodies to establish common frameworks and regulations that protect Nature beyond Earth, ensuring a unified approach to conservation efforts.
5. *Developing*, innovating and investing in advanced life support systems for human missions, reducing reliance on Earth-bound resources and minimizing the harsh effects of space travel on the human body.
6. *Minimizing* contamination and implementing strict protocols to prevent biological and chemical contamination of celestial bodies, ensuring that human activities do not introduce harmful substances that could adversely affect potential extraterrestrial life or future scientific research.
7. *Leveraging* the centuries of research into our own planetary ecosystem to better understand and predict our impact on the novel environments we may encounter as we venture forward into the stars.

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Article 1
Nature & Life Beyond Earth

8. *Advocating* for international environmental treaties and agreements that protect and preserve the natural environments of celestial bodies, similar to the protections afforded to Earth's biosphere.

9. *Promoting* the responsible and sustainable collection and use of resources discovered on other celestial bodies, ensuring that human activities do not deplete or irreversibly damage the local environments.

10. *Establishing* sustainable exploration guidelines that prioritize the preservation of natural environments in celestial bodies, ensuring responsible and ethical exploration practices.

11. *Promoting* education and public awareness about the importance of protecting Nature beyond Earth, raising awareness about the potential existence and the need for responsible exploration and conservation.

12. *Respecting* and engaging with indigenous and local communities who hold cultural and ecological knowledge relevant to celestial bodies, recognizing their rights and involving them in decision-making processes.

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Article 2
Realizing Infinite Possibility

In the depths of the universe, beyond our terrestrial boundaries, lies a realm of infinite possibilities awaiting exploration. The time has come for humanity to embark on a new era of space exploration, one driven not just by scientific curiosity, but by a unified vision of sustainable progress. The maximum benefit to humanity can only be realized by a purposeful convergence of private industry and national agencies, creating a harmonious alliance to propel us towards a future where the peaceful and sustainable exploration of space becomes a reality and the expected norm. As we stand on the precipice of this unprecedented journey, let us draw inspiration from our past triumphs while acknowledging the cutting-edge work being done today, as we pave the way for a future filled with hope and boundless opportunities.

We are at a turning point in humanity's journey into space; the Astra Carta compels us to envision a future where the exploration of the cosmos is not marred by exploitation but guided by sustainability and the principles of peaceful coexistence.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Committing* to lunar exploration, and beyond. The Moon remains an artefact of our past success; it is now on track to become a proximate proving ground for permanent human habitation off-world. The Moon presents immense opportunities for scientific research, resource utilization experiments, and technological innovations. As we inevitably venture past the Moon, to Mars and the unknown, we must ensure that our efforts are centred around sustainable practices, nurturing a harmonious relationship between humankind and the cosmos.

2. *Building* on the foundations of space exploration. Just as the Apollo missions symbolized a pinnacle of human achievement, we now possess the knowledge and expertise to build upon those foundations and push the boundaries of space exploration even further.

3. *Pursuing* international partnerships. At the core of the Astra Carta is a spirit of international collaboration, transcending national boundaries and geopolitical barriers. By uniting our global knowledge and resources, we can pool together the brightest minds and diverse perspectives, creating a robust framework for peaceful and sustainable exploration. The International Space Station has demonstrated that humanity's greatest achievements are within reach when we work together towards a common human goal.

4. *Bringing* into focus the vital aspects of sustainability, emphasizing the responsible utilization of resources and the preservation of the celestial environments we will discover. Building on decades of research in green power generation, recycling of waste products, and with a deeper appreciation of the world we call home, we can ensure that our exploration of outer space aligns with the principles of sustainability and environmental stewardship.

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5. *Developing* revolutionary propulsion systems. The next giant leap will be catalyzed by the development of novel propulsion systems that will transform space travel and expand the radius of human reach. Visionary researchers and engineers are currently pushing the boundaries of propulsion technologies, such as green propellants, quantum drive, air-breathing rocket engines, solar-electric propulsion, safe nuclear thermal propulsion and even antimatter-based solutions. These advances are critical to aligning human exploration of space with the typical lifespan of our species; accelerating both the craft we send, and the interest in participating in the pioneering journeys.

6. *Encouraging* the sustainability-aligned democratization of space. With the cost per kilogram to orbit continuing to decline, the barriers to access are lowering to the point where new experience and new business opportunities can be realized. By embracing these opportunities, we not only inspire a new generation of explorers but also stimulate economic growth and innovation. The incentivization of these endeavours must be underpinned by responsible practices, adhering to ethical standards and prioritizing sustainability as a core tenet of human existence in the universe.

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Article 3
Default Sustainable In Space

Humanity's relentless pursuit of exploration and discovery has always led to remarkable achievements; as we set our sights on the vast expanse of space, it becomes imperative that we approach this new frontier with a sense of responsibility and commitment to sustainable practices. Astra Carta calls industry leaders in the space sector to unite in the noble cause of preserving both access and use of the space environment for future generations. It is essential to acknowledge the interconnectedness between the preservation of the space environment and the wellbeing of our own planet. The principles of sustainability that guide our actions on Earth must, similarly, extend to our celestial ambitions. By embracing a holistic approach that encompasses technological innovation and robust regulatory frameworks, we can pave the way for a future where space exploration becomes synonymous with responsible stewardship.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Designing* space missions for sustainability. The lifecycle of each space mission must aim to guarantee the long-term sustainability of the space environment. Consideration should be given to reusability of the launch vehicle, debris mitigation, end-of-life disposal and alternative propellants as key value drivers of new space exploration technologies.

2. *Enhancing* space situational awareness by improving tracking and monitoring capabilities to precisely catalogue space objects, identify potential collision risks and facilitate more informed decision-making in orbit. This would include the sharing of space-related data, including orbital information, collision avoidance strategies and technological advancements to support research and development efforts for sustainable space activities.

3. *Encouraging* scientific research and international collaboration to enhance understanding of celestial bodies' ecosystems, geology, and potential habitability, supporting the sustainable exploration and preservation of extraterrestrial environments.

4. *Establishing* a more robust framework for global space traffic management, to ensure we continue to safely operate as orbits become increasingly crowded.

5. *Promoting* responsible exploration and sustainable habitation on other celestial bodies, ensuring compliance with internationally recognized laws and norms, including agreements like the UN's Outer Space Treaty and the Artemis Accords, while respecting the efforts of other nations and the interests of future generations.

6. *Establishing* protocols and guidelines, such as the Committee on Space Research (COSPAR), for the protection of celestial bodies, including the Moon, Mars and asteroids, from contamination and interference to preserve their scientific, historical and cultural value.

7. *Promoting* the exploration and development of renewable sources of energy for use off-world, which will also help transition our planet away from fossil fuels. Looking to the Sun as a source of unlimited fusion energy, harnessing and storing that energy may well unlock the key to the green future we have envisioned for so long; it can also be used in novel propulsion systems that enable significantly higher efficiency, unlocking higher transit speeds and shorter journeys to new destinations.

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8. *Encouraging* the development of technologies that will enable in-situ resource utilization (ISRU), such as the collection and processing of abundant resources into useful building materials to protect humans from harmful temperatures and radiation.

9. *Expanding* on the closed-loop-life support proven in low-Earth orbit will help to minimize our ecological footprint. Proving such technologies will reduce the mass-to-orbit requirements from Earth, and accelerate the construction of habitats and transport of other critical equipment for research and basic survival needs.

10. *Encouraging* cooperation and dialogue with bodies like the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS)

11. *Encouraging* collaboration and coordination among satellite constellation operators to optimize orbital positions, reduce interference, and maximize efficient use of space resources. Also, optimizing satellite design for sustainability by employing lightweight materials, efficient power systems and durable components to extend satellite lifetimes and reduce the need for frequent replacements.

12. *Investing* in technologies and infrastructure that enable on-orbit repairs, refuelling and upgrading of satellites, reducing the need for new launches and minimizing space debris.

13. *Designing* for end-of-life disposal/reuse by incorporating responsible design principles that facilitate the safe deorbiting, relocation or reuse of satellites and spacecraft at the end of their operational life.

14. *Encouraging* sustainable innovation, design and manufacturing in all industries engaged in space exploration, including agriculture, tourism, health, transportation, telecommunications and energy.

15. *Promoting* transparency and traceability in supply chains to ensure responsible and sustainable sourcing practices, including the sourcing and procurement of material, components and services for space missions.

16. *Investing* in advanced materials and manufacturing techniques that enhance the durability, reliability and sustainability of space systems, reducing the need for frequent replacements. Also fostering resource efficiency and the circular economy by encouraging industries to adopt resource-efficient practices, including the recycling, repurposing and reuse of materials and components in space-related activities.

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Article 4
Science, Technology & Innovation As A Human Trait

As we embark on this new chapter of space exploration, it is crucial to ensure that our endeavours reflect the best of our human potential. The space industry can continue to lead by fostering a culture of scientific curiosity, technological innovation and a respect for all forms of life as a fingerprint of human presence beyond Earth. By promoting collaboration, investing in research and development, and inspiring the next generation, we can continue to push the boundaries of human knowledge to ensure that our efforts are regarded in the best possible light for generations to come.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Promoting* an ethical framework for space exploration that establishes or refines existing international agreements to prevent the exploitation of celestial bodies and ensure the preservation of their scientific, cultural and spiritual value.
2. *Promoting* inclusive access to space and its derived benefits, ensuring that no nation is left behind as humanity departs for the stars.
3. *Recognizing* the importance of indigenous knowledge and culture in shaping our understanding of space; collaborating with their communities and incorporating their perspectives to ensure respectful engagement in our scientific and technological expansion of our shared heritage.
4. *Promoting* the peaceful and collaborative use of space as a platform for diplomacy and cooperation among nations, fostering a spirit of unity and a shared purpose as we reach beyond our shared home.
5. *Investing* in educational programmes that inspire future generations to pursue careers in the ever-increasing number of space related fields. Partnering with all levels of education and with space agencies to provide hands-on learning opportunities and mentorship programmes.
6. *Establishing* funding programmes that specifically support innovative projects and ideas in space science, technology and exploration, encouraging scientists, entrepreneurs and innovators to push the boundaries of human knowledge and capabilities.
7. *Establishing* dedicated space innovation centres or hubs that bring together scientists, engineers, entrepreneurs and investors, providing a collaborative environment to nurture new ideas, technologies and startups focused on space exploration and innovation.
8. *Fostering* an organizational culture within the space industry that values innovation, sustainability, creativity and calculated risk-taking, encouraging individuals and teams to think beyond traditional boundaries and explore new possibilities.
9. *Creating* incentive programmes and competitions that offer substantial rewards for significant scientific breakthroughs, technological advancements and innovative solutions that push the boundaries of human exploration and innovation beyond Earth.
10. *Encouraging* interdisciplinary collaboration between scientists, engineers, philosophers, and artists as we take our first steps beyond Earth. Emphasizing the importance of integrating

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differing perspectives to help develop comprehensive solutions to the complex challenges of space exploration.

11. *Fostering* collaboration and partnerships between space agencies, educational institutions and other worldwide organizations to promote the free exchange of knowledge, expertise and resources that advance scientific research and technological innovation beyond Earth.

12. *Implementing* guidelines for the responsible use of artificial intelligence (AI) and automation in space missions; balancing efficiency and longevity of AI with human control, to preserve the agency and intent of our exploration.

13. *Leveraging* the ingenuity and resources of the private sector, alongside research, development and investment into emerging technologies that can contribute to more sustainable space exploration, including:

    i. Electric propulsion systems
    ii. Lightweight and high-strength materials
    iii. Space-based solar power generation
    iv. Advanced life support systems
    v. Bioregenerative systems
    vi On-orbit manufacturing
    vii. Laser communications
    viii. Advanced radiation shielding
    ix. Self-sustaining habitats
    x. In-space assembly and construction
    xi. Space-based telescopes
    xii. Lunar and Martian resource utilization
    xiii. Closed-loop food production systems
    xiv. Advanced energy storage systems
    xv. Space weather forecasting
    xvi. Advanced propulsion concepts
    xvii. Planetary drilling and sampling systems
    xviii. Precision landing and navigation systems
    xix. Space debris mitigation and removal
    xx. Bioengineering for space agriculture
    xxi. Advanced space radiation protection
    xxii. Space-based energy harvesting
    xxiii. Quantum communication and encryption
    xxiv. Autonomous spacecraft servicing
    xxv. Biomimicry for space exploration
    xxvi. Human-robot collaboration
    xxvii. Space tourism infrastructure
    xxviii. Cryogenic fuel storage and transfer
    xxix. Virtual and augmented reality for space exploration

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Article 5
Creating Sustainable Markets In Space

Increasingly, it is the private sector, across all industries, that will be playing a leadership role in space exploration and development. Affordable access to space will drive scientific discoveries, paving the way for breakthroughs in fields like astronomy, materials science, propulsion technology and planetary sciences. Cost-effectiveness will also open new markets for industries like space tourism, health systems, Earth monitoring and asteroid mining along with the technologies and knowledge acquired to support these burgeoning industries. As entirely new global markets emerge, it will be critical that sustainability in space be at the heart of business models, investment considerations and industry partnerships.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Enabling* space-based manufacturing by leveraging advanced materials and the increased lift capacity of new rockets to build workshops for components, structures and even habitats in-orbit or on the surface of other celestial bodies; explore the utilization of local resources while minimizing waste generation, fostering a sustainable approach to production of the materials needed for humans to survive in new environments.
2. *Funding* research into alternative fuels and propulsion systems, to reduce emissions and minimize the environmental impact of space launches. Similarly invest in the future of propellant-less thrust solutions for deep space travel and orbital corrections, helping to reduce the launch mass of spacecraft leaving Earth.
3. *Facilitating* the reduction of the costs related to sustainable space exploration including by:
    i. *Harnessing* focused artificial intelligence (AI) and automation into launch operations, spacecraft and mission design, onboard systems and payload management as a way to improve efficiency, and reduce costs associated with participating in the industries around space exploration.
    ii. *Advancing* more efficient launch vehicles capable of reaching orbit without the need for multiple stages, streamlining the launch process and minimizing costs.
    iii. *Embracing* in-space propellant depots that can be resupplied by reusable vehicles, enabling spacecraft to refuel in orbit and reducing the mass required to be launched from Earth.
    iv. *Harnessing* advanced propulsion technologies, such as ion propulsion or nuclear propulsion, which offer higher efficiency and lower fuel requirements, reducing costs.
    v. *Fostering* sustainability-aligned public-private partnerships by collaborating with private companies, leveraging their entrepreneurial spirit and efficiency, to share the financial burden of developing and operating launch systems, lowering costs for government agencies.
    vi. *Encouraging* the establishment of sustainability focused commercial spaceports worldwide, with an open-sourced common launch vehicle architecture to drive down launch costs through increased accessibility and availability of responsible and reliable launch providers.

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vii. *Exploring* innovative and sustainable manufacturing techniques, like 3D printing of AI-designed components, to increase efficiency and reduce the production time and cost of complex rocket components, making launches more affordable.
viii. *Investing* in satellite miniaturization, which can be launched in larger numbers and at lower costs, revolutionizing space-based applications and services.

4. *Expanding* the space-based communication infrastructure with additional sustainable satellite communication systems that provide reliable and efficient connectivity throughout the solar system while minimizing the environmental impact of space-based communication networks.

5. *Encouraging* research and development of innovative technologies for efficient and environmentally-friendly extraction, processing, and utilization of space resources, including ISRU techniques.

6. *Fostering* international cooperation and collaboration in sustainability aligned space mining activities, including knowledge-sharing, capacity-building and joint ventures, to maximize the sustainable and beneficial use of space resources for all while recognizing the need to protect Earth's own resources.

7. *Encouraging* the development of a sustainable power generation industry in space, combining high efficiency solar energy collection or scaled fusion with storage and the possibility of transferring energy from orbit to the surface, providing clean energy solutions for humans throughout the solar system.

8. *Creating* incentives for innovative sustainable market development in space and for the development of sustainability-aligned space industries, including by:

i. *Developing* space-based agriculture initiatives that enable sustainable food production in space, advancing our understanding of self-sufficiency and resource conservation.
ii. *Promoting* responsible resource extraction by implementing sustainable mining techniques, minimizing environmental disruption, and prioritizing reclamation and restoration efforts.
iii. *Focusing* on renewable energy sources, such as solar power, in space-based power generation systems, reducing reliance on non-renewable fuels and minimizing environmental impact.
iv. *Exploring* additive manufacturing techniques in space, using recycled materials and minimizing waste generation to produce tools, spare parts and structures on-demand.
v. *Designing* and operating robotic systems with long lifespans, emphasizing repair-ability, upgradability and recyclability to reduce waste and increase the efficiency of space exploration missions.
vi. *Enhancing* space weather monitoring capabilities and developing accurate predictive models to safeguard spacecraft and astronauts from the effects of solar flares and other space weather phenomena.

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vii. *Designing* and implementing space-based infrastructure, such as satellites and power systems, that can withstand and recover from extreme space weather events, minimizing disruption and downtime.

viii. *Integrating* sustainable design principles into the development of space habitats, focusing on energy efficiency, waste reduction, and ecological balance to create environmentally friendly living spaces.

ix. *Optimizing* cargo logistics and packaging methods to minimize waste generation, reduce packaging materials, and maximize cargo capacity to lower the environmental impact of space transportation.

x. *Developing* efficient navigation systems that optimize fuel consumption, reduce orbital debris, and ensure precise positioning for spacecraft, satellites, and interplanetary missions.

xi. *Encouraging* the development of sustainable insurance policies that incentivize safe and responsible space operations while considering environmental risks and potential impacts.

xii. *Utilizing* remote sensing technologies to monitor and manage natural resources, track deforestation, measure air and water quality, and support sustainable land use practices on Earth.

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Article 6
Space Tourism

As the commercial space industry continues to grow, it will be important to ensure the safety and confidence of those who choose to embark on their personal journeys to the stars. Incorporating renewable energy sources and minimizing the ecological footprint of space infrastructure can greatly contribute to a sustainable and resilient space economy that does not sacrifice life on Earth in the pursuit of life beyond it. By establishing a framework for sustainability in space tourism and other commercial activities, we can protect the integrity of space environments, while inspiring a new era of responsible exploration and pave the way for a thriving and sustainable space industry. By adopting sustainable design and manufacturing practices, such as using reusable rockets and spacecraft, we can reduce waste, resource consumption and carbon emissions as we necessarily open the aperture of access to space to share its majesty with humanity.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Developing* guidelines and regulations for space tourism operators to ensure the safety, wellbeing and informed consent of space tourists, including measures for medical screenings, training and emergency preparedness.
2. *Promoting* sustainable space tourism practices, such as minimizing environmental impacts, reducing space debris generation, and preserving the integrity of celestial bodies, while providing unique and transformative experiences for space tourists.
3. *Facilitating* public-private partnerships and collaborations between space agencies, research institutions and commercial entities, promoting knowledge transfer, technology commercialization and joint ventures in space-related activities.
4. *Encouraging* the establishment of international standards and certifications for space tourism operators, promoting industry best practices and consumer protection.
5. *Providing* financial incentives, grants, and support programmes to promote the growth and competitiveness of startups and small and medium-sized enterprises (SMEs) in the commercial space sector, enabling them to contribute to space exploration and utilization.
6. *Promoting* international dialogue and coordination on the commercial use of space resources, addressing issues such as property rights, intellectual property protection, benefit sharing and the preservation of cultural and scientific heritage.
7. *Fostering* a conducive regulatory environment that encourages sustainable innovation, entrepreneurship and investment in the commercial space industry, facilitating the development and deployment of new space technologies and services.
8. *Integrating* sustainable design principles into space tourism experiences, ensuring minimal impact on natural resources and ecosystems during the development and operation of space tourism infrastructure.

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Article 7
Human Space Flight & Deep Space Life Support Systems

We are fortunate to have learned a great deal about human resilience from our efforts to keep astronauts alive aboard the spacecraft and space stations we have collectively put into orbit of our planet. As we seek to venture further into space, embarking on longer-duration missions, it becomes imperative to prioritize the continued development of reliable and resilient life-support systems. In furthering the principles of sustainability, we can continue to reduce resource consumption, waste generation and our reliance on finite sources of energy. Focuses on the advancements in recycling and regenerative life support technologies, efficient energy management systems and the gaining efficiencies in solar power generation are prime candidates as we learn to extend our presence in space. In consort with responsibly designed life support, we must consider the psychological impacts of long duration deep-space missions. The fragility of the human mind should therefore be factored into decisions at all levels of mission planning and habitat development. By safeguarding the health and future of our astronauts, we can establish a precedent for morally responsible and environmentally conscious exploration, setting the stage for a prolonged future in space.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Ensuring* the development and maintainability of reliable life support systems, medical capabilities and technologies for prolonged human spaceflight, prioritizing the health and wellbeing of astronauts.
2. *Establishing* international collaborations and knowledge-sharing platforms to exchange best practices, lessons learned and technological advancements in human spaceflight and life support systems.
3. *Conducting* ongoing monitoring and research on the long-term health effects of space travel, including bone loss, muscle atrophy, cardiovascular health and psychological impacts, to inform the development of effective countermeasures.
4. *Advancing* human-AI teaming in space exploration by investing in the:
    i. development of systems capable of assisting astronauts with tasks such as data analysis, decision-making and problem-solving
    ii. study of optimal balance between AI autonomy and human control;
    iii. development of AI systems that can adapt to the unique challenges and constraints of long duration space missions; systems, reducing reliance on non-renewable fuels and minimizing environmental impact.
    iv. establishment of protocols and guidelines for the ethical use of AI in space exploration, emphasizing transparency, accountability and the preservation of human agency.
5. *Investing* in research and development to improve life support systems, including air revitalization, water recycling, waste management and radiation protection, to ensure the long-duration health and safety of astronauts.

SECTION 2:
ACHIEVING SUSTAINABILITY IN SPACE

Article 7
Human Space Flight & Deep Space Life Support Systems

6. *Enhancing* shared medical capabilities and telemedicine technologies for remote healthcare management during space missions, including advanced diagnostics, surgical procedures and psychological support systems.

7. *Implementing* comprehensive crew training programmes that focus on physical and mental health, stress management and resilience-building techniques, ensuring the wellbeing and performance of astronauts in space.

8. *Establishing* a comprehensive psychological health program for astronauts that includes: compatibility for long-duration space missions; research on the psychological effects of isolation, confinement and extreme environments; proactive measures to foster social connections and support systems such as regular communications back to Earth; and developing training programmes to enhance psychological resilience, coping strategies and mental wellbeing.

8. *Collaborating* with international space agencies and research institutions to establish protocols and standards for crew selection, training and medical evaluations, ensuring the fitness and readiness of astronauts for space missions.

SECTION 2:
ACHIEVING SUSTAINABILITY IN SPACE

Article 8
Space Debris Mitigation

We are seeing a nearly exponential increase in the delivery of payloads to orbit; this rise is a direct result of laudable achievements to reduce the barriers to space access through the reduction in launch costs, re-using launch vehicles and the miniaturization of components, sparking competition among nations to keep pace with industry leaders. The conveniences of mega constellations, global positioning, and Earth observation should, however, be weighed against the corresponding growth of space debris which poses a significant threat to continued access to space and the long-term sustainability of the space environment. It is crucial that we address this challenge by actively targeting the sources of debris, while seeking methods to mitigate the hazards imposed by current debris which number in the tens of millions. By focusing our effort now, to learn how to clean up our own planet's orbital environment, we are far more likely to have an inherent instinct to preserve the orbits of our extraterrestrial destinations.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Strengthening* protocols and procedures for effective communication and coordination among satellite operators, space agencies and other stakeholders to prevent close approaches and potential collisions in congested orbits.
2. *Encouraging* international cooperation in space traffic management, fostering the exchange of data, information and best practices to enhance the overall safety and sustainability of space activities.
3. *Raising* public awareness about the issue of space debris and its potential impacts on space activities, Earth observation and satellite communications through targeted educational campaigns and outreach programmes.
4. *Integrating* space debris education into curricula at educational institutions, providing students with knowledge about the challenges posed by space debris and the importance of responsible space practices.
5. *Investing* in research and development of innovative technologies for space debris remediation, such as active debris removal, deorbiting, post-mission disposal, on-board tracking technologies and passivation techniques.
6. *Advocating* for the adoption of international agreements and guidelines, such as the Inter-Agency Space Debris Coordination Committee Space Debris Mitigation Guidelines, that promote responsible practices, ensuring a coordinated and standardized approach across nations and organizations.
7. *Establishing* strict design guidelines and standards for spacecraft and satellites to minimize the generation of space debris during their operational life and responsible disposal towards the end of their missions.
8. *Encouraging* satellite operators and space agencies to incorporate debris removal in their mission planning, either by incorporating it into their payloads, or making use of emerging commercial services in the field.

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ACHIEVING SUSTAINABILITY IN SPACE

Article 8
Space Debris Mitigation

9. *Promoting* international collaboration and data sharing among space agencies, research institutions and private entities to enhance knowledge and capabilities in space debris remediation.

10. *Improving* space surveillance capabilities and expanding the global network of tracking sensors to achieve comprehensive and timely space situational awareness.

11. *Promoting* the use of advanced tracking and monitoring systems to accurately characterize and predict the trajectories of space debris, enabling proactive collision avoidance manoeuvres and enhancing the safety of space missions.

12. *Facilitating* public-private partnerships to accelerate the deployment of space debris remediation missions and the development of cost-effective and scalable technologies.

13. *Supporting* the testing and demonstration of space debris removal technologies through dedicated missions and testbeds, enabling the validation and refinement of their effectiveness and reliability.

14. *Developing* automated collision avoidance systems and algorithms to optimize spacecraft and satellite manoeuvres and minimize the risk of collisions with space debris.

SECTION 2:
ACHIEVING SUSTAINABILITY IN SPACE

Article 9
Adopting Universal Sustainability Metrics & Standards

As humanity ventures further into the cosmos it will be crucial to assess, compare, and mitigate the environmental, social and economic impacts of our activities beyond Earth. By establishing sustainability metrics and standards specifically tailored to space exploration, we can systematically evaluate and track the performance of missions, technologies and practices. These metrics and standards would encompass factors such as carbon emissions, resource utilization, waste management and the protection of celestial bodies. By setting clear benchmarks and targets, we can drive continuous improvement, innovation and accountability in the space industry.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Building* upon established industry standards, such as those published by the International Standards Organization's Space Systems and Operations subcommittee and the European Cooperation for Space Standardization (ECSS), while encouraging the development of new sustainability standards to address emerging technologies and mission requirements.
2. *Undertaking* extensive research and analysis to identify the key environmental, social and economic aspects of space activities that need to be addressed in a set of universal metrics and standards.
3. *Defining* clear and measurable sustainability goals that encompass the minimization of environmental impact, efficient resource management, social responsibility and economic viability in space operations.
4. *Engaging* diverse stakeholders across nations, space agencies, industry players, academia, NGOs and local communities in the development of sustainability standards and metrics, ensuring broad representation and consensus.
5. *Collaborating* with international organizations such as the United Nations Office for Outer Space Affairs (UNOOSA) and the International Astronautical Federation (IAF) to align efforts and leverage existing frameworks for sustainability standards.
6. *Convening* a working group / committee of space agencies, organizations and stakeholders dedicated to developing universal space sustainability standards and metrics scoped to the responsible exploration of all celestial bodies.
7. *Ensuring* sustainability standards encompass the entire space value chain, from manufacturing and launch to in-space operations, satellite deployment, mission execution and end-of-life.
8. *Establishing* key performance indicators (KPIs) that can measure the sustainability performance of space missions, considering destination specific factors like harmful emissions, waste management, energy efficiency and an analysis of the potential benefit to humanity to properly assess risk.
9. *Incorporating* social and ethical considerations into the sustainability standards, addressing issues such as human rights, labour practices, equity and cultural preservation in space activities.

SECTION 2:
ACHIEVING SUSTAINABILITY IN SPACE

Article 9
Adopting Universal Sustainability Metrics & Standards

10. *Establishing* and implementing a set of best practices with corresponding reporting and disclosure guidelines for the partnering stakeholders in the exploration of the new frontier; encouraging transparency and accountability in measuring and reporting sustainability performance.

11. *Developing* certification and labelling programmes that recognize and incentivize space endeavours that meet or exceed the sustainability standards, providing market differentiation and promoting responsible practices.

12. *Ensuring* alignment with existing Earth-based sustainability frameworks, such as the United Nations Sustainable Development Goals (SDGs), the Paris Climate Agreement and the Convention on Biological Diversity to facilitate cross-sector integration and contribute to broader sustainable development objectives.

13. *Continuously* reviewing and updating standards and metrics to reflect advances in technology, scientific knowledge, risk tolerance and societal expectations, ensuring their relevance and effectiveness over time.

SECTION 3:
ONE PEOPLE, ONE VOYAGE

Article 10
Peaceful Exploration, Cooperation & Use Of Outer Space

Peaceful cooperation in space has proven to foster trust, confidence and mutual understanding among nations and stakeholders, leading to long-term partnerships that transcend geopolitical differences. By working together, nations, organizations and companies can leverage their resources, expertise and collective efforts to advance scientific knowledge, address global challenges and promote unity in exploration. By upholding the principles of peace and diplomacy as we venture beyond the national borders of Earth, we can ensure a sustainable and harmonious future, where the benefits of space exploration are shared equitably for the benefit of all humankind.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Encouraging* the planning and execution of multinational long duration missions and global research and development initiatives in areas of space technology innovation, lunar and planetary exploration and Earth observation, thereby maximizing the scientific and societal benefits of space exploration.
2. *Fostering* collaboration between public and private entities in space research, technology development and commercial space ventures, leveraging the respective strengths and resources of both sectors.
3. *Reducing* barriers to the transfer of space related technologies, intellectual property and expertise between public and private sectors; promoting innovation, entrepreneurship and continued economic growth in the space sector.
4. *Establishing* mechanisms for sharing data infrastructure, including ground stations, satellite networks and data processing centres, enabling equitable and cost-effective access to space-based services and applications globally.
5. *Facilitating* international cooperation and information sharing on space policies and regulations, promoting transparency, understanding and convergence to foster a harmonized global space governance framework; incorporating views of public and private actors.
6. *Encouraging* the integration of interdisciplinary approaches, including legal, ethical, social and economic perspectives, in space policy research and analysis, ensuring comprehensive and holistic policy frameworks for space activities.
7. *Establishing* frameworks and incentives for private investment in space-related projects with a focus on sustainability-aligned development, space tourism, satellite services and resource utilization, ensuring responsible and ethical practices.
8. *Promoting* collaborative initiatives for data analysis, modelling and simulation, leveraging international expertise and resources to address complex challenges, including climate change, natural disasters and sustainable development.
9. *Providing* technical training, knowledge transfer and mentorship programmes to build the capacity of all countries in space science, technology and applications, promoting inclusivity and reducing the space divide.

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Article 10
Peaceful Exploration, Cooperation & Use Of Outer Space

10. *Exploring* the establishment of additional governance mechanisms, including international space regulatory bodies or expert committees, to address emerging issues in space activities, such as mega-constellations, space traffic management, space situational awareness and humans becoming a multiplanetary species.

11. *Encouraging* comprehensive space policies for the private sector that align with international norms, principles and guidelines, ensuring coherence, consistency and compatibility in space activities.

12. *Enhancing* the role and effectiveness of existing international bodies, such as the United Nations Office for Outer Space Affairs (UNOOSA) and the Committee on the Peaceful Uses of Outer Space (COPUOS), in coordinating and facilitating international space governance, including policy coordination, norm development and capacity-building.

13. *Facilitating* diplomatic dialogue and negotiations among nations to build trust, enhance transparency and promote cooperation in space activities, ensuring the peaceful and sustainable use of outer space.

14. *Encouraging* states, organizations and companies to leverage space-based technologies for addressing global challenges, including climate change, disaster management, agriculture and telecommunication, to promote sustainable development.

15. *Encouraging* states, organizations and companies to enhance transparency and exchange information on their space activities, promoting trust, confidence and mutual understanding.

16. *Facilitating* the peaceful resolution of disputes related to space activities through diplomatic negotiations, mediation and adherence to international law, including the United Nations Charter and relevant treaties.

SECTION 3:
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Article 11
Equitable Access

As we venture into the vast frontier of space, it is essential to ensure that all nations, regardless of their economic or technological status, have equal opportunities to participate and benefit from space activities. By promoting equitable access, we create a level playing field that fosters innovation, diversity and global collaboration. Inclusivity ensures that diverse perspectives, experiences and talents are represented, leading to more comprehensive and holistic solutions to the challenges of space exploration. Benefit-sharing is crucial in ensuring that the benefits derived from space exploration, such as scientific knowledge, technological advancements and economic opportunities are shared fairly and contribute to the sustainable development of all nations.

By embracing equitable access, inclusivity, and benefit-sharing, we can harness the collective potential of humanity and create a more just and sustainable future in space, where the benefits and responsibilities are shared by all, leaving no one behind.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Supporting* capacity building in emerging space nations.
2. *Promoting* the inclusion of diverse perspectives, including those from underrepresented groups, in decision-making bodies, advisory committees and policy formulation processes related to space activities.
3. *Developing* a comprehensive framework of ethical principles, norms and guidelines for space activities, addressing issues such as informed consent, privacy, responsible research and the protection of vulnerable populations.
4. *Promoting* the integration of ethical considerations into the design, development and deployment of space technologies, ensuring the responsible use of artificial intelligence, robotics and other emerging technologies in space exploration and utilization.
5. *Encouraging* ongoing dialogue and debate among stakeholders, including space agencies, researchers, ethicists and civil organizations, on the ethical implications of space activities, fostering a culture of responsible innovation and accountability.
6. *Establishing* mechanisms for independent oversight, monitoring, and review of space activities, promoting accountability, compliance with international law and ethical standards.
7. *Encouraging* the transparent reporting of space missions, research findings and outcomes, facilitating the sharing of knowledge, fostering trust and promoting public engagement in space activities.
8. *Promoting* responsible data management practices, including data privacy, security and open access principles, to ensure the ethical and responsible use of space-based data for scientific, societal and environmental purposes.
9. *Advocating* for international agreements and treaties that prohibit the development, deployment and use of autonomous weapons systems in space, ensuring the prevention of an arms race and the preservation of outer space as a peaceful domain.

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Article 11
Equitable Access

10. *Ensuring* equal opportunities for women and girls in pursuing careers and leadership roles in space science, technology, engineering, and mathematics (STEM) fields, addressing gender disparities and promoting inclusive policies and practices.

11. *Implementing* measures to eliminate gender biases, stereotypes and discrimination in space-related education, training and employment, fostering an inclusive and supportive environment in the space sector.

12. *Supporting* initiatives that empower marginalized communities, including persons with disabilities, indigenous peoples and ethnic minorities, to participate meaningfully in space-related decision-making and benefit from space exploration and utilization.

13. *Fostering* partnerships with civil society organizations, non-governmental organizations (NGOs) and grassroots movements working towards inclusivity and diversity in the space sector, promoting collaboration and knowledge-sharing.

SECTION 3:
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Article 12
Legal Frameworks For Space

As activity in space grows exponentially, legal frameworks provide the necessary rules and regulations to ensure responsible and sustainability-aligned conduct, prevent conflicts and protect the rights and interests of all stakeholders. Safety measures are crucial to protect human life, space infrastructure and the environment from potential hazards, accidents or collisions. At the same time, with a human-centric and future-orientated mindset, we can imagine a world where a common 'one planet' approach to human engagement in space is achieved. As we move in this united direction, by upholding a recognized set of space focused laws, safety protocols and security measures, we can mitigate risks, foster confidence and ensure the long-term viability of space exploration.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Supporting* the work of international bodies and committees involved in space law and policy, such as the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS), providing resources, expertise and participation from the private sector and other stakeholders to advance the development of a harmonious and inclusive legal framework for space activities.
2. *Promoting* the ratification and implementation of relevant international treaties and agreements, including the Outer Space Treaty and initiatives like the Artemis Accords, ensuring their comprehensive and effective application.
3. *Enhancing* space situational awareness capabilities through improved tracking, monitoring and cataloguing of space objects, enabling more accurate prediction and avoidance of collisions.
4. *Developing* international norms and guidelines for responsible space operations, including standards for satellite operations, orbital debris mitigation and space traffic management, ensuring the safe and sustainable use of outer space.
5. *Strengthening* the protection of critical space infrastructure, including satellites, ground stations and communication networks, against intentional threats, cyber exploitation and space-based weaponization, in accordance with international law.
6. *Establishing* cybersecurity standards and protocols for space systems and networks, including advanced encryption, authentication and secure data transmission, to protect against unauthorized access, data breaches and cyber threats.
7. *Enhancing* international cooperation and information-sharing on space cybersecurity, fostering collaboration among states, space agencies, cybersecurity organizations and the private sector to address emerging threats and vulnerabilities.
8. *Promoting* capacity-building initiatives and training programmes to enhance the cybersecurity capabilities of space organizations, ensuring the resilience and integrity of space systems and data.
9. *Incorporating* space law and policy courses into the curricula of law schools, universities and specialized training programmes, ensuring the development of legal expertise in space-related matters.

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Article 12
Legal Frameworks For Space

10. *Supporting* the organization of workshops, conferences and training programmes on space law and policy for government officials, legal practitioners and policymakers, enhancing their understanding of the legal framework governing space activities.

11. *Encouraging* the dissemination of educational materials, publications and online resources on space law and policy, promoting public awareness and understanding of the rights, obligations and opportunities related to outer space.

12. *Facilitating* the exchange of legal expertise, best practices, and experiences among states, international organizations, and legal research institutes, fostering collaboration in the development and interpretation of space law.

SECTION 3:
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Article 13
Space Education & Public Outreach

The common thread of engaging and educating the public about space, to inspire curiosity, ignite passion and foster a sense of collective responsibility towards the cosmos. Space education empowers individuals with the knowledge, skills and awareness needed to understand the challenges and dream of the opportunities relating to space exploration. Public outreach initiatives create platforms for dialogue, interaction and collaboration between space agencies, scientists, educators, the private sector and the general public, fostering a sense of inclusivity and shared ownership of space exploration. Furthermore, by promoting diversity and inclusivity in space education and outreach, we help to ensure that all segments of society will have equal access to participate in and benefit from space activities.

By investing in space education and public outreach, we nurture the next generation of space enthusiasts, scientists, engineers and policymakers who will drive innovation, promote sustainability and shape the future of space exploration for the benefit of humanity and the preservation of our cosmic heritage.

Actions the private sector and other stakeholders could adopt to further ambition and deliver the results required include:

1. *Integrating* space-related education programmes and curricula into formal education systems at all levels, promoting scientific literacy, critical thinking and the understanding of space science, technology and applications.
2. *Supporting* the establishment of space education centres, museums, and outreach programmes to engage the public, particularly youth, in learning about space, inspiring interest in STEM disciplines and nurturing the next generation of space professionals.
3. *Leveraging* advanced visualization and realization technologies to bring the space environment down to Earth to allow students, researchers, and all interested parties to better understand the majesty, scale and challenges of becoming a space faring species.
4. *Encouraging* the sharing of educational resources, online platforms and e-learning initiatives to facilitate global access to space education, bridging the digital divide and promoting equal opportunities for all.
5. *Providing* technical assistance, training programmes and scholarships to developing countries to build their capacity in space science, engineering and technology, fostering their ability to participate effectively in space activities.
6. *Facilitating* knowledge-sharing and technology transfer from space-faring nations to developing countries, supporting the establishment of research institutes, laboratories and testing facilities to foster indigenous research and development capabilities.
7. *Incorporating* space-related topics into national curricula and educational programmes, providing students with opportunities to learn about space science, technology and exploration.
8. *Fostering* international collaboration in space-related capacity-building initiatives, including joint research projects, twinning programmes and mentorship schemes, to promote global cooperation and the exchange of expertise.

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Article 13
Space Education & Public Outreach

9. *Fostering* partnerships between educational institutions, space agencies and industry to facilitate mentorship programmes, internships, and hands-on experiences for students in the field of space.

10. *Organizing* public events, exhibitions and space-themed festivals to engage the public in space exploration and its societal impact, promoting public interest and support for space programmes.

11. *Utilizing* digital platforms and social media to share space-related news, discoveries and educational content, reaching a broader audience and facilitating interactive engagement.

12. *Collaborating* with media organizations and science communicators to effectively communicate space-related topics and inspire public interest and enthusiasm for space science and exploration.

13. *Promoting* citizen projects across science, technology, industry, the arts and philosophy that enable individuals, schools and communities to actively participate in space research, data collection and analysis, fostering a sense of ownership and contribution to scientific advancements.

14. *Providing* accessible global platforms and tools for citizens around the world to collaborate with professional researchers, facilitating the sharing of knowledge, skills and data for mutual benefit.

15. *Recognizing* and celebrating the contributions of global citizens and industry leaders in space research, raising awareness of their valuable role in advancing scientific knowledge and fostering a culture of inclusivity and participation in space exploration.