IAC–24–E9,IP,45,x85848 (PREPRINT)

# An Overview of Space Policy in North America, Central America, and the Caribbean – Perspectives from the Young Space Generation

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## Abstract

This paper presents perspectives from members of the Space Generation Advisory Council's (SGAC) Policy and Advocacy Task Force for the North American, Central American, and Caribbean region (NCAC). We are a team of passionate young professionals and students in the space sector who envision the sustainable, fair, and cooperative development of activities in space that benefit all people on Earth. Our initiatives include policy background briefs, perspective blogs, working groups, public webinars, and other advocacy activities to facilitate discussions with experts and encourage broad engagement with space policy discourse.

This paper presents an overview of space activity and policy in the NCAC region. We discuss what policies exist throughout the region and present perspectives from our Task Force members on these governance mechanisms. In January 2024, SGAC released a report detailing SGAC's official policy positions regarding space sustainability: "Towards An Intergenerational Pact for Space Sustainability." Therefore, this paper particularly highlights existing governance frameworks regarding space sustainability in the NCAC region and provides regional policy recommendations.

We present our perspectives as members of the young space generation who will be influenced by and contribute to space exploration for decades to come. This paper aims to summarize our current work and facilitate further discussion with the space community at large to inform our future work.

## Acronyms/Abbreviations

European Space Agency (ESA)
Intergenerational Pact for Space Sustainability (IPASS)
Latin American and Caribbean Space Agency (ALCE)
Low Earth Orbit (LEO)
Longer Term Sustainability (LTS)
National Aeronautics and Space Administration (NASA)
North, Central America, and the Caribbean (NCAC)
Outer Space Treaty (OST)
Sistema de la Integración Centroamericana Space Working Group (SICA)
Space Generation Advisory Council (SGAC)
Space Generation Advocacy and Policy Platform (SGAPP)
United Nations Committee On the Peaceful Uses of Outer Space (UN COPUOS)

## 1. Introduction

As the space sector continues to grow, new policy considerations emerge. Space exploration and utilization is an international endeavor that will impact generations to come. It is, therefore, critical that we engage diverse perspectives in these policy discussions. In this paper, we present perspectives from young people on space activity and policy, focusing on North America, Central America, and the Caribbean (the NCAC region).

The Space Generation Advisory Council (SGAC) is an international non-profit organization founded in 1999 to support the United Nations (UN) Program on Space Applications. Members are young professionals and students worldwide, ages 18-35. SGAC's mission is "to enable and empower the young generation in advancing humanity through the peaceful uses of outer space" for "the peaceful and inclusive use of space for the benefit of all" [1]. To do this, there are five core activities of the organization: (1) global, regional, and local events to foster community; (2) scholarships and fellowship to enable access to the space sector; (3) project groups working on research and other initiatives in specific areas of the space sector; (4) policy groups developing and advocating for policy positions that represent SGAC's global youth membership; and (5) providing education and professional developing

opportunities for members throughout government, space agencies, industry, academia, and the United Nations [1].

This paper is a product of SGAC's NCAC Policy and Advocacy Task Force, henceforth referred to as the NCAC Task Force [2]. SGAC has been engaged with international advocacy through the UN since its founding. In 2022, SGAC founded the Space Generation Advocacy and Policy Platform (SGAPP), with the aim of compiling yearly reports detailing the official policy priorities and positions of SGAC in a given subfield of space activities. The NCAC Task Force is a subteam of SGAPP focused on the NCAC region. Participation in the NCAC Task Force is volunteer-based and open to all interested members of SGAC. The NCAC Task Force has the following goals: (1) to spearhead policy recommendations in the NCAC region in support of SGAC-wide policy positions, (2) to encourage broad involvement in space policy conversations, (3) to provide educational resources to policymakers and the public, (4) to provide a platform for SGAC members to share their perspectives, and (5) to build an enthusiastic, inclusive, and effective community of advocates. In January 2024, SGAPP released their latest yearly report, "Towards An Intergenerational Pact for Space Sustainability" (referred to as the IPASS report) [3]. Therefore, space sustainability has been the primary focus area for the NCAC Task Force this year.

In this paper, we first briefly summarize space activity throughout the NCAC region, including emerging space actors. We then outline the IPASS report [3], focusing on those components that are especially relevant to the NCAC region. Throughout the paper, we detail some of the work our team has put out this year, including in-person working groups, perspective blogs, and background briefs.

## 2. Space Activity and Policy in the NCAC Region

The NCAC region contains space exploration powerhouses such as the United States and Canada, as well as many other nations actively working to establish their presence in the industry based on their historical strengths. In this section, we provide a brief summary of past and current space activities of the countries in the NCAC region, as defined by SGAC. Fig. 1 contains a table of countries in the NCAC region and some of the major treaties they are signatories of as of writing this paper.

### *2.1 Barbados (Caribbean)*

Barbados played a significant role in early space research with the High-Altitude Research Project (HARP) [4] in the 1960s, which focused on launching small payloads into LEO without a rocket. Even without a dedicated space agency, Barbados remains engaged in regional and international efforts to utilize space technology, particularly for environmental monitoring [5]. Barbados is a signatory of the Outer Space Treaty (OST) [6], reflecting its commitment to peaceful space activities. The SpinLaunch project [7], based out of California in the United States, is built based on the HARP experiment and provides an innovative eco-friendly alternative to fuel-based rockets for spacecraft under 200 kilograms.

#### *2.1.1 Canada (North America)*

Canada is a major player in the global space community, with the Canadian Space Agency (CSA) leading the country's efforts. Canada is known for its contributions to space exploration, especially in robotics. CSA developed the Canadarm on the International Space Station and plans to deploy Canadarm3 on the US-led Lunar Gateway. CSA is an active participant in international missions, especially with the US National Aeronautics and Space Administration (NASA), the European Space Agency (ESA), and the Japan Aerospace Exploration Agency (JAXA), among others [8]. The country has a comprehensive national space policy [9] and is actively involved in Earth observation, satellite communications, and space exploration. Canada's space activities are driven by a commitment to international collaboration and technological innovation, making it one of the most advanced space programs in the NCAC region.

#### *2.1.2 Costa Rica (Central America)*

Costa Rica has made significant strides in space technology, creating the Costa Rican Space Agency in 2021 and successfully launching the first Central American CubeSat, Batsú [10]. This milestone has paved the way for other Central American countries like Guatemala to develop their own CubeSat projects [11], enhancing regional capacity in space technology. Costa Rica is also home to the LeoLabs Costa Rica Space Radar, a crucial technology for tracking space debris [12]. Despite a temporary pause in the space agency's activities due to political changes [13], Costa Rica remains committed to space research, focusing on environmental monitoring and disaster management. The country is also a founding member of the Latin American and Caribbean Space Agency (ALCE) [14]. Moreover, Costa Rica has had a significant role model in astronaut Franklin Chang-Díaz, the first Latin American astronaut, whose career has inspired generations across the region [15].

#### *2.1.3 El Salvador (Central America)*

El Salvador established the El Salvador Aerospace Institute (ESAI) [16], focused on research and education in aerospace. The country has been inspired by NASA astronaut Frank Rubio, whose Salvadoran heritage has sparked

interest in space exploration [17]. El Salvador has also emerged as a leader in commercial airlines through Aeroman, South America's largest aircraft maintenance center [18]. El Salvador remains a signatory of the Outer Space Treaty, a member of ALCE, and is currently working towards launching its first CubeSat [19].

*2.1.4 Guatemala (Central America)*

Guatemala's emerging space involvement centers on satellite technology for environmental monitoring and disaster response. Inspired by Costa Rica's success with the Batsú CubeSat, Guatemala has initiated its own CubeSat projects [20]. The country is also part of the Sistema de la Integración Centroamericana (SICA) Space Working Group [21, 22], which promotes regional cooperation in space activities and is currently facilitating the launch of the Morazàn-Sat. Guatemala does not yet have a national space agency or policy.

*2.1.5 Jamaica (Caribbean)*

The focus in Jamaica is on education and leveraging space technology to address national challenges, particularly in climate monitoring and resource management [23]. While Jamaica does not have a dedicated space agency or formal space policy, it is a member of the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) and ALCE.

*2.1.6 Mexico (North America)*

Mexico is a leading space actor in the NCAC region, with a well-established space program managed by the Mexican Space Agency (AEM) [24]. It also led efforts in the founding of ALCE. The country is involved in a wide range of space activities, including satellite development [25], Earth observation [26], and international collaborations [e.g., 27]. The country's space efforts are focused on using technology to address national challenges and on participating in global space missions, making Mexico a significant player in space exploration and research in the region.

*2.1.7 Nicaragua (Central America)*

Nicaragua's space activities are currently limited, focusing primarily on satellite communication and educational outreach. The country does not have a national space agency or formal space policy, but it is a signatory of the Outer Space Treaty and recently created the Ministry of Extraterrestrial Space Affairs [28]. Nicaragua's recent efforts include exploring the potential of space technology for disaster management and environmental monitoring [29]. Nicaragua has signed an agreement with Russia on the peaceful uses of space technology for science [30], and they have joined China's International Lunar Research Station (ILRS) program [31].

*2.1.8 Panama (Central America)*

Panama has shown a growing interest in space technology, particularly for resource management. The country has participated in regional initiatives, such as the SICA Space Working Group, to explore the benefits of space technology for national development. While Panama does not have a dedicated space agency or national space policy, it is the host of the Copernicus Latin America and Caribbean Panama Centre (CopernicusLAC Panama), which is a regional hub for the European Union's Copernicus satellite data project [32].

*2.1.9 St. Lucia (Caribbean)*

St. Lucia's involvement in space is primarily focused on education and capacity building. This exploratory phase has an emphasis on sustainable development [33]. St. Lucia does not have a space agency or formal space policy but is a founding member of ALCE [14]. Additionally, Italian company e-GEOs has partnered with St. Lucia to set up a satellite-based weather monitoring station on the island [34].

*2.1.10 USA (North America)*

The United States (US) is the global leader in space exploration, with NASA being one of the most prominent space agencies worldwide. The US has a comprehensive national space policy [35, 36] and is a signatory of all major international space treaties, with the exception of the Moon treaty. The country's space activities span crewed space missions, satellite technology, and space exploration, including the Artemis program, which aims to return humans to the Moon [37]. The US also plays a key role in the International Space Station (ISS) and has a thriving commercial space sector.

Because the US is a major player in space, members of the NCAC Task Force have produced numerous pieces of content relevant to the US space sector. Here, we highlight some of that work:

**The Artemis Accords** [NCAC Task Force background brief: 38] are a bilateral agreement between the United States and more than forty other nations. The Accords were initially signed by seven nations in 2020 following the initiation of the new Artemis program. Additional nations continue signing the Accords, underscoring the global recognition of the updated set of guiding principles. The Accords establish "a practical set of principles, guidelines, and best practices in carrying out activities in outer space" aiming to "increase the safety of operations,

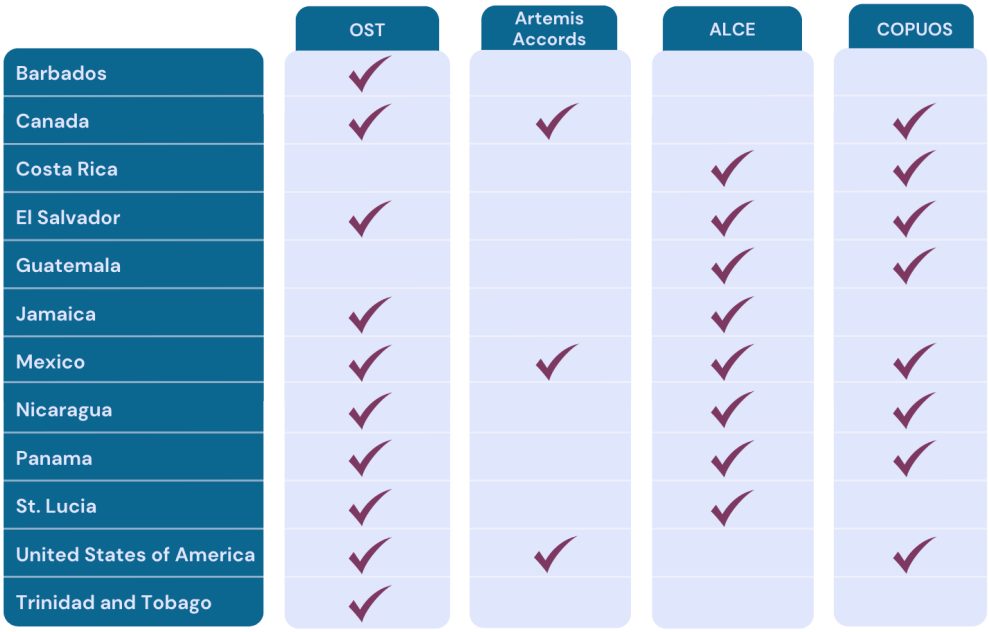



Fig. 1. A summary of major agreements that each country is participating in. Check marks indicate that the country in that row is a part of the treaty/organization of the corresponding column. A large majority of NCAC countries are signatories of the Outer Space Treaty [6], the United Nations Committee On the Peaceful Uses of Outer Space (UN COPUOS), and the Latin American and Caribbean Space Agency (ALCE) [14].

reduce uncertainty, and promote the sustainable and beneficial use of space for all humankind" [39]. The Accords reaffirm commitment to the 1967 Outer Space Treaty [6] and include new provisions that clarify interpretation of the OST. To further the peaceful use of outer space, the Accords include provisions on deconfliction, ensuring interoperability of equipment, and promising due consideration while introducing the concept of "safety zones" to prevent international interference with activity. Importantly, the Accords clarify that the signers interpret the Outer Space Treaty to allow for commercial uses of space, including mining.

**Federal Science Funding:** The NCAC Task Force has published multiple pieces related to US federal support for science [40–43]. In the United States, there are three major governmental agencies that support fundamental space science – NASA, the National Science Foundation (NSF), and the Department of Energy (DoE). Unfortunately, all three have limited funding relative to other US agencies, despite calls to increase it, such as through the CHIPS & Science Act [44]. NASA is expecting a flat or reduced budget in 2025, largely due to the budget cuts to Mars Sample Return. NSF and DoE may expect slight increases (2.2% and 1.8% respectively), but not sufficient to ensure completion of their space science goals [45].

Regardless of budgetary challenges, there are still numerous research projects and future science missions to look forward to from the US, including space telescopes from NASA (e.g., Roman, HWO, Pandora), NASA solar system science missions (e.g., Dragonfly, Europa Clipper, DAVINCI), and ground-based observatories supported by the DoE and NSF (e.g., Rubin, CMD-S4, the ELTs, ngVLA) [46–48].

#### *2.1.11 Trinidad and Tobago (Caribbean)*

Trinidad and Tobago is gradually increasing its involvement in space activities, particularly in satellite communications and Earth observation for disaster management. While Trinidad and Tobago does not have a national space agency or formal space policy, it has shown interest in developing its space capabilities through the establishment of the Geospatial Observation Centre [49]. The focus is on exploring future opportunities for regional and international collaboration through education partnerships [50].

## 3. Commercial Actors in Space

In recent years, there has undoubtedly been an increase in commercial space activity with more independence from national efforts. The NCAC Task Force has written on the impacts of this development [51–53]. In

this section, we outline examples from the United States and Canada of approaches to fostering a thriving commercial space industry.

### *3.1 The United States*

While NASA has collaborated with commercial actors since its founding, NASA's encouragement of these collaborations in recent years has changed the commercial space landscape. Programs such as the Small Business Innovation Research (SBIR) program [54] and the Commercial Crew Program [55] have caused a burst of activity for both space startups and established contractors. Through these initiatives, NASA aims to facilitate a sustainable space economy in the US that embraces innovation.

The National Oceanic and Atmospheric Administration's (NOAA) Office of Commercial Space is also driving new commercial partnerships [56]. NOAA, in partnership with the Department of Defense (DoD), is working with commercial actors on space situational awareness initiatives. The goal is to use these partnerships to advance commercial capabilities for effectively coordinating space traffic and safety in Medium Earth Orbit and Geostationary Earth Orbit. Integrating commercial services is expected to make space operations safer and more efficient, benefiting the expanding US commercial space industry.

In a similar vein, the Federal Communications Commission's (FCC) Space Bureau ensures cooperation with private stakeholders as it regulates and mitigates orbital debris, even while enabling more space objects than ever before. The Bureau adopts a case-by-case approach, requiring an Orbital Debris Mitigation plan [57] upon applying for a space communications license.

Despite these initiatives supporting commercial activity, it is possible that the US commercial space sector might be reaching full capacity. A BryceTech report [58] indicates that contrary to expectations, venture investments in space startups declined in 2022 compared to the previous year. This shift presents a challenge for startup companies dependent on external funding to develop their technologies.

Additional challenges to the commercial space sector include the Wolf Amendment [59] and International Traffic in Arms Regulations (ITAR) [see NCAC Task Force brief: 60]. The Wolf Amendment prohibits US government collaboration with China and Chinese-owned companies in space activities due to national security concerns. By extension, this restricts commercial actors that are fully or partially funded by the US government [61]. ITAR also complicates operations for US companies, particularly in export markets and foreign talent acquisition. ITAR and the Wolf Amendment play important roles in protecting national security, however, they also limit US space firms' global competitiveness by imposing bureaucratic hurdles and restricting the inclusion of foreign citizens. Navigating these dynamics requires balancing security concerns with innovation and global engagement in a rapidly expanding space industry.

### *3.2 Canada*

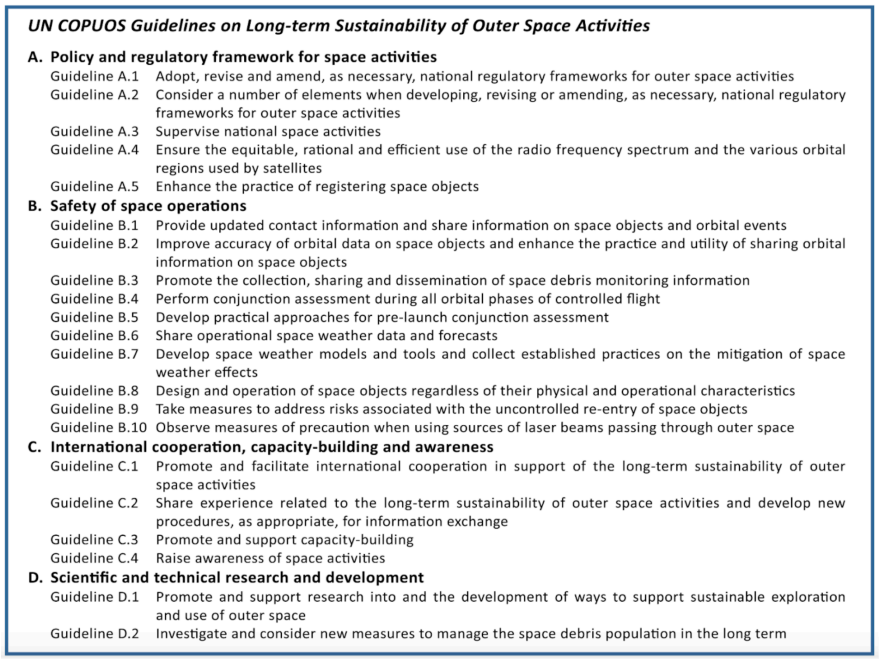
Canada has implemented a commercial space model dependent on public funding through legislation to instigate private companies' growth in space. "Positioning the Private Sector at the Forefront of Space Activities" is one of the five core principles in Canada's Space Policy Framework [9]. It is noteworthy that the RADARSAT Constellation Mission employs circa 300 highly skilled workers in 125 companies all over the country [62]. The Remote Sensing Space System Act [63] provides a regulatory framework for licensing remote sensing satellite activities to ensure safety and security. The Canadian model is another example of blending public investment with proper regulatory mechanisms necessary for the space industry to thrive [64].

## 4. The UN Long-Term Sustainability Guidelines in the NCAC Region

In 2018, UN COPUOS established the Long-Term Sustainability (LTS) Guidelines for Outer Space Activities [65]. Included are 21 guidelines for ensuring continued activity in space and the safety of space operations. The LTS Guidelines are not legally binding. However, participating states may codify them in national legislation. See Figure 2 for a complete list of guidelines.

In June 2023, SGAC announced a report by SGAC's Space Law and Policy Project Group, "Report on the Implementation of the United Nations Long-Term Sustainability Guidelines (2020-2022)" [66], which provides an overview of existing treaty provisions relevant to sustainability in space and, notably, a detailed review of national implementation of the LTS guidelines in select countries from 2020-2022. The United States and Canada were both significantly involved in establishing the LTS guidelines, and both countries are presented as examples within SGAC's LTS report for implementation of the LTS guidelines [67]. Here, we summarize some of those examples. We note that this list is not a comprehensive picture of all the policies that both the US and Canada have implemented.

- Guidelines A.1-A.5: **Policy and Regulatory Framework –** In the US, the Federal Communications Commission (FCC) mandates low Earth orbit satellites be de-orbited within 5 years of mission completion. The ORBITS Act, currently pending in US Congress, sup-



***UN COPUOS Guidelines on Long-term Sustainability of Outer Space Activities***

**A. Policy and regulatory framework for space activities**

| | |
|---|---|
| Guideline A.1 | Adopt, revise and amend, as necessary, national regulatory frameworks for outer space activities |
| Guideline A.2 | Consider a number of elements when developing, revising or amending, as necessary, national regulatory frameworks for outer space activities |
| Guideline A.3 | Supervise national space activities |
| Guideline A.4 | Ensure the equitable, rational and efficient use of the radio frequency spectrum and the various orbital regions used by satellites |
| Guideline A.5 | Enhance the practice of registering space objects |

**B. Safety of space operations**

| | |
|---|---|
| Guideline B.1 | Provide updated contact information and share information on space objects and orbital events |
| Guideline B.2 | Improve accuracy of orbital data on space objects and enhance the practice and utility of sharing orbital information on space objects |
| Guideline B.3 | Promote the collection, sharing and dissemination of space debris monitoring information |
| Guideline B.4 | Perform conjunction assessment during all orbital phases of controlled flight |
| Guideline B.5 | Develop practical approaches for pre-launch conjunction assessment |
| Guideline B.6 | Share operational space weather data and forecasts |
| Guideline B.7 | Develop space weather models and tools and collect established practices on the mitigation of space weather effects |
| Guideline B.8 | Design and operation of space objects regardless of their physical and operational characteristics |
| Guideline B.9 | Take measures to address risks associated with the uncontrolled re-entry of space objects |
| Guideline B.10 | Observe measures of precaution when using sources of laser beams passing through outer space |

**C. International cooperation, capacity-building and awareness**

| | |
|---|---|
| Guideline C.1 | Promote and facilitate international cooperation in support of the long-term sustainability of outer space activities |
| Guideline C.2 | Share experience related to the long-term sustainability of outer space activities and develop new procedures, as appropriate, for information exchange |
| Guideline C.3 | Promote and support capacity-building |
| Guideline C.4 | Raise awareness of space activities |

**D. Scientific and technical research and development**

| | |
|---|---|
| Guideline D.1 | Promote and support research into and the development of ways to support sustainable exploration and use of outer space |
| Guideline D.2 | Investigate and consider new measures to manage the space debris population in the long term |

Fig. 2. A summary of the United Nations Long Term Sustainability Guidelines, compiled by the Secure World Foundation [68].

ports the development of technology to address orbital debris, documentation of debris, and updated practices for space traffic management and debris mitigation. In 2023, the FCC took its first space debris enforcement action against DISH for failing to properly de-orbit one of its satellites, fining the company $150,000 and signaling stepped-up regulation efforts [69].

- Guidelines B.1-B.3: **Safety of Space Operations –** Canada operates Sapphire, a situational awareness satellite that monitors space debris and satellites 6,000-40,000 km from Earth, providing data to the Space Surveillance Network (SSN). Canada is developing the Surveillance of Space 2 project (SofS 2) to improve existing capabilities [70]. Canada also operates the Near-Earth Object Surveillance Satellite (NEOSSat) for collecting tracking data on space objects from asteroids to debris. In the US, registration of space objects is mandatory and license applicants must indicate their plan for sharing space situational awareness information [71]. The data is publicly accessible, with the Department of Commerce and the Department of Defense both taking an active role.
- Guidelines B.4-B.5: **Conjunction Assessments –** Canada produces conjunctions assessments based on close-approach notifications from the US's Combined Space Operations Center (CSpOC) and Canada's Canadian Space Operations Centre (CANSpOC). Additionally, Canada offers a free subscription to its Collision Risk Assessment and Mitigation System (CRAMS) for national or international actors [72]. In the US, Space Policy Directive 3 [73] encourages action on space traffic management. The FAA requires launch and reentry collision avoidance analyses [74]. NASA has published best practice documents [75, 76] and regularly conducts Conjunction Assessment Risk Analyses (CARA) for its missions, which are also used by the National Oceanic and Atmospheric Administration (NOAA).
- Guidelines B.6-B.7: **Space Weather –** Canada operates the Canadian Space Weather Forecast Centre (CSWFC) and provides free space weather alerts through the Natural Resources Canada (NRCAN) space weather website [77].
- Guideline B.8: **Design and Operation of Space Objects –** In the US, all NASA projects are required to perform debris assessments and end-of-mission planning [78]. In 2021, the US Space Priorities Framework was adopted, stating the US will "increase efforts to mitigate, track, and remediate space debris" [79]. In 2022, the FCC adopted rules requiring satellite operators in LEO to dispose of their satellites

within five years of mission completion [80].

- Guidelines B.9-B.10: **Uncontrolled Reentry of Space Objects and Laser Beams in Space –** Canada and the US are members of the Inter-Agency Space Debris Coordination Committee [81], which has procedures for notification and monitoring of annual high-risk re-entry test campaigns. Canada's Remote Sensing Space Systems Act requires the eventual disposal of licensed satellites [63]. In the US, the 2016 Department of Defense Instruction "Management of Laser Illumination of Objects in Space" establishes procedures to manage risks associated with laser beams emitted from space objects [82].

- Guidelines D.1-D.2: **Promote and Support Research, Investigate Measures to Limit Space Debris –** Government bodies and Universities in Canada and the US have hosted events, sponsored research, and provided scholarships in support of enhancing safety and security in outer space.

## 5. The IPASS Report

SGAC's Space Generation Advocacy and Policy Platform (SGAPP) report, "Towards an Intergenerational Pact for Space Sustainability" (IPASS) [3] addresses the critical need for an international and long-term space sustainability framework. The report highlights key challenges related to space debris, mega-constellations, dark and quiet skies, and activities beyond Earth's orbit. The IPASS report proposes binding agreements, technological advancements, and global educational programs to foster intergenerational collaboration and to ensure the sustainable use of space for future generations. Some of the key recommendations in the IPASS report that are relevant to the NCAC region are summarized here:

**Adopt a Space Debris and Traffic Management Plan:** The UN COPUOS Space Debris Mitigation Guidelines [83] advocate for proactive strategies in reducing space debris. An International Organization for Standardization (ISO) standard [84] also lays out requirements for mitigating space debris, reflecting international consensus on best practices. Leading actors in the NCAC region are engaging with space debris mitigation technology development [e.g., 85], but many do not yet have their own national guidelines. The growing networks of mega-constellations in LEO are motivating expedited discussions about space traffic management as they cause problems with space pollution, access to dark skies, and astronomy research [86]. The UN and the International Astronomical Union (IAU), among other organizations, are working to minimize satellite light pollution [87].

**Integrate Intergenerational and Multi-Stakeholder Approaches to Space Sustainability:** The IPASS report encourages implementing the UN LTS guidelines [65, 66] and the UN "Space2030" Agenda [88]. These guidelines aim to establish a collaborative, more inclusive global space community for a well-managed space environment in Earth orbit and beyond, safeguarding current and future space operations, including for climate action, disaster management, astronomy, and global connectivity.

**Space Situational Awareness Through Information Sharing:** The importance of transparency and international cooperation for Space Situational Awareness (SSA) is emphasized in the IPASS report. This includes individual countries cooperating with each other by notifying the global community when a potential collision in LEO is predicted.

**Build Capacity and Inclusivity:** Special attention is needed for global educational and advocacy programs to promote space sustainability. These programs should focus on building capacity in space law and policy to ensure active participation in global space governance frameworks. The NCAC Task Force is one such effort, aiming to raise awareness of space sustainability challenges and build capacities of actors in the NCAC region.

**Develop Legal and Policy Frameworks:** Discussion on the existing international legal frameworks for space activities, such as the Outer Space Treaty, the Liability Convention, and the Registration Convention is carried on.

Existing international treaties and agreements, such as the OST [6], the Liability Convention [89], and the Registration Convention [90], provide a foundation for the long-term sustainability of space activities and emphasize the responsibility of states to supervise private entities. Regional policy recommendations should focus on implementing international guidelines, the development of national space policies, and fostering a cooperative approach to space governance.

### *5.1 IPASS Implementation by the NCAC Task Force*

The NCAC Task Force and SGAPP lead working groups at conferences to engage members of the young space generation in policy discussion. There have been two such working groups in 2024:

**The Space Generation Fusion Forum:** During the 2024 Space Generation Fusion Forum (SGFF), delegates provided recommendations for implementing the IPASS report framework to promote space sustainability policy and best practices [91]. The delegates called for a clear, measurable definition of space sustainability, such as "the ability for all actors, present and future, to access and use space." The delegates then identified finite space resources, including orbital regimes, electromagnetic spec-

trum allocations, access to space, and shared Earth resources, stressing the need for sustainability policies based on agreed criteria. A progress metric for space actors and a roadmap for enforcement mechanisms were also recommended to help drive decision-making and to ensure the inclusion of current and future stakeholders, including national actors, commercial operators, emerging countries, and local communities who may be impacted by space activities. Finally, the delegates recommended encouraging the industry, at large, to embrace good behavior that promotes globally scaled sustainable practices such as respecting orbital spaces, proactive deorbit plans, and adopting future space sustainability policies and guidelines.

**ASCEND:** In July 2024, NCAC Task Force supported a workshop at ASCEND hosted by SGAPP titled "Shaping the Cosmos: Young Voices on Responsible Space Behavior." Workshop attendees provided recommendations to encourage sustainable and responsible space behaviors [92]. Recommendations included: encouraging commercial space companies and national programs to model responsible practices through rewards and incentives; developing global educational curricula; educating policy-makers on space topics; encouraging industry standard organizations to communicate internationally; exploring subsidized efforts for sustainability, especially for emerging space actors; promoting an intergovernmental approach and international agreements; and engaging with terrestrial stakeholders, including indigenous communities, to understand local impacts of space activities. These recommendations will be incorporated into an upcoming SGAPP report and policy roadmapping on responsible space behavior.

## 6. Conclusion

The NCAC region contains a diverse multitude of established and emerging space actors, both motivated by government initiatives and commercial interests. Local networks in Central America and the Caribbean, such as ALCE and the SICA Working Group, promote collaboration and access to space solutions for national priorities in environmental monitoring and natural disaster management. In 2018, the UN established the LTS guidelines, which contain global recommendations pertaining to space traffic management, space weather monitoring, and policy frameworks. The SGAC IPASS report provides recommendations for implementing the LTS guidelines, among other space sustainability initiatives. In this paper, we emphasize both the LTS guidelines and the IPASS report in the context of the NCAC region. The NCAC Task Force, through conference workshops, policy blogs and briefs, webinars, and more, aims to engage the young generation in the NCAC region in policy discussions. Throughout this paper, we highlight the work of NCAC Task Force members.

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