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National Space Policies and Their Importance in Ensuring the Long-Term Sustainable Use of Space

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Given the increase of new actors to and users of space, it is important that the space domain remain usable and reliable over the long-term, and that there is confidence in continued access to space assets and capabilities. Making publicly accessible a national space policy or strategy – some sort of written documentation from the national government that spells out national goals and priorities for space – is one way to undertake a transparency and confidence-building measure (TCBM). This demonstrates to a certain extent one's intentions and priorities for a national space program. This TCBM is included in several international initiatives currently underway to work toward the long-term sustainable use of space, such as the Group of Governmental Experts on space TCBMs, the draft International Code of Conduct, and the draft guidelines on the long-term sustainability of space coming out of a working group by the United Nations Committee on Peaceful Uses of Outer Space (COPUOS). Five countries' space guidance are chosen to demonstrate the wide spectrum of forms a national space policy/strategy can take: Australia, Brazil, China, Russia, and the United Kingdom. This TCBM can thus help a country advance its space capabilities while at the same time work with the international community to ensure a safe, secure, and sustainable space environment.

I. INTRODUCTION

Given the increasing democratization of access to space, the concurrent swelling of new actors to space (both in terms of nations with new space capabilities and new types of organizations manipulating space technologies), and the way in which space is being more and more tightly woven into daily lives, economic development, and national security, it is ever more apparent that the international community must come together to ensure a safe, secure, and sustainable space environment.

Part of this stability rests upon reliable and predictable access to space assets, and confidence in one's ability to use these space assets as warranted. Because the actions by one space actor can affect how others use space, it is important to demonstrate that one has good intent in regards to its space activities so not to alarm other space actors.

Making publicly accessible a national space policy or strategy – some sort of written documentation from the national government that spells out national goals and priorities for space – is one way to go about doing this. This demonstrates to a certain extent one's intentions and priorities for a national space program. It gives an idea of how much budgeting may go into a nation's space activities. In turn, this raises transparency and is a type of confidence building measure. It also forces a government to go through the process of having an intergovernmental discussion about priorities and goals for its space program, information which can then be used to inform international discussions.

Next to be discussed is the idea of using the creation of national space policies as a transparency and

confidence building measure (TCBM) that can help establish the long-term sustainable use of the space environment, which is already apparent in several international initiatives working toward that goal. It can be seen in recommendations of the recent report of the Group of Governmental Experts (GGE) on space TCBMs, given to the United Nations Secretary-General in the summer of 2013. It is part of the draft International Code of Conduct on Outer Space Activities (CoC). And there are parts of the draft guidelines on the long-term sustainability of space coming out of a working group by the United Nations Committee on Peaceful Uses of Outer Space (COPUOS) which delineate goals that could be met by the publication of national space policies or strategies.

Finally, several active space stakeholders are highlighted to give examples of types of national space policies/strategies: Australia, Brazil, China, Russia, and the United Kingdom. This is done to demonstrate the wide spectrum of options available to space stakeholders who may believe that the only way to demonstrate the intent and goals of a national space program are through an arduously and expensively built bureaucratic and legislative architecture.

II. SPACE POLICY AS A TCMB

Demonstrating good intent

Due to the dual-use nature of space technologies, the mere possession of a capability cannot be used to determine what the stakeholder intends to do with that capability. A satellite that conducts Earth observations could be used to help a country determine crop yields; it could also be used to gather intelligence for military and

security purposes. The technology itself cannot be the sole clue given for what a country's intentions are in space.

Part of this relies on the responsible use of space and recognizing that there are norms of behaviour that nations which mean no deliberate harm follow. Deliberately misrepresenting what one intends to do on orbit is not necessarily illegal, but it does raise the question about how trustworthy that actor is and if they are going to undertake activities that could negatively affect others' abilities to utilize and access space. In fact, just not openly sharing what one intends to do with a technical capability leaves one open to speculation, which often goes to the worst, most threatening type of explanation. For example, the United States' refusal to discuss what the X-37B space plane is doing or any specifics about it have led others to believe, probably wrongfully so, that it is intended to test out a space weapon capability and would be used against those who are not actively supporting U.S. interests internationally.

Alternatively, having a published national space policy or strategy can help answer questions regarding intent for space capabilities and possibly bely concerns about strategic intentions. Furthermore, by willingly sharing this information and participating in this joint effort to improve relations across various space stakeholders, a nation demonstrates that they recognize that there are some responsibilities that come along with space activities and that they are ready to face them, which in turn is a sign of good faith efforts on orbit. This TCBM can help make the space environment a more predictable, reliable domain that will help lead to its long-term sustainability and peaceful use.

International initiatives and space policy as TCBMs

While the idea of simply publishing a national space policy or strategy may appear fairly basic, it has been included as an initial recommendation in several international initiatives attempting to help establish the long-term sustainable use of space.

GGE on Space TCBMs

The United Nations Group of Government Experts (GGE) on Transparency and Confidence-Building Measures in Outer Space Activities was first called for by Russia in 2010, and was then established formally by UN Secretary-General Ban Ki-Moon in 2011.¹ The goal of the GGE was to create a consensus-driven report of recommendations of ways in which to improve the overall stability and security of space. The GGE was comprised of 15 member states: the five permanent members of the UN Security Council, and then ten geographically diverse and representative nations selected by the UN (Brazil, Chile, Italy, Kazakhstan,

Nigeria, Romania, South Africa, South Korea, Sri Lanka, and Ukraine).² While the experts were chosen by the member states, they were supposed to be neutral in their discussions of space TCBMs. The group met three times over the summers of 2012 and 2013, finally finishing up in order to deliver its report in July 2013. This report made its way to the UN General Assembly, which received and endorsed the report in December 2013.³

The final report noted that "the world's growing dependence on space-based systems and technologies and the information they provide requires collaborative efforts to address threats to the sustainability and security of outer space activities."⁴ It went on to say, "Transparency and confidence-building measures can reduce, or even eliminate, misunderstandings, mistrust and miscalculations with regard to the activities and intentions of States in outer space."⁵ The report urged for the "the development and implementation of voluntary and pragmatic measures to ensure the security and stability of all aspects of outer space activities."⁶ Recommendation 37, called "Exchanges of information on the principles and goals of a State's outer space policy," explained that

"States should publish information on their national space policies and strategies, including those relating to security. States should also publish information on their major outer space research and space applications programmes in order to build a climate of trust and confidence between States worldwide on military and non-military matters. This should be carried out in line with existing multilateral commitments. States may provide any additional information reflecting their relevant defence policy, military strategies and doctrines."⁷

Draft International Code of Conduct on Outer Space Activities

The draft International Code of Conduct (CoC) on Outer Space Activities is a non-legally binding document which intends to elucidate norms of behavior that space actors can voluntarily agree to follow. These best practices have emerged throughout the years as actors continue to gain experience in space activities. The first draft of this document was released publicly for discussion in 2010. Meetings were held to discuss it in Vienna, Austria, in June 2012; Kiev, Ukraine, in May 2013; Bangkok, Thailand, in November 2013; and Luxembourg in May 2014; negotiations continue on it to this day. The European Union, which started the process and has been largely responsible for shepherding it along, hopes to open it up for signature by interested parties over the next year.

The draft CoC opens up with the statement, “The purpose of this Code is to enhance the safety, security, and sustainability of all outer space activities pertaining to space objects, as well as the space environment.”⁸ It also calls for a “comprehensive approach to safety, security, and sustainability in outer space.”⁹ Section 6.1 brings up national space policies:

“The Subscribing States resolve to share, on an annual basis, where available and appropriate, information with the other Subscribing States on: their space strategies and policies, including those which are security-related, in all aspects which could affect the safety, security, and sustainability in outer space; their major outer space research and space applications programmes; their space policies and procedures to prevent and minimise the possibility of accidents, collisions or other forms of harmful interference and the creation of space debris; and efforts taken in order to promote universal adoption and adherence to legal and political regulatory instruments concerning outer space activities.”¹⁰

Draft LTS Guidelines

COPUOS’s Scientific and Technical Subcommittee (STSC) began an initiative called the Long Term Sustainability of Outer Space Activities (LTS) Working Group in 2010. Its goal was to create a consensus report of best practices for space actors, coming at it from a bottoms-up approach, in order to build toward the safe and sustainable use of outer space over the long term. There are four expert groups which have examined different aspects of space sustainability: sustainable space utilization supporting sustainable development on Earth; space debris, space operations, and tools to support space situational awareness sharing; space weather; and regulatory regimes and guidance for new actors.¹¹ Initially, they had hoped to have agreed-upon guidelines to present to the COPUOS plenary session – which meets every June in Vienna, Austria – by 2014, but now it looks like it will not be completed until 2016.

There are a series of draft LTS guidelines that the various expert groups have put together. The chair, Peter Martinez of South Africa, is in the process of combining the various guidelines and correcting for redundancies as he waits for any more input by interested states. The current draft of LTS guidelines points out that “implementation of national and international frameworks for space activities not only provides assurance to users of the space environment, but also facilitates bilateral and multilateral cooperation

in the peaceful uses of outer space and thereby contributes to the safety and stability of outer space.”¹²

Along those lines, draft guideline 9 recommends, “Adopt national regulatory frameworks suitable for space activities that provide clear guidance to actors under the jurisdiction and control of each State.”¹³ Draft guideline 10 suggests that states “Encourage advisory input from affected national stakeholders in the process of developing, refining and implementing national regulatory frameworks governing space activities.”¹⁴ Interestingly, the guideline goes on to explain:

“By allowing early advisory input, the State can avoid unintended consequences of regulation that have an adverse impact on key stakeholders...States with developing space capabilities should identify the essential components of a national regulatory framework after advisory input from, or consultation with, relevant stakeholders.”¹⁵

It goes on to note,

“In instances in which the State has not previously attempted to legally control or regulate space activities, the State may wish to consider other States’ space legislation or, by analogy, other national laws, as a guide to drafting.”¹⁶

This recommendation is something for new actors to keep in mind if they opt to follow this TCBM.

Finally, draft guideline 12 builds on the above by recommending, “When adopting or implementing national regulatory frameworks, consider the long-term sustainability of outer space activities.”¹⁷

III. SELECTED NATIONAL SPACE POLICIES/STRATEGIES

Some space actors are reluctant to put together a publicly accessible space policy or strategy, as they worry that it would limit their freedom of action or be prohibitively expensive to put together. However, there are a range of responses that national governments have undertaken in an attempt to create written guidance for their national space programs. This section will examine several different types of national space policy/strategies of space stakeholders.

Australia

Australia is an interesting example of a creative way to guide governmental action regarding space. The Australian government does not control any satellites – the few Australian satellites which exist are commercial communications satellites – but the country depends

heavily on space assets and is using its unique geographic location to increase its involvement in space activities with allies. So, after many years of discussion, the Australian government released its Satellite Utilisation Policy in April 2013. It notes that, “The purpose of this policy is to articulate Australia’s space interests and objectives, identify existing and emerging opportunities and Australia’s competitive advantages, and prepare the nation to meet future challenges effectively.”¹⁸ The policy points out that Australia benefits from international capabilities and thus it should contribute where possible, namely in “ground infrastructure and in the application of space information to achieve cost-effective outcomes.”¹⁹

It spells out Australia’s national goal in space: “Achieve on-going, cost-effective access to the space capabilities on which we rely,” and explains what it sees are the five key benefits to Australia in doing so: “improved productivity;” “better environmental management;” “a safe and secure Australia;” “a smarter workforce;” and “equity of access to information and services.”²⁰

The policy then explains principles for achieving this goal. The first is to “focus on space applications of national significance,” namely, Earth observations, satellite communications, and position, navigation, and timing.²¹ The second is to “assure access to space capability,” including access to radiofrequency spectrum.²² The third is to “strengthen and increase international cooperation.”²³ The fourth is to “contribute to a stable space environment,” including supporting norms of behaviour, supporting international regulatory frameworks for space, and become involved in international fora where these issues are being discussed.²⁴ The fifth is to “improve domestic coordination,”²⁵ with the sixth being to “support innovation, science, and skills development.”²⁶ The seventh and final principle is to “protect and enhance national security and economic well-being.”²⁷ The policy goes on to break down roles and responsibilities of the Australian government for various types of space activities.

Brazil

Brazil’s national space efforts are guided by its National Program for Space Activities (PNAE) for the Brazilian Space Agency. The PNAE is currently in its fourth iteration and covers the years 2012-2021.

The PNAE indicates its underlying interest in using space for national development with the following statement: “A country’s sovereignty and autonomy are proportionally related to its capacity for technical development. Space technology is undoubtedly the most far reaching in this scenario.”²⁸ It highlights often

Brazil’s wish to be more involved in space industry in order to “drive industrial progress” and asks what it calls the “developed world” if Brazil could “cooperate with joint technological development, mutual interests and shared benefits.”²⁹

Eight strategic guidelines are given to try to meet the PNAE’s priority of using space to enhance Brazil’s industrial sector:

“Consolidate the Brazilian space industry, by increasing its competitiveness and innovation capacity, also through the use of the State’s purchasing power and the partnerships with other countries.

“Develop an intensive program of critical technologies in order to foster the capacity building in the space sector, with greater participation of academia, S&T governmental institutions and the industry.

“Expand partnerships with other countries, by prioritizing joint development of technological and industrial programs of mutual interest.

“Encourage funding of programs based on public and/or private partnerships.

“Promote greater integration of the space activities governance system in the country, by increasing the synergy and effectiveness of actions among its main players and the creation of the National Space Policy Council, conducted directly by the President of the Republic.

“Improve the legislation to strengthen space activities, by encouraging and facilitating government purchases, allocating more funds for the Space Sectorial Fund, and decreasing taxes to the industry.

“Encourage the human resources development by training of experts needed in the Brazilian space activities, both domestically and abroad.

“Promote public awareness on the relevance of the study, use and development of the space activities in Brazil.”³⁰

The PNAE goes on to give priority actions for country to meet its goals and suggests strategic actions that could help support the Brazilian space industry. It includes a section specifically on international cooperation on space issues, noting that

“For us, space cooperation in the fully globalized world of the twenty-first century is much more than a business transaction, it is about promoting joint scientific, technological and industrial development, with trusted partners, based on mutual interest, common effort and sharing benefits.”³¹

More prosaically, the PNAE gives an estimate for how much it will cost to carry out the programs and initiatives suggested by it: “R\$ 9,1 billion, with 47% allocated to satellite mission projects, 17% to space access projects, 26% to space infrastructure and 10% to other special and complementary projects.”³²

China

In 2000, China released a white paper detailing its five-year plan for its space program. This was updated in 2006 and, most recently, 2011, which is intended to guide China’s space activities through 2016.

The 2011 white paper starts off by noting the new opportunities to China’s space program afforded to it by industrial development, but carefully states,

“China will work together with the international community to maintain a peaceful and clean outer space and endeavor to make new contributions to the lofty cause of promoting world peace and development.”³³

Purposes given for China’s space industry are: space exploration; use space for “peaceful purposes” in order to “benefit the whole of mankind;” “meet the demands of economic development, scientific and technical development, national security and social progress;” and to “improve the scientific and cultural knowledge of the Chinese people, protect China’s national rights and interests, and build up its national comprehensive strength.”³⁴ The white paper sets goals for space applications (primarily Earth observation, communication/broadcasting satellites, and position, navigation, and timing capabilities); space science (Sun-Earth space exploration, lunar scientific research); and space debris mitigation. Major tasks for the next five years include developing “a comprehensive plan for

construction of space infrastructure, promote its satellites and satellite applications industry,” undertaking more scientific space research, and continuing the “comprehensive, coordinated and sustainable development of China’s space industry.”

The white paper goes on to list some efforts the Chinese government is undertaking to promote Chinese space industrial development. One of the measures listed is:

“Strengthening legislative work. To actively carry out research on a national space law, gradually formulate and improve related laws, regulations and space industrial policies guiding and regulating space activities, and create a legislative environment favorable to the development of space activities.”³⁵

The white paper has a long section on international exchanges and cooperation. It starts off with the statement that the

“Chinese government holds that each and every country in the world enjoys equal rights to freely explore, develop and utilize outer space and its celestial bodies, and that all countries’ outer space activities should be beneficial to economic development, the social progress of nations, and to the security, survival and development of mankind.”³⁶

It goes on to assert that international cooperation should “promote inclusive space development on the basis of equality and mutual benefit, peaceful utilization and common development.”³⁷ Fundamental policies to guide international cooperation include “Supporting activities regarding the peaceful use of outer space within the framework of the United Nations,” focusing on Asia-Pacific space cooperation (and even more broadly, other regional space cooperative efforts), strengthening cooperative efforts with developing countries, and “Appropriately using both domestic and foreign markets and both types of resources, and actively participating in practical international space cooperation.”³⁸ International exchanges and cooperation for China over the course of this white paper are intended to focus on scientific research; using Earth observation satellites for environmental, disaster, and climate change monitoring; applications of communication satellites; cooperating on a space lab and space station; and commercial satellite launch services.³⁹

Russia

Russia's national space activities are currently guided by its Federal Space Program 2006-2015.* It most recently was updated in December 2012.⁴⁰ This Program reportedly increased the budget for remote sensing and communications satellites by double. In January 2013, Roscosmos released a draft document called "Space Activities of the Russian Federation in 2013-2020," which reportedly included a space strategy through 2030.⁴¹ According to Yuri Koptev, head of the Rostekh state corporation general director's advisor team and ex-head of Rosaviacosmos, "The key priority is the development and use of means supporting socioeconomic development, defense capacities of the country and issues of daily life of individuals and the entire society."⁴² Space access and applications were reportedly the top priorities listed. The program reportedly set the goal of increasing Russia's portion of the global space industry "from 10.7 percent in 2011 to 14 percent in 2015 and 16 percent in 2020."⁴³ This draft was updated in April 2013.

As of writing, an update of the Federal Space Program is being worked on that would cover the timeframe 2016-2025, and according to Roscosmos head Oleg Ostapenko, "[W]e are completing the stage of coordination and it will be submitted for approval in the nearest future."⁴⁴

United Kingdom

The United Kingdom space strategy is comprised of two parts: a civil space strategy, which was published in July 2012; and a national space security strategy, which was published in April 2014.

The civil space strategy set out some of the roles and responsibilities of the relatively new UK Space Agency (created in April 2011). It also discussed the six different ways it wanted to see the UK space industry see growth: through new opportunities (via new industries and markets, domestically and internationally); from export, with a stated goal of having the UK get to have 10 percent of the global market by 2030; innovation supporting growth; "science to underpin growth;" and growth "through smarter government."⁴⁵ Interestingly, the strategy points out, "Regulation can be used as a tool to establish a competitive edge in the international arena," since it could "create an environment which attracts inward investment and encourages industry to develop new systems and services in the UK."⁴⁶ Very often, industry sees regulation – potential or actual – as a way in which to stymie its efforts, increase bureaucracy, and cut into

* No official English language version of Russia's space documents exists, to the author's knowledge.

its profits. Overall, the strategy sets the goal of the UK Space Agency heading up the UK civil space efforts, in order to "ensure that our central goal of growth becomes a reality and the potential of space to the twenty-first century economy will be both recognised and realised."⁴⁷

The national space security strategy was published in order to protect "the provision of vital services for our economy and national security."⁴⁸ It hopes to do so via four objectives:

"To make the United Kingdom more resilient to the risk of disruption to space services and capabilities, including from space weather;

"To enhance the United Kingdom's national security interests through space;

"To promote a safe and more secure space environment;

"To enable industry and academia to exploit science and grasp commercial opportunities in support of national space security interests."⁴⁹

The strategy defines space security as "having safe, assured and sustainable access to space capabilities, with adequate resilience against threats and hazards."⁵⁰ It also calls for the United Kingdom to work with international partners when possible. The GGE, COPUOS, and CoC are all mentioned as part of its efforts to work toward a safe and secure space environment.⁵¹

IV. CONCLUSION

In order to ensure that current space stakeholders and future users can benefit from space over the long-term, it is important to lay the foundations for approaching space in a cooperative manner now. Actively undertaking TCBMs can help ensure that space is used responsibly and make the space domain a predictable one that can be depended upon.

Not all TCBMs have to be arduous or invasive. Establishing a national space policy/strategy and making that guidance available publicly can do much to demonstrate good intent for national space activities. It can also help analysts get a better sense of what a country is intending to do in space, particularly if budget numbers are released as well. Again, this can be done in an unclassified form and not at the cost of a state's national security. The process of going through the creation of a national space policy/strategy (and

updating it when warranted) is helpful to ascertain national priorities and hopefully sheds some light on domestic discussions of budgetary and programmatic decisions.

There are several concurrent international initiatives which are striving to result in the long-term sustainable and peaceful use of space. The GGE on space TCBMs, the draft CoC, and the draft LTS guidelines all include a recommendation that suggests putting together a national space policy/strategy.

Finally, by examining the guidance the countries of Australia, Brazil, China, Russia, and the United Kingdom have given their space programs, we can see that there are a wide variety of options available to space stakeholders, and that the creation of a national space policy/strategy can be individualized to best suit a state's needs. This TCBM can thus help a country advance its space capabilities while at the same time work with the international community to ensure a safe, secure, and sustainable space environment.

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² Johnson, updated April 2014

³ *Resolution Adopted by the General Assembly on 5 December 2013, Res. 68/50*, http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/68/50

⁴ *General and complete disarmament: transparency and confidence-building measures in outer space activities: Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities, Res. 68/189*, July 29, 2013, p. 2, http://www.un.org/ga/search/view_doc.asp?symbol=A/68/189

⁵ *Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities*, July 29, 2013, p. 2

⁶ *Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities*, July 29, 2013, p. 14

⁷ *Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities*, July 29, 2013, p. 16

⁸ *Draft International Code of Conduct for Outer Space Activities*, VERSION 31 March 2014, http://eeas.europa.eu/non-proliferation-and-disarmament/pdf/space_code_conduct_draft_vers_31-march-2014_en.pdf

⁹ *Draft International Code of Conduct for Outer Space Activities*, VERSION 31 March 2014

¹⁰ *Draft International Code of Conduct for Outer Space Activities*, VERSION 31 March 2014

¹¹ Tiffany Chow, *UNCOPUOS Long-Term Sustainability of Space Activities Working Group Fact Sheet*, Secure World Foundation, updated June 2013, <https://www.gov.uk/government/publications/civil-space-strategy-2012-to-2016>

¹² *Proposal for a draft report and a preliminary set of draft guidelines of the Working Group on the Long-term Sustainability of Space Activities*. United Nations Committee on the Peaceful Uses of Outer Space. Vienna: United Nations Office for Outer Space Affairs. Retrieved Sept. 21, 2014, from http://www.oosa.unvienna.org/pdf/limited/c1/AC105_C1_L339E.pdf, p. 4

¹³ *Proposal for a draft report and a preliminary set of draft guidelines of the Working Group on the Long-term Sustainability of Space Activities*, p. 8

¹⁴ *Proposal for a draft report and a preliminary set of draft guidelines of the Working Group on the Long-term Sustainability of Space Activities*, p. 9

¹⁵ *Proposal for a draft report and a preliminary set of draft guidelines of the Working Group on the Long-term Sustainability of Space Activities*, p. 9

¹⁶ *Proposal for a draft report and a preliminary set of draft guidelines of the Working Group on the Long-term Sustainability of Space Activities*, p. 9

¹⁷ *Proposal for a draft report and a preliminary set of draft guidelines of the Working Group on the Long-term Sustainability of Space Activities*, p. 10

¹⁸ Commonwealth of Australia, *Australia's Satellite Utilisation Policy*, April 16, 2013, <http://www.space.gov.au/Documents/Australia%27s%20satellite%20utilisation%20policy%20-%20version%201.1p%20-%202016%20April%202013.pdf>, p. 1

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- ²⁰ *Australia's Satellite Utilisation Policy*, April 16, 2013, p. 6
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