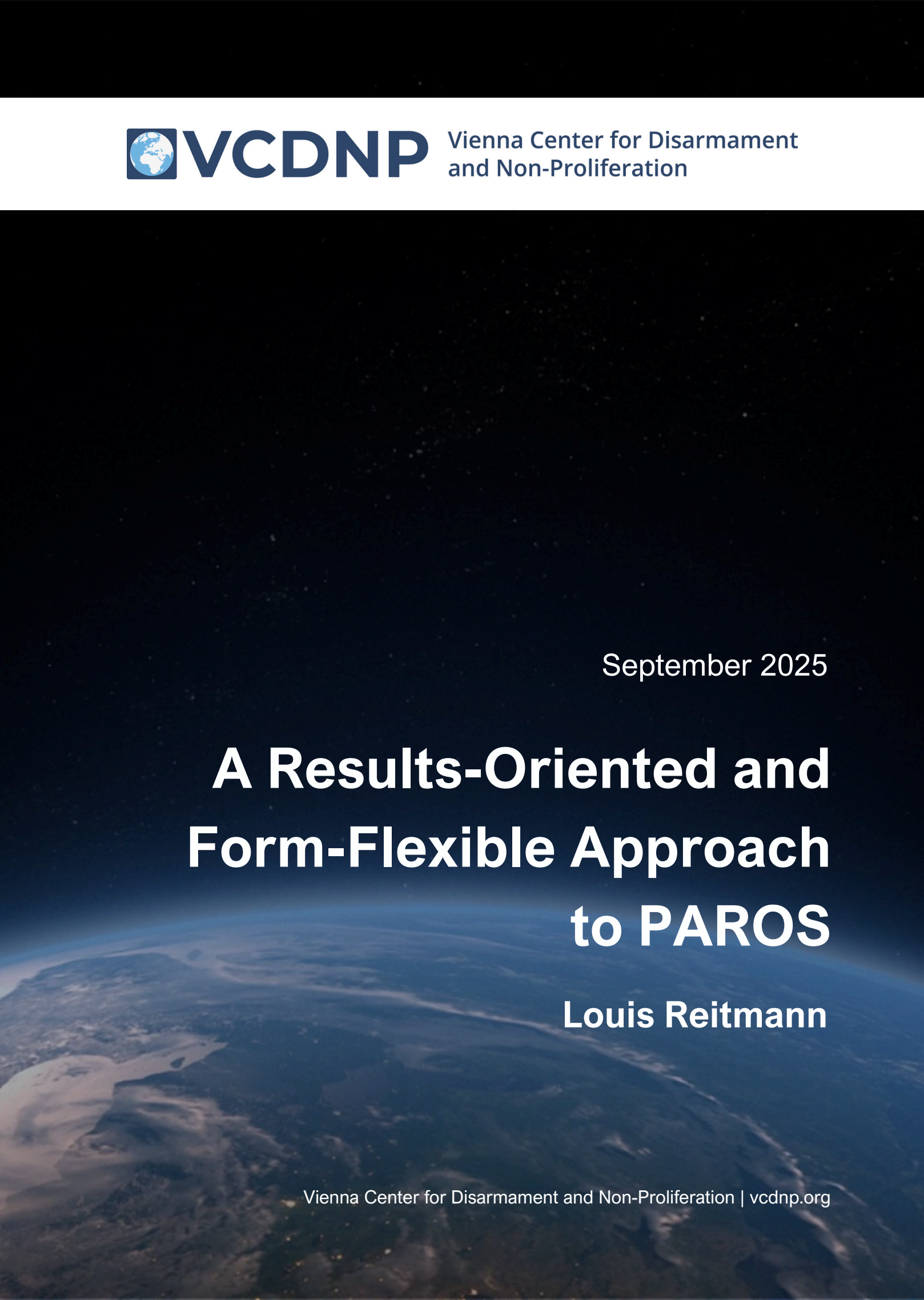

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A Results-Oriented and Form-Flexible Approach to PAROS

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About the VCDNP

The Vienna Center for Disarmament and Non-Proliferation (VCDNP) promotes international peace and security by conducting research, facilitating dialogue, and building capacity on nuclear non-proliferation and disarmament.

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This photo of the Earth from the Moon, known as "Earthrise", was taken by astronaut William Anders in 1968 and has since become a symbol for the fragility of our planet and the need for global cooperation to protect it. Credit: NASA.

Executive Summary

Limitations of PAROS processes: Despite over 40 years of dialogue, multilateral processes on the prevention of an arms race in outer space (PAROS) are still marked by competition between two legacy approaches: a treaty to ban the placement of weapons and the use and threat of force in space (PPWT) and the universalisation of existing space treaties alongside individual arms control, transparency, and confidence-building measures. PAROS processes still debate issues that emerged in the 1980s, i.e., the verifiability of the PPWT, definitions of key terms, etc. The competition for political ownership of the PAROS agenda and duplication of work in 'rival' UN bodies make it difficult for States to have the flexible, constructive discussions needed to make progress. They disadvantage States with fewer officials, especially developing countries, disincentivise States from investing political capital in PAROS, and discourage engagement by non-governmental experts and space industry.

Recent shift in PAROS: Norms of responsible behaviour: This stagnation has been disrupted by the initiative for norms of responsible behaviour in outer space. Through the OEWG on Reducing Space Threats (2022-2023), this initiative has strengthened a shared understanding of relevant space threats, promoted the complementarity of legally binding and voluntary measures, brought more countries into PAROS discussions, and renewed momentum for progress on space security.

A results-oriented and form-flexible approach to PAROS: Given the poor outlook for achieving a space security regime under the traditional PAROS paradigm and the pragmatic progress made in the OEWG on Reducing Space Threats, States should consider adopting a results-oriented and form-flexible approach to enable urgently needed space threat reduction. This approach acknowledges that States need not hold out for consensus on either legacy approach to work towards their shared goal of a secure space domain.

It argues that neither insisting on one particular treaty nor rejecting any legally binding instrument can deliver an effective space security regime. Instead, it encourages States to produce rules, guidelines, policies, and instruments that address specific space threats, unilaterally and with partners. Under this form-flexible approach, States may assess that some threats are more suitable for legally binding and others for voluntary measures; they could also design combinations, with a legally binding agreement and supporting memoranda that provide interpretive detail. States may find that a legally binding commitment against jamming and spoofing of signal transmissions would be difficult to verify and therefore less suitable, or they may find that States indeed have sufficient mutual confidence and means of verification to adopt a legally binding DA-ASAT weapons test ban.

To ensure that individual measures work towards threat reduction in a focused way, States should adopt them as part of threat reduction pathways. These can be vertical sequences of steps that build on each other, for example, a declaration of norms and principles, which guide the development and implementation of a catalogue of threat reduction measures, followed by their codification in a treaty. They could also be horizontal, with several steps at the same "level". For example, to address unauthorised proximity operations, States could adopt operational standards that define when proximity operations present a threat, while also enhancing space object registration practices and crisis communication. Together, these measures address different elements of what can make proximity operations dangerous and significantly reduce this threat.

In multilateral forums, States can discuss high-level principles to guide the threat reduction measures they adopt, exchange good practices, and explore opportunities for harmonisation. Standards, policies, and instruments that enjoy broad support and have proven effective could be codified in a comprehensive treaty. Its membership could be expanded over time, as with all space treaties. Another focus of this approach is on operationalisation and implementation. States have achieved a comprehensive picture of relevant space threats and potential solutions across several PAROS processes, even if consensus has been difficult to achieve. However, discussions on solutions have stayed at the conceptual level and few if any have been adopted into national regulations. Space security efforts must increase the focus on national implementation to yield results.

Some may be concerned that a results-oriented approach could risk losing focus on preventing an arms race in outer space through a legally binding instrument. This deserves earnest engagement. A results-oriented approach and a potential PAROS treaty share the ultimate goal of preventing conflict in space, damage to space-based services, and the implications for security on Earth. The measures adopted under a results-oriented approach can also support the development of a treaty. Emphasising the agency of States, a results-oriented and form-flexible approach does not discourage interested States from making legally binding commitments against placing weapons in space or using or threatening to use force against space objects. To be results-oriented, this commitment should be part of a bigger package of measures, for example, instruments to interpret and operationalise the broadly worded commitment against weapons placement and use of force in space.

In evaluating a results-oriented approach against the traditional PAROS paradigm, States should also consider the risk that failure to produce outcomes for space security may reduce the relevance of PAROS processes over time, with States potentially ceasing participation at senior level or divesting political capital.

Pressures from military developments in space: The biggest impetus for a results-oriented approach may come from developments in counterspace capabilities. China, France, Russia, and the United States are developing kinetic and laser weapons for deployment on Earth and in space; other countries are developing and/or using electronic warfare tools against satellites and ground stations. With more military actors and objects in space, high-risk interactions may become more frequent, increasing the likelihood of escalation. This is made worse by the lack of transparency of some space defence programmes. Postponing threat reduction until consensus on either legacy approach to PAROS is achieved leaves unacceptable security risks unchecked.

A new framing for space security: 40+ years on, the PAROS concept no longer fully reflects the reality in space, with new spacefaring nations and rapid growth in commercial launches and civil uses. These developments have introduced new threats to the space domain. While the content of discussions in PAROS bodies has adapted to this new reality, their reference point has remained the same.

States could consider a new framing around "the protection of peaceful uses of space". This better reflects the priorities of Global South countries as the majority of space end users and focuses more immediately on the ultimate objective of PAROS – ensuring that space is secure for peaceful uses by all countries by reducing tensions and preventing conflict. Importantly, "the protection of peaceful uses of space" is not charged with connotations of either legacy approach to PAROS.

Defining success: Success in PAROS processes is often equated with the adoption of consensus outcome documents. This allows geopolitics and competition between the legacy approaches to determine results, often preventing their adoption. In contrast, the GGE on Further Practical Measures for PAROS (2023-2024) adopted a substantive report without seeking consensus on all parts, treating the document as an ideas repository. States should favour this approach and consider further indicators for success in PAROS processes, such as: Did the process discuss how to develop instruments for addressing identified space threats? Was there diversity among participating States by geography, development, etc.? Were delegates able to benefit from expert input?

Further priorities for PAROS processes: Next to a results-oriented and form-flexible approach, States should consider further priorities for enhancing the effectiveness of multilateral processes on space security.

- **Better reflect Global South priorities on PAROS:** The lack of progress, competition between opposing approaches, and focus on relations between the space powers has deterred many Global South countries from fully engaging in PAROS processes. States should consider framing PAROS discussions along Global South priorities, including the protection of peaceful uses of space. States and NGOs should provide capacity-building for newcomer countries to increase their agency to shape the space security regime.
- **Intensify dialogue with industry:** States should encourage space industry groups to formulate positions on ensuring security of operations and institutionalise substantive exchange with industry in PAROS processes.
- **Reduce political barriers to learning across space safety, security, and sustainability:** States should institutionalise updates between COPUOS and PAROS bodies, education on the safety-security-sustainability nexus in Vienna and Geneva, and expert-level consultations on operationalising their complementarity, similar to the UNOOSA Space Bridge. States should consider which guidelines adopted in COPUOS and the national regulations flowing from them could serve as space threat reduction measures, or contribute to their development.
- **Close the gap between PAROS and space defence:** States should enhance coordination between space file holders in ministries of foreign affairs and defence to ensure consistent positions, contributing to transparency and trust among States. PAROS bodies should receive regular briefings from defence officials and experts about developments in counterspace capabilities and space defence postures.
- **Examine the emergence of norms and standards for space security:** States would benefit from a 'state of play' overview of proposals for norms and standards for space security. By analysing the convergence of States on these norms, research could identify mature norms that could be translated into tangible, even legally binding measures, but also less developed norms that require more dialogue.
- **Convene technical experts meetings:** Other multilateral processes, including COPUOS, show that groups of technical experts can often continue making progress on substantive issues despite geopolitical tensions. PAROS bodies could task panels of national technical experts to develop operational standards to reduce threats emanating from certain space activities, like proximity operations.
- **Invest in platforms for dialogue and innovation:** States should invest in NGOs that provide thought entrepreneurship and platforms for track-1.5 dialogue. If UN bodies are slowed or blocked by geopolitics, keeping open other avenues for substantive discussions and policy innovation for space security is key.
- **Maintain civil society participation:** States should ensure the full participation of non-governmental stakeholders in PAROS processes, in line with General Assembly rules, and continue to include language on civil society participation in the resolutions mandating PAROS bodies.

The United Nations headquarters in Geneva, where many PAROS processes have taken place.

Limitations of PAROS Processes

During the Space Race from 1955 to 1975, the Soviet Union and the United States developed and tested anti-satellite (ASAT) weapons and conducted nuclear weapons tests in space, seeking the ability to destroy the other's space objects, which perform critical functions for military communication, navigation, and early warning of missile launches. This showed that an arms race, or worse, armed conflict in space pose a major threat to strategic stability on Earth but also to the security of peaceful uses of space. While States were able to ban the placement, stationing, and installation of WMDs in space through the 1967 Outer Space Treaty, they have been unable to agree on further rules and mechanisms for space security.

Since the 1978 Special Session of the UN General Assembly concluded that States should take further measures "to prevent an arms race in outer space" (PAROS), efforts towards that goal have been housed in several UN bodies and multilateral initiatives.[1] For more information, see the VCDNP publication *The History of PAROS*.

Two Competing Approaches to PAROS

The defining theme across PAROS processes has been tension between two approaches: a treaty to prohibit the placement of weapons and the use and threat of force in space (PPWT), championed by China and Russia, and the universalisation of existing space treaties alongside individual arms control, transparency, and confidence-building measures (TCBMs), championed by the United States.

1 United Nations, "Final Document of the Tenth Special Session of the General Assembly", June 1978, https://docs.un.org/en/A/RES/S-10/2.

At the core of the debate is disagreement about whether the prompt adoption of a blanket ban on weapons and the use of force in space could ensure stability and prevent conflict in space. Those favouring the swift conclusion of a treaty argue that only binding guarantees can pre-empt the burgeoning weaponisation of space, meaning the large-scale proliferation of weapons designed to destroy space objects, which would threaten the security of human activities in space.

Others criticise that regulating capabilities alone does not address other serious threats like intentional debris creation, spoofing and jamming of signal transmissions, or unauthorised close approaches to foreign satellites. They also point out that current treaty proposals lack a verification system, which would be essential for monitoring compliance. Further, it has been noted that trust, especially between Russia and Western countries, is at a historic low. This adds hurdles to starting treaty negotiations and, for some countries, diminishes confidence in the faithful interpretation of the broad provisions in the PPWT.[2] Similar differences over treaty interpretation and verification have led to the failure of US-Russian nuclear arms control agreements, such as the INF Treaty in 2019 and the New START Treaty in 2023.[3]

These positions are also shaped by national security interests. Soviet proposals to ban space weapons in the 1980s were informed by an interest in pre-empting US plans for space-based interceptors capable of destroying nuclear-armed missiles shortly after launch.[4] Though questions on their feasibility and effectiveness remain,[5] such defences could make the United States less vulnerable to other countries' nuclear weapons. This could undermine strategic stability and trigger a nuclear arms race. Concerns around periodically resurfacing plans for such missile interceptors continue to inform Chinese and Russian positions.

Likewise, the United States' rejection of the proposed PPWT is partly based on a desire to maintain maximum freedom of action to enhance its missile defences. Such concerns ultimately prevented the United States from signing the EU-proposed Code of Conduct for Outer Space Activities. The United States also did not join consensus on the report of the GGE on Further Practical Measures of PAROS (2018-2019) out of concern that it too closely resembled a treaty. These enduring interests on both sides are a key reason why, in contrast to nuclear arms reductions, PAROS processes did not see convergence between US and Russian positions after the Cold War.

Convergence on Key Points

To be sure, PAROS processes have produced consensus on some key points, notably:

- States have agreed that there are destabilising developments that increase the risk of conflict in space and threaten the security of peaceful uses of space.[6] Until the 1990s, some countries had maintained that there were no significant developments on space weapons to indicate a looming arms race in space.[7]

2 Eric Desautels, "Review of the Analyses Submitted to the Conference on Disarmament of the 2014 Russian - PRC draft […]", December 2023, https://docs-library.unoda.org/Group_of_governmental_experts_on_further_practical_measures_for_the_prevention_of_an_arms_race_in_outer_space_-_(2023)/WP.7.pdf.

3 Claire Mills, "Demise of the Intermediate-Range Nuclear Forces (INF) Treaty", House of Commons Library, September 2019, https://commonslibrary.parliament.uk/research-briefings/cbp-8634/; Shannon Bugos, "Russia Suspends New START", *Arms Control Today*, March 2023, https://www.armscontrol.org/act/2023-03/news/russia-suspends-new-start.

4 Paul Meyer, "Ballistic Missile Defence & Outer Space Security: A Strategic Interdependence", UNIDIR, June 2020, https://unidir.org/wp-content/uploads/2023/05/Space-Dossier-6-—-UNIDIR.pdf.

5 Steve Fetter and David Wright, "Can the Iron Dome Be Transmuted into a Golden Dome?", *The Washington Quarterly*, Vol. 48, No. 2, 95-114, https://www.cissm.umd.edu/research-impact/publications/can-iron-dome-be-transmuted-golden-dome.

6 United Nations, "Report of the Disarmament Commission for 2023", April 2023, https://docs.un.org/en/A/78/42, 12.

7 Paul Meyer, "The CD and PAROS: A Short History", UNIDIR, April 2011, https://unidir.org/files/publication/pdfs/the-conference-on-disarmament-and-the-prevention-of-an-arms-race-in-outer-space-370.pdf, 3.

- States have affirmed that existing international law, including the UN Charter, applies to space.[8] However, States disagree whether discussing how international humanitarian law (IHL) applies in outer space is appropriate in the PAROS context. China and Russia argue that PAROS bodies should focus exclusively on the prevention of the use of force in space and that discussing IHL could imply that prevention has failed or legitimise the use of force in space.[9] Other States argue that discussing legal restrictions applicable to conflict in space would discourage aggression. They also point to Protocol I to the Geneva Conventions, which states that *"nothing in this Protocol or in the Geneva Conventions […] can be construed as legitimizing or authorizing any act of aggression or any other use of force inconsistent with the Charter of the United Nations"*.[10]

- States have agreed that existing international law on space, such as the Outer Space Treaty's prohibition on WMDs, is not sufficient for ensuring strategic stability and preventing conflict in space. They agree that the universalisation of and strict compliance with all existing space treaties would contribute to the PAROS goal but disagree on the most effective steps beyond this.[11]

- States have agreed in principle that it is desirable to adopt an effective and verifiable treaty to prevent an arms race in outer space.[12]

- States have agreed that TCBMs can support the development and implementation of legally binding instruments on PAROS by promoting mutual trust, easing some verification challenges, and by building towards elements of a future PAROS treaty.[13]

Prospects for Achieving the PAROS Goal

However, despite over 40 years of dialogue, there has been little movement in the established views on adopting a treaty. Multilateral discussions on PAROS are still marked to a large degree by the issues and arguments that emerged in the 1980s, i.e., the feasibility of defining "space weapons", the verifiability of the PPWT, etc. This creates a poor outlook for achieving consensus on either a legally binding or non-binding approach to space security.

This is also reflected in the development of PAROS processes. While there have been efforts to bridge the divide between the two approaches, for example, by identifying TCBMs through the GGE on Transparency and Confidence-Building Measures in Outer Space Activities (2012-2013) and promoting their implementation through the 2017 Secretary-General's report and the 2023 UN Disarmament Commission report, more recently, there has been a trend of establishing competing bodies.

After the United States did not join consensus on the report of the GGE on Further Practical Measures for PAROS (2018-2019), which focused on elements of a future treaty, Russia prevented the adoption of the report of the OEWG on Reducing Space Threats (2022-2023), which had made progress on non-binding measures. In 2022, China and Russia sponsored a repeat of the GGE in 2023-2024 under the same mandate.

8 United Nations, "Report of the Group of Governmental Experts on Further Practical Measures for the Prevention of an Arms Race in Outer Space", September 2024, https://front.un-arm.org/wp-content/uploads/2025/02/n2427137.pdf., 9.

9 Russian Federation, "On counterproductive nature of consideration of the applicability of international humanitarian law (IHL) to outer space activities", 2022, https://docs-library.unoda.org/Open-Ended_Working_Group_on_Reducing_Space_Threats_-_(2022)/IHL_Unofficial_translation_итог-1.pdf.

10 United Nations, "Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol 1)", June 1977, https://www.ohchr.org/en/instruments-mechanisms/instruments/protocol-additional-geneva-conventions-12-august-1949-and.

11 United Nations, "Prevention of an arms race in outer space", December 2024, https://digitallibrary.un.org/record/4070619?ln=en&v=pdf.

12 While critical about the concrete treaty proposals offered by China and Russia, the United States as the principal advocate for voluntary measures for space security has stated that it supports *"proposals for new legally binding agreements that are equitable and effectively verifiable"*. See: US Mission to International Organisations in Geneva, "Remarks to the Conference On Disarmament on Prevention of an Arms Race in Outer Space", March 2023, https://geneva.usmission.gov/2023/03/30/remarks-arms-race-in-outer-space-paros/.

13 United Nations, "Prevention of an arms race in outer space", January 1994, https://docs.un.org/en/A/RES/48/74; United Nations, "Report of the Disarmament Commission for 2023", April 2023, https://docs.un.org/en/A/78/42, 12.

In 2023, the General Assembly established two working groups that would have divided work on PAROS along a legally binding and a non-binding approach, before they were merged into the OEWG on PAROS in All its Aspects (2025-2028). Likewise, the agenda of this OEWG has been split into two tracks, one focused on each approach. Some consider this to clash with the OEWG's mandate to produce recommendations on PAROS in a comprehensive, inclusive fashion.

The enduring competition for political ownership of PAROS processes makes it difficult for States to flexibly and constructively explore topics of shared interest. Precious time in the few multilateral meetings on PAROS per year is eaten up by lengthy arguments over procedural questions and the appropriateness of discussing certain topics. At the OEWG on PAROS in All its Aspects (2025-2028), attempts to restrict which topics States could raise culminated in a costly delay of the adoption of the agenda until the second substantive meeting in July 2025.

This dynamic also hinders PAROS processes in discussing critical new developments. For example, it has been argued that PAROS bodies should not discuss guidelines on space safety and sustainability, negotiated in the Committee on the Peaceful Uses of Outer Space (COPUOS), because this would be incompatible with the goal of adopting a PAROS treaty. In an example to the contrary, the 2019 Long-Term Sustainability Guidelines contain several provisions that are relevant to space security, for example, on orbital tracking and data sharing, coordination on collision prevention, and non-interference with radio transmissions.[14] As the Guidelines will likely be updated in the coming years, PAROS bodies should be able to consider learnings from the negotiations in COPUOS that could be relevant for space security, including to prevent duplication of work between Vienna and Geneva.

Competition between the two approaches also reduces the impact and effectiveness of intergovernmental initiatives, such as the commitment against first placement of weapons in space, championed by Russia, or the moratorium on direct-ascent anti-satellite (DA-ASAT) weapons tests, championed by the United States. Their language and the way they are employed tend to reinforce rather than redress competition between the two approaches. This makes signing up to either initiative at least as much a question of geopolitical allegiance as of contributing to a secure space domain, which can be observed in the membership of both initiatives.[15] Especially for many developing countries, which prioritise securing free and equal access to a sustainable space domain, this is an unattractive proposition.

Ultimately, competition for political ownership, stagnation on substantive issues, and duplication of work in competing bodies or tracks disadvantage States with smaller diplomatic corps, whose officials have less time to specialise in space security, especially developing countries. They disincentivise States from sending capital-based experts to multilateral meetings and investing the political capital needed to forge agreement among States. They also disincentivise NGO experts and space industry from engaging with PAROS processes, despite the critical roles they play for developing and implementing a space security regime.

The enduring influence of competition between the two approaches strengthens the idea that PAROS is an issue on which only the space powers can move the needle. If progress on space security is considered possible only with consensus among the space powers, this reduces the agency of other States to create rules and mechanisms to protect human activities in space, even though a comprehensive space security regime can only be effective if a wide range of countries participate in creating and upholding it.

14 UNOOSA, "Guidelines for the Long-Term Sustainability of Outer Space Activities of the Committee on the Peaceful Uses of Outer Space", 2019, https://www.unoosa.org/documents/pdf/PromotingSpaceSustainability/Publication_Final_English_June2021.pdf.

15 Secure World Foundation, "Multilateral Space Security Initiatives Tracking Sheet", May 2025, https://docs.google.com/spreadsheets/d/1e91IEWkTF43k3CG6jQYLoUJeHROY03HAxP-T35eqqnA/edit?gid=1101016345#gid=1101016345.

Recent Shift in PAROS: Norms of Responsible Behaviour

A recent development that has disrupted the back-and-forth between the two approaches has been the initiative for norms of responsible behaviour in outer space, championed by the United Kingdom. It aims to collaboratively develop norms, rules, and principles to regulate State conduct in space to prevent misunderstanding, miscalculation, and escalation into armed conflict. While international law and international humanitarian law already restrict the use and threat of force in space, actions that may fall below that threshold are not covered by existing law or treaty proposals. They include grey-zone threats that, in a crowded space domain and tense geopolitical situation, could trigger crises with dangerous consequences for essential space-based services and security on Earth.

In the OEWG on Reducing Space Threats (2022-2023), States identified such threats, including cyberattacks on ground stations and satellites, unauthorised close approaches and docking, or intentional debris creation.[16] States also suggested measures to reduce these threats, building on previous proposals for TCBMs, although discussions on solutions have not yet penetrated to a technical, operational level of detail and have not yet produced policies or regulations at the State level.

A notable benefit of this initiative has been raising awareness of the complementarity of legally binding and voluntary measures.[17] As with the genesis of the Outer Space Treaty, the norms developed through this initiative could eventually be codified in a treaty; norms can also contribute to trust and transparency between space actors, facilitating the adoption and supporting the interpretation of a future treaty. Monitoring mechanisms for the implementation of norms of behaviour can also serve future legally binding instruments. This understanding has helped to surpass the previous notion of two mutually exclusive approaches. Additionally, the initiative has promoted the complementarity of space safety, security, and sustainability. Indeed, compliance with international standards for safe and sustainable spaceflight can itself indicate responsible behaviour and help to prevent misinterpretation of intentions and escalation.[18]

Shifting attention away from counterspace capabilities, which only a few countries possess, towards behaviour, the initiative also led to the participation of a more diverse range of countries, reducing the focus on relations between the space powers and highlighting the interest of the global majority of space users in an accessible, secure, and sustainable domain. Indeed, the OEWG on Reducing Space Threats saw submissions from several emerging space actors, including Peru, the Philippines, and the UAE.

Though similar language is accepted in UN processes in other areas, such as the Norms of Responsible State Behaviour in Cyberspace,[19] the term "responsible" has been questioned. Indeed, the implied judgement of differentiating between "responsible" and "irresponsible" actors or behaviours does not resonate with some stakeholders.

Alternatively, States could adopt the more neutral "international standards for conduct in space". Standards are governance instruments with greater operational detail, whereas norms could be seen as more general provisions that need to be interpreted and operationalised to be applied. A focus on standards could invite States to develop more precise solutions for space threat reduction with objective technical detail. "Standards" is also industry-typical language for non-binding regulation and could invite more engagement from commercial actors in shaping standards for conduct in space, similar to the Consortium for Execution of Rendezvous and Servicing Operations (CONFERS).

16 United Nations, "Open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours: Chairperson's Summary", September 2023, https://docs.un.org/en/A/AC.294/2023/WP.22.

17 Sarah Erickson and Vivienne Zhang, "Advancing Space Security through Norms, Rules and Principles of Responsible Behaviour?", UNIDIR, June 2023, https://unidir.org/wp-content/uploads/2023/05/UNIDIR_Advancing-space-security-summary.pdf.

18 United Kingdom, "Reaffirming the existing legal regime for space and building on it through new non-binding norms, rules and principles of responsible space behaviour", January 2023, https://docs.un.org/en/A/AC.294/2023/WP.4.

19 United Nations, "Open-ended working group on developments in the field of information and telecommunications in the context of international security: Final Substantive Report", March 2021, https://disarmament.unoda.org/open-ended-working-group/.

3D model of a satellite.

A Results-Oriented and Form-Flexible Approach to PAROS

Given the poor outlook for achieving a space security regime under the traditional PAROS paradigm, marked by competition between two approaches, States should consider new ways of addressing space security. Adopting a results-oriented and form-flexible approach to PAROS could facilitate urgently needed space threat reduction. This approach is the logical consequence of the achievements of the OEWG on Reducing Space Threats, namely a new appreciation of the complementarity of legally binding and voluntary measures, a stronger shared understanding of space threats, and a renewed sense that progress on PAROS is possible.[20]

A results-oriented approach acknowledges that States need not hold out for consensus on either legacy approach to PAROS to work towards their shared goal of a secure space domain. It argues that neither the insistence on one particular treaty nor the rejection of any legally binding instruments can deliver an effective space security regime. Instead, a results-oriented approach prioritises the achievement of concrete, effective measures that contribute to reducing threats in space. At a time when space threats are multiplying fast, any measure that can deliver any amount of threat reduction is welcome progress towards a secure space domain.

20 United Nations, "Open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours: Chairperson's Summary", September 2023, https://documents.un.org/doc/undoc/gen/g23/178/26/pdf/g2317826.pdf.

Under a results-oriented approach, States are encouraged to produce rules, guidelines, policies, and instruments that address specific space threats, unilaterally and with partners. States and groups of States can also develop monitoring mechanisms to support the implementation of their measures.

These threat reduction measures should be based on higher-level principles for TCBMs identified in PAROS processes, such as transparency and verifiability, and can be anchored in the provisions of international space law, such as the principles of due regard and avoiding harmful contamination in the Outer Space Treaty. This would ensure that States can take agile, pragmatic action while remaining in line with and reinforcing existing space law.

This approach is form-flexible in that it does not pre-determine whether States should adopt legally binding or voluntary measures. States may assess that some space threats are more suitable for legally binding and others for voluntary threat reduction measures; they could also design combinations of both, with a legally binding agreement and supporting declarations or memoranda that provide additional interpretive detail. The decision between legally binding and voluntary measures may be shaped by various factors. For example, States may decide that a legally binding commitment against jamming and spoofing of signal transmissions would be difficult to verify and therefore less suitable, or they may find that States have sufficient mutual confidence and means of verification to adopt a legally binding DA-ASAT weapons test ban.

To ensure that individual measures work towards the maximum reduction of identified threats in a focused way, States should adopt these measures as part of threat reduction pathways. They can be vertical sequences of steps that build on each other, with each step entailing a greater level of commitment and assurance, for example, a declaration of norms and principles by a group of States, which guides the development and implementation of a catalogue of threat reduction measures, followed by their codification in a treaty.

However, they could also be horizontal sequences with several steps at the same "level" that, together, achieve significant threat reduction. Taking unauthorised proximity operations as an example, States could adopt operational standards that define under which circumstances proximity operations present a security threat. They could also improve space object registration practices and enhance crisis communication. These three measures address different elements of what can make proximity operations dangerous and significantly reduce this threat. States should develop such pathways collaboratively and could be supported by non-governmental experts in exploring different compositions of measures.

Form-flexible also applies to the actors developing and implementing threat reduction measures, for example, by States in a regional format, using existing governance-making structures as in the African Union, ASEAN, and the European Union. They could also be cross-regional groups of countries with similar space capabilities or shared special interests in space, for example Large Ocean States, which particularly depend on space-based services for communication, navigation, marine resource tracking, and severe weather warning.

Measures could also be developed as public-private partnerships. By including space industry, which drives much of the technological innovation in space today, States can better ensure that the threat reduction measures and instruments they adopt will remain effective for longer. Industry involvement could also boost the ability to provide effective monitoring for adopted measures. At the same time, the adoption of measures by industry, which operate an increasing share of space objects, could support the harmonisation of standards across State and industry actors, in turn, supporting clarity and predictability of operations in space.

While emphasising the agency of States to act flexibly, including outside of UN bodies, multilateral forums on space security continue to serve indispensable functions under a results-oriented approach. There, States discuss high-level principles to guide threat reduction measures, exchange good practices, and discuss developments in technologies and capabilities that affect space security. Indeed, constructive participation in multilateral space forums could itself be considered a measure that can help to assuage some concerns about a State's intentions in space.

Crucially, such forums are where States can explore opportunities for harmonisation between threat reduction measures; they can amend and update them based on implementation experience, so that proven concepts are adopted widely. PAROS bodies could even decide to establish panels of technical experts from participating States who would be tasked to develop operational standards that address discrete space threats.

Standards, policies, and instruments that enjoy the confidence of many States and have effectively contributed to space security could be codified in international law, including in a comprehensive treaty that may combine different sets of standards. Its membership could be expanded over time, as has been the case with all space treaties.

A major focus of a results-oriented approach is the operationalisation of agreed principles and norms and their implementation in national laws and regulations. States have achieved a comprehensive picture of relevant space threats and potential solutions through several PAROS processes, even if consensus has been difficult to achieve. However, as mentioned before, discussions on solutions have mostly stayed at the conceptual level and few if any have been adopted into national regulations. This is also observable in space safety and sustainability. Whereas States have successfully adopted different guidelines, such as the Space Debris Mitigation Guidelines, progress on translating them into national regulations and applying them in space operations has remained limited. This is why the UN Office for Outer Space Affairs (UNOOSA) established the Global Space Law Project in 2025, working with national legislators and regulators to *"draft or revise their national space law and/or policies to be in line with the international normative frameworks"*.[21] Space security efforts must increase their focus on national implementation to yield results.

There may be concern among some stakeholders that the proposed approach could risk losing focus on the prevention of an arms race in outer space through a legally binding instrument. This concern deserves earnest engagement.

First, both a results-oriented approach and the adoption of a PAROS treaty share the ultimate goal of preventing conflict in space, damage to essential space-based services, and the implications for security on Earth. Second, the measures adopted under a results-oriented approach can support the development of a treaty.

Finally, because it emphasises the agency of States, a form-flexible approach does not discourage interested States from making legally binding commitments against placing weapons in space and using force against space objects. Such an agreement could also focus on certain space weapons first, with an option of future agreements covering more or all types of counterspace capabilities, similar to how the ban on nuclear tests was expanded to a comprehensive ban between 1963 and 1996. To be results-oriented, this commitment should be part of a bigger package of measures. This could include instruments to interpret and operationalise the broadly worded commitment against weapons placement and use of force in space.

In evaluating a results-oriented approach against the traditional PAROS paradigm, States should also consider the risk that failure to produce outcomes for space security may reduce the relevance of PAROS processes over time, with States potentially ceasing participation at senior level or divesting political capital. The same risk faces other multilateral processes that have long struggled to find consensus, or to adapt their working methods, such as the NPT review process.[22]

21 UNOOSA, "The Global Space Law Project", 2025, https://www.unoosa.org/oosa/en/ourwork/spacelaw/capacitybuilding/advisory-services/summary-of-the-project.html.

22 Gaukhar Mukhatzhanova, "10th NPT Review Conference: Why It Was Doomed and How It Almost Succeeded", *Arms Control Today*, October 2022, https://www.armscontrol.org/act/2022-10/features/10th-npt-review-conference-why-it-was-doomed-and-how-it-almost-succeeded.

Underlining the need for a results-oriented approach, Madin Maseeh, President of the Maldives Space Research Organisation, stresses the urgency of reducing space threats for Large Ocean States, which depend on space-based services to protect their populations from devastating storms, next to other essential purposes:

"A lot of the discussions around space security […] are very strategic, but for countries like the Maldives the conversation has to become operational soon because the moment we have a disaster or a security issue in space, it is far too late to decide how we react operationally. […] both State and non-State entities can come together to understand what are the operational requirements and what are some scenarios that we can address […]."[23]

Most States engaged on PAROS already take a pragmatic position, supporting the adoption of a space disarmament treaty whenever feasible while promoting other legally binding and voluntary measures to achieve threat reduction, enhance trust, and support the development and implementation of a future treaty. This was illustrated recently in many national statements at the July 2025 session of the OEWG on PAROS in All its Aspects. However, States have yet to draw the necessary conclusion from this position and adopt concrete and effective measures for space threat reduction.

Pressures from Military Developments in Space

The biggest impetus for a results-oriented approach may ultimately come from developments in counterspace capabilities. The space powers – China, India, Russia, and the United States – have demonstrated their ability to destroy satellites with direct-ascent weapons from Earth. Open-source information indicates that China continues to invest heavily into its DA-ASAT programme and may be developing ground-based ASAT laser weapons as well as a kinetic co-orbital weapon.[24] There is strong evidence that Russia may be testing a co-orbital weapon, supported by an in-orbit surveillance or targeting system.[25] The United States has tested technologies that could be developed into a kinetic co-orbital and ground-based laser weapons;[26] it also intends to deploy kinetic interceptors in space as part of the "Golden Dome" missile defence programme, although details on these interceptors are not yet known and experts have voiced concerns about technical feasibility and costs.[27]

Beyond the space powers, France is planning to deploy patrol satellites with kinetic and laser capabilities for the defence of new military surveillance and communications satellites, while Australia, Iran, Israel, Japan, and North Korea are either exploring, developing, or have already used electronic warfare tools to interrupt signals between satellites and ground stations.[28]

These developments show that, without action, the likelihood of escalation in space and the scale of the potential consequences will rise dramatically. With more military actors and objects in space, high-risk interactions may become more frequent. This is made worse by the lack of transparency of some space defence programmes, making it difficult to know the extent of military uses of space, undermining cooperation on PAROS, and increasing the risk for misunderstanding and misinterpretation of space activities.

23 UNIDIR, "OS24 Panel V – Shining a Light on Space Activities – Clarity and Transparency for Peace and Security", September 2024, https://www.youtube.com/watch?v=FLzlyWPhlTw&list=PLEQ2SvONl8gw8wKeh91pwBXsaL3nzRGdu&index=6.

24 Victoria Samson and Laetitia Cesari, "Global Counterspace Capabilities", Secure World Foundation, April 2025, https://drive.google.com/file/d/1FA8aLXiQeAEK1Z8mTpHFIs_c27Ne50qa/view, XXIII.

25 Victoria Samson, "Russian Co-Orbital Anti-Satellite Testing", Secure World Foundation, June 2025, https://cdn.prod.website-files.com/66dcc6872f6ed23bce1db235/684ada4e76e85940ac2d3513_Fact%20Sheet%202025_Russian%20Co-orbital%20Anti-satellite%20Testing.pdf.

26 Victoria Samson and Laetitia Cesari, "Global Counterspace Capabilities", Secure World Foundation, April 2025, https://drive.google.com/file/d/1FA8aLXiQeAEK1Z8mTpHFIs_c27Ne50qa/view, XIX.

27 Frederick Lamb and Laura Grego, "Golden Dome: A Science-based Assessment", July 2025, https://ucs-documents.s3.us-east-1.amazonaws.com/global-security/Golden-Dome-A-Scientific-Assessment.pdf.

28 Victoria Samson and Laetitia Cesari, "Global Counterspace Capabilities", Secure World Foundation, April 2025, https://drive.google.com/file/d/1FA8aLXiQeAEK1Z8mTpHFIs_c27Ne50qa/view.

Given the rapid growth of the global space economy and industries relying on space-based services like GNSS, which are projected to triple in value from $630 billion in 2023 to $1.8 trillion in 2035, the stakes for States' failure to create rules and mechanisms for space threat reduction will rise too.[29]

The fact that several countries are creating strategy and operations departments for space defence, adopting space defence strategies, and are exploring or developing counterspace capabilities also underlines that the responsibility to act on space security no longer falls to the space powers alone. All countries have a legitimate interest and stake in keeping space secure for scientific, commercial, and humanitarian applications.

These findings strengthen the case for a results-oriented approach. They highlight that postponing threat reduction until consensus on either legacy approach to PAROS is achieved leaves unacceptable security risks in space and on Earth unchecked. States must be able to flexibly adopt measures, voluntary and binding, unilaterally and with partners, prioritising impact over format.

A New Framing for Space Security

Space security processes have been framed under PAROS since the 1978 Special Session of the UN General Assembly agreed that further measures were necessary "to prevent an arms race in outer space".[30]

However, this concept does not accurately correspond to today's space domain, which is no longer defined primarily by military uses with modest numbers of State-operated space objects owned by a handful of countries, but by the arrival of new spacefaring nations and the rapid growth of commercial space launches and civil uses for communication and navigation. While only ca. 100-150 objects were being launched into space every year until the 2010s, this number has exploded to nearly 3,000 objects in 2024 alone.[31] Between 1957 and 1990, only 4% of launched objects were commercial,[32] compared to 90% in 2023.[33] These developments have also propelled new challenges with implications for space safety, security, and sustainability to the top of the international agenda. While the content of discussions in PAROS bodies has adapted to this reality by addressing threats arising from a space domain that could not have been envisioned in 1978, the reference point guiding these discussions has remained static.

To better reflect the modern reality of space, States could consider a new framing for space security efforts around "the protection of peaceful uses of space". Not only is this more directly rooted in Articles I to III of the Outer Space Treaty, which codify the principles of free and equal access, international cooperation, non-appropriation, and peaceful use, but it also better reflects the priorities of Global South countries, which represent the majority of space end users on Earth. This new framing focuses more immediately on the ultimate objective of PAROS – ensuring that space is a secure environment for peaceful uses by all countries by reducing tensions and preventing conflict.

29 McKinsey & Company, "Space: The $1.8 trillion opportunity for global economic growth", April 2024, https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/space-the-1-point-8-trillion-dollar-opportunity-for-global-economic-growth#/.

30 United Nations, "Resolution adopted on the Report of the Ad Hoc Committee of the Tenth Special Session", June 1978, https://docs.un.org/en/A/RES/S-10/2, 9.

31 UNOOSA, "Annual number of objects launched into space", 2025, https://ourworldindata.org/grapher/yearly-number-of-objects-launched-into-outer-space.

32 Todd Harrison et al., "The evolution of space as a contested domain", *Spacenews*, September 2017, https://aerospace.csis.org/wp-content/uploads/2018/01/Harrison_SpaceNews.pdf, 30.

33 Satnews, "The Space Report 2023 Q4 published by Space Foundation", January 2024, https://news.satnews.com/2024/01/28/the-space-report-2023-q4-published-by-space-foundation/.

Importantly, "the protection of peaceful uses of space" is not charged with connotations of a legally binding or non-binding approach and does not presuppose that any instrument is more suitable for ensuring the protection of peaceful uses of space than another. "The protection of peaceful uses of space" may even have the potential to open a window of opportunity for cooperation among the space powers towards their shared goal of a secure space environment. It offers a face-saving way for the proponents of each legacy approach to collaborate on practical measures without ceding political ownership of the space security agenda to the other.

Defining Success

Success in PAROS processes is often equated with the adoption of comprehensive outcome documents by consensus. This allows geopolitical tensions and competition between the legacy approaches to determine results, often preventing the adoption or diluting the content of those documents. The same issue affects the review process of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT). It has been proposed, including in a dedicated NPT working group in 2023, to reduce the emphasis on comprehensive outcome documents and use the available time for dialogue on specific issues,[34] instead of negotiating texts that are often broad in scope and thin on detail.

While NPT States Parties have yet to agree on more flexible procedures, the GGE on Further Practical Measures for PAROS (2023-2024) achieved a notable feat by adopting a substantive report that outlined potential elements of a future PAROS treaty without seeking consensus on all parts, treating the document as a repository of ideas. States should favour this practice under a results-oriented approach. A smaller emphasis on consensus outcome documents would reduce the salience of relations between the space powers in PAROS processes and help keep useful substantive proposals on record, even if they were not agreed by consensus. This would also encourage greater flexibility for States to adopt space threat reduction measures based on proposals that enjoyed broad agreement.

States should consider other success indicators for PAROS processes alongside the adoption of outcome documents, such as:

- **Progress towards solutions:** Did the process contribute to broader agreement on discrete items, for example, whether non-aggressive military uses of space are compatible with PAROS? Did the process discuss how to develop instruments for addressing identified space threats, e.g., tasking a panel of national technical experts to develop a protocol for assessing threats posed by proximity operations?
- **Fair representation:** Was there diversity among participating countries in terms of geography, economic development, space-faring and non-space-faring nations, etc.? Were efforts made to broaden participation from underrepresented countries? Were different views on space security represented throughout? Was speaking time distributed fairly, irrespective of delegation size?
- **Expert input:** Did the process allow delegates to benefit from expert input through statements, presentations, and side events relevant to the mandate, such as developments in counterspace capabilities, innovation in on-orbit servicing and active debris removal, or proposals for threat reduction measures?

34 Robert Einhorn, "The 2020 NPT Review Conference: Prepare for Plan B", UNIDIR, February 2020, https://unidir.org/wp-content/uploads/2023/05/The-2020-NPT-Review-Conference-Prepare-for-Plan-B.pdf.

Second substantive session of the Open-Ended Working Group on PAROS in All its Aspects in Geneva.

Further Priorities for PAROS Processes

In addition to the results-oriented and form-flexible approach set out above, States may wish to consider the following further priorities for multilateral processes on space security. Under each priority, the paper identifies one concrete action that States can take towards that priority in the short term.

Better reflect Global South priorities on PAROS: Though Global South countries represent the majority of space end users, the continued focus on two competing approaches has decreased visibility for their interest in protecting the peaceful uses of space and has deterred some countries from fully engaging in PAROS processes. As the OEWG on Reducing Space Threats (2022-2023) showed, reducing the focus on the legacy approaches to PAROS can facilitate substantive contributions from a more diverse range of countries. Greater inclusion of Global South countries and their interests in PAROS processes will become even more important as they launch and expand national space programmes.

Action: States should consider framing PAROS discussions along the priorities of Global South countries. States and NGOs should provide capacity-building for newcomer countries to increase their agency on space security.

Intensify dialogue with industry: Space industry needs clear 'rules of the road' for its conduct in space as well as assurance that space will be a secure environment for peaceful uses long-term. At the same time, industry itself shapes norms and standards for safe, secure, and sustainable space operations, and provides services like SSA and cybersecurity solutions that contribute to that goal.

States should increase dialogue with industry, receiving input on addressing space threats and encouraging industry to define a role for itself in ensuring security in space. Dialogue with industry will also help PAROS processes learn about new technologies that present challenges and/or solutions for space security. A further benefit would be greater transparency and understanding of the growing integration of industry and military actors in space. Lessons on constructive industry engagement can be learned from COPUOS.

Action: States should encourage national and cross-national space industry associations to formulate common positions on ensuring security of operations in space, as done by the Consortium for Execution of Rendezvous and Servicing Operations (CONFERS), and institutionalise substantive exchange with industry in PAROS processes.

Reduce political barriers to learning across space safety, security, and sustainability: The complementarity of space safety, security, and sustainability has often been acknowledged in UN resolutions, COPUOS, and PAROS processes. Indeed, many countries design and implement space law and policy in an integrated fashion.[35] Yet, drawing benefits from that complementarity for PAROS has been hindered by concerns of interfering with the mandates of COPUOS and PAROS bodies.

States should openly discuss the benefits and drawbacks of greater exchange between COPUOS and PAROS bodies, focusing on how such exchange could provide benefits on substance and how political hurdles could be overcome. States should consider which guidelines adopted in COPUOS and the national regulations flowing from them could serve as space threat reduction measures, or contribute to their development. If PAROS bodies were better informed about existing and emerging governance instruments in COPUOS, this would help to prevent duplication of work at no risk of interference with the mandates of COPUOS or PAROS bodies.

Action: Institutionalise updates on developments between COPUOS and PAROS bodies, education on the safety-security-sustainability nexus in Vienna and Geneva, and expert-level consultations on operationalising their complementarity, similar to the UNOOSA Space Bridge.[36]

Close the gap between PAROS and space defence: PAROS processes poorly reflect developments in space defence. Several countries are developing new counterspace capabilities and space defence strategies that anticipate uncertainty and hostility in space, while some defence experts are proposing expanded missions with fewer restrictions for armed forces in space.[37]

PAROS processes cannot adopt effective space threat reduction measures if their discussions do not cover current developments in space defence and the 'state of the art' of counterspace capabilities. Additionally, the disconnect between the language used in PAROS bodies compared to defence circles is concerning. States should adopt positions on space security that are consistent across their engagement on PAROS and space defence. In assessing the peaceful intentions behind behaviours in space, States should consider congruence between policies on PAROS and space defence as an important factor.

Action: States should enhance coordination between space file holders in ministries of foreign affairs and defence to ensure consistent positions. PAROS bodies should receive regular briefings from defence officials and experts about developments in counterspace capabilities and space defence postures.

35 Almudena Azcárate Ortega and Sarah Erickson, "To Space Security and Beyond: Exploring Space Security, Safety, and Sustainability Governance and Implementation Efforts", UNIDIR, 2023, https://unidir.org/publication/to-space-security-and-beyond-exploring-space-security-safety-and-sustainability-governance-and-implementation-efforts-space-dossier-9/.

36 UNIS, "UN Office for Outer Space Affairs launches 'UNOOSA Space Bridge'", 2023, https://unis.unvienna.org/unis/pressrels/2023/unisos591.html.

37 Clayton Swope, "The Future of Military Power is Space Power", CSIS, 2025, https://www.csis.org/analysis/future-military-power-space-power.

Examine the emergence of norms and standards for space security: States and space experts have proposed different norms, standards, and instruments for space security in various reports, national statements, working papers, and publications. To enhance the focus and effectiveness of PAROS processes and prevent duplication of work, States would benefit from an overview of the 'state of play' on norms and standards for space security. By analysing convergence between States on such proposals, research could identify more mature norms that could be translated into tangible measures and codified in legally binding instruments, but also less developed norms that require more dialogue.

Action: States should support the conduct of a 'state of play' assessment on norms and standards for space security, for example, by contributing information on national positions.

Convene technical experts meetings: PAROS processes should convene meetings at technical expert level. Experience from multilateral processes in other areas affected by geopolitical competition, e.g., WMD export controls, shows that groups of technical experts can remain effective at addressing operational issues. An example in space governance is the COPUOS Working Group on the Use of Nuclear Power Sources in Outer Space, which has continued substantive talks and agreed recommendations on further enhancing the Principles Relevant to the Use of Nuclear Power Sources in Outer Space.[38]

Action: The OEWG on PAROS in All its Aspects could task a panel of national technical experts to develop operational standards for space activities that can constitute a threat, such as proximity operations.

Invest in platforms for dialogue and innovation: States should strengthen investment in NGOs that provide thought entrepreneurship and platforms for informal dialogue on space security. If UN processes are slowed or blocked by geopolitics, keeping open other avenues to continue dialogue and policy innovation for PAROS is essential. NGOs play a unique role in this by providing research, organising track-1.5 dialogue, and linking disconnected communities, such as governments and space industry, or space diplomats and defence officials. As some countries prefer talks within the UN, including for capacity and financial reasons, facilitating their full participation in informal meetings is key.

Action: Interested States should fund policy research and track-1.5 dialogue by NGOs to explore the development of concrete measures along threat reduction pathways.

Maintain civil society participation: States should ensure the full participation of non-governmental stakeholders in space security processes in line with UN General Assembly rules.[39] States should continue to include language on civil society participation in the UN resolutions mandating PAROS processes.

Action: All States should encourage domestic non-governmental experts to meaningfully participate in PAROS processes. States can also invite non-governmental experts to join national delegations – a regular practice in many UN forums. Chairpersons should close meetings only if broad consultations with delegations showed support for doing so.

38 UNOOSA, "Working Group on the Use of Nuclear Power Sources in Outer Space", 2025, https://www.unoosa.org/oosa/en/ourwork/copuos/stsc/nps/index.html.

39 Permanent Mission of Switzerland to the United Nations, "The GA Handbook", 2011, https://www.eda.admin.ch/dam/eda/en/documents/publications/InternationaleOrganisationen/Uno/UN-ga-handbook_en.pdf&ved=2ahUKEwjnn9KU356OAxUyLRAIHSAiOt4QFnoECCMQAQ&usg=AOvVaw2a-mHmdGJ0xFyCWhWzf72z, 31.

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