

The importance of non-binding instruments in international space law

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Soft law has an increasing role in shaping the legal sphere and global policy.¹ The European Space Agency and especially the United Nations have adopted guidelines, codes of conduct and principles which, despite being soft law, have a big impact on the conduct of activities in outer space.² In this essay the validity and importance of soft law in outer space will be analysed by focusing soft law in an environmental context and identifying how effective the “Principles on the Use of NPS” and the Space Mitigation Guidelines have been proven to be, to promote sustainable and safe development of space exploration.

What is Soft Law?

For the purposes of this essay, “soft law describes regulations which have the purpose of steering behaviour and conduct of states by creating recommendations and guidelines, which do not have sanctions that can be implemented in case of violations”.³ Soft law is not listed among the traditional sources of international public law in Art 38 ICJ Statute.⁴ This can be seen as a deliberate decision, as the purpose of soft law is to be non-binding.⁵ Besides the five major binding treaties of space law, several soft law instruments have been created to supplement the treaties and focus on creating guidelines for certain activities in outer space.⁶

Importance of Soft Law

Positive Aspects

The main detriment of soft law is its non-binding nature and therefore inability to impose sanctions against violations.⁷ However there are also advantages which may even indicate a preference for soft law instruments in the field of space law. Soft law establishes minimum

¹ Cassandra Steer, “Sources and Law-Making Process Relating to Space Activities” in Ram Jakhu and Dempsey P (ed), *Routledge Handbook of Space Law* (Routledge 2017), 19; Bryan H. Druzin, “Why Does Soft Law Have Any Power Anyway?” (2016), *Asian Journal of International Law*, 361.

² Marcel Brus, “Soft Law in Public International Law: A Pragmatic or a Principled Choice?” in Pauline Westerman and others (eds), *Legal validity and Soft Law* (Springer 2018), 250; Fabio Tronchetti, “Soft Law” in Brünner Christian and Alexander Soucek (eds), *Outer Space in society, politics and law* (Springer-Verlag 2011), 632.

³ Christian Brünner and Georg Königsberger, “Regulatory Impact Assessment” in Marboe I (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 54.

⁴ Steer (n 1) 5; Statute of the International Court of Justice (opened for signature 26 June 1945, entered into force 24 October 1945 (ICJ Statute)).

⁵ Werner Schroeder, “Beschlüsse internationaler Organisationen” in August Reinisch (ed), *Österreichisches Handbuch des Völkerrechts Band I* (Manz 2021), 107.

⁶ Francis Lyall and Paul Larsen, *Space Law: A Treatise* (Routledge 2020), 52.

⁷ Alexander Soucek, “International Law” in Brünner Christian and Alexander Soucek (eds), *Outer Space in society, politics and law* (Springer-Verlag 2011), 311.

standards and/or technical guidelines by experts to ensure safe and sustainable exploration of space. Especially the “Guidelines for the Safe Use of Nuclear Power Sources” and the “Guideline for the Mitigation of Space Debris” are tech-based guidelines, which intend to regulate by imposing safety standards.⁸ They steer away from controversial economic, military or political content, which increases the willingness of states to adhere to them. These principles stay within the scope of the Outer Space Treaty (OST) and therefore do not expand or limit space explorations in the scope of possibilities. Soft law instruments can also aid in the use of hard law treaties by supplementing and updating its contents by defining terminology to create more uniform practice among the states.⁹

There are several grey areas in space law, which is why states are willing to come to these agreements in order to have a guideline to orient themselves and to be able to gauge the behaviour of other states.¹⁰ While states may want to protect their own space technology to reap the benefits of space exploration for themselves, there already is an economical need for cooperation for the advancement of humanity and space technology.¹¹ There needs to be a collaborative effort to maximise innovation for states to mutually benefit from one another. Soft law instruments facilitate international cooperation by allowing space-faring actors to be able to simply refer to them when setting the cooperation conditions so that principles concerning these issues of safety do not have to be negotiated anew.¹² This is especially important as international cooperation is crucial to the advancement of technology and furthering of space exploration.

The strong approval and adherence to the “Space Debris Mitigation Guidelines” demonstrates this, as many states are willing to impose costs and set higher national standards to facilitate cooperation by aligning with international standards.¹³ Soft law can therefore promote international relations through the facilitation of technological cooperation. The building of cooperation, a good rapport and communication among states will also become more important in the future, once more controversial issues such as the distribution and mining of space resources become prevalent.¹⁴

Compliance can also be encouraged by creating a system of conferences for states to update each other on progress, but also to control reciprocal commitment.¹⁵ The outcome of these

⁸ Lyall/Larsen (n 6) 52.

⁹ Schroeder (n 5) 125; Lotta Viikari, *The Environmental Element in Space Law: Assessing the Present and Charting the Future* (Martinus Nijhoff Publishers 2008), 243.

¹⁰ Lyall/Larsen (n 6) 51.

¹¹ Viikari (n 9) 26.

¹² Marco Ferrazzani, “Soft Law in Space Activities - An Updated View,” in Marboe I (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 103; Viikari (n 9) 242.

¹³ Druzin (n1) 366; Viikari (n 9) 114.

¹⁴ Jean-François Mayence, “The European Union's Initiative for a Code of Conduct on Space Activities” in Irmgard Marboe (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 358.

¹⁵ Daniel Thürer, *Völkerrecht Als Fortschritt Und Chance = Grundidee Gerechtigkeit, Band 2* (Dike 2009), 166.

conferences have no legal meaning, however monitoring compliance encourages the states to follow guidelines to avoid scrutiny.¹⁶ These conferences can promote the adherence of the norms by creating a forum for exchange of information and scientific developments.¹⁷ Less developed states might also benefit from the technical and legal expertise exchanged in these forums.

Refusing to adhere to important safety guidelines may display recklessness and irresponsibility of the state violating these norms.¹⁸ They are therefore considered an unreliable partner, which deters other states from continuing cooperation.¹⁹ One might undermine trust and damage relations to other states and influence foreign policy beyond the field of space law.²⁰ There are no hard law sanctions that can be imposed, but the threat of this disadvantage could be enough to force compliance with soft law. In 2007 China destroyed its Feng Yun 1-C satellite causing thousands of pieces of debris.²¹ Due to the space debris mitigation guideline being simply a soft law document, states have scrutinised this reckless behaviour although there were no sanctions they could impose. To impose sanctions, one must also establish a supervisory authority, a procedural system and a competent court, which would require a lot of negotiations to reach consent and cause high costs.²²

Not only international relations can be affected by violations, as these guidelines often indicate the appropriate and necessary conduct to be acting *bona fides*.²³ A violation of soft law principles can be seen as negligence indicating fault that in turn triggers international responsibility.²⁴ Art VII of the OST articulates that states are “*internationally liable for damage to another State Party*” and read together with Art III OST states “*shall be liable only if the damage is due to its fault*”.²⁵ This expresses a liability of states for damage which has not been caused on Earth, only then when fault has been established.²⁶ Therefore these soft law guidelines may help identify what experts and the international community deem as the

¹⁶ Viikari (n 9) 245.

¹⁷ Henry Hertzfeld and Raymond Jones, “International Aspects of Technology Controls” in Brünner Christian and Alexander Soucek (eds), *Outer Space in society, politics and law* (Springer-Verlag 2011), 647.

¹⁸ Viikari (n 9) 243.

¹⁹ Ferrazzani (n 12) 102.

²⁰ Steer (n 1) 20.

²¹ Lyall/Larsen (n 6) 305; Kai-Uwe Schrogl, “Space and Its Sustainable Uses” in Brünner Christian and Alexander Soucek (eds), *Outer Space in society, politics and law* (Springer-Verlag 2011), 606.

²² Lyall/Larsen (n 6) 308.

²³ Bin Cheng, “United Nations Resolutions on Outer Space: Instant International Customary Law?” *Studies in International Space Law* (Clarendon Press 1997), 144.

²⁴ Viikari (n 9) 245.

²⁵ Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (opened for signature 27 January 1967, entered into force 10 October 1967) 610 UNTS 205 (OST).

²⁶ JM Hutagalung and others, “Space Debris as Environmental Threat and the Requirement of Indonesia’s Prevention Regulation” (2020) 456 IOP Conference Series: Earth and Environmental Science, 5.

required good practice.²⁷ In the event that conduct deviates from these guidelines, a state may be held liable for the damage which has occurred due to this negligence.²⁸ At the very least these guidelines demonstrate in which areas caution is to be advised.²⁹

States have to authorise and supervise space activities of private entities engaging in space exploration.³⁰ To prevent liability of states, many states like the USA and Japan require a licence for private operators wanting to engage in space activities.³¹ To acquire this licence, private actors often must take out an insurance so that potential damage can be covered by the insurance.³² In Austria §4 Abs 4 Weltraumgesetz requires private actors wanting to obtain a licence to take out an insurance with a minimum of 60.000.000 EUR to cover damages. If states, choose to ignore these soft law principles in the event of an accident this results in monetary loss through restitution of damages and having to bear the costs of international dispute settlement.³³

Soft law therefore gives a certain level of security and predictability, while also not forcibly binding the states to every principle.³⁴ This may be important for states as they will be hesitant to consent to principles which might limit their abilities in the future.³⁵ Soft law manages to balance security with the freedom to choose to adhere to principles which align with national interests. States may also be hesitant because there still is a lot of uncertainty over future developments in the field of space law and the problems needing to be addressed.³⁶ The likelihood of states agreeing on restrictive provisions is much higher if they are non-binding.³⁷

Changes in justice, technology and environment can be catered to more easily, increasing the adaptability and thus the practicability due. This is especially important for tech-based guidelines as they can be easily updated to cater to new scientific developments and correspond

²⁷ Gefion Schulner, "Effective Governance through Decentralised Soft Implementation: The OECD Guidelines of Multinational Enterprises" in Armin von Bogdandy and others (eds), *The exercise of Public Authority by international institutions* (Springer 2010), 57.

²⁸ Irmgard Marboe, "National Space Legislation" in Brünner Christian and Alexander Soucek (eds), *Outer Space in society, politics and law* (Springer-Verlag 2011), 443; Stephan Hobe, *Space Law* (Hart Publishing 2020), 66.

²⁹ Viikari (n 9) 245.

³⁰ Lyall/Larsen (n 6) 84; Marboe (n 28) 102.

³¹ Jinyuan Su, "Control over Activities Harmful to the Environment" in Ram Jakhu J and Dempsey P (ed), *Routledge Handbook of Space Law* (Routledge 2017), 77.

³² Marboe (n 28) 445.

³³ Gerhard Hafner, "The Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States" in Irmgard Marboe (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 29.

³⁴ Steer (n 1) 19.

³⁵ Steven Freeland, "The Role of Soft Law in Public International Law and Its Relevance to the International Regulation of Outer Space," in Marboe I *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 29; Francis von der Dunk, "Customary International Law and Outer Space" in Brian Lepard (ed), *Re-examining customary international law* (Cambridge University Press 2018), 359.

³⁶ Viikari (n 9) 241.

³⁷ Tronchetti (n 2) 621.

to the current needs of space-faring nations.³⁸ Due to the high level of uncertainty over future developments, scientific complexity and the shift from state to private actors, there needs to be a certain flexibility to adapt to the different concerns of the various parties, while still having an authoritative framework to rely on.³⁹

Soft law may also serve as a “test run” for regulations. The practicability of these rules can be observed and could be adopted into a treaty if proven successful and accepted by the international community. This “trial run” would also increase the willingness of states to be bound as they can assess whether they can feasibly implement the regulations. Also in the field of environmental law, General Assembly (GA) resolutions have contributed to the establishment of soft law documents by establishing the 1979 resolution on the preservation of nature.⁴⁰ This document influenced the Brundtland report and the Rio Declaration.⁴¹ These soft law guidelines can be used as a model and pave the way for the formation of hard law treaties.⁴² Many of the principles outlined in these instruments have the advantage of familiarity as they are already based on actions being currently practised by many states, albeit not to a level that would constitute customary international law (CIL).⁴³ In environmental law the “Goals and Principles of Environmental Impact Assessment” prepared for the binding “UN ECE Convention on Environmental Impact Assessment” in the way as the “Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer” paved the way for the OST.⁴⁴

There are also views which attribute more weight and authority to a unanimous soft law instrument from such a highly esteemed organisation.⁴⁵ GA resolutions are non-binding, however they are highly influential as this unanimity of votes demonstrates how widely accepted these rules are by the international community.⁴⁶ The Universal Declaration of Human Rights (UDHR), while being largely aspirational nevertheless contributed to our perception of human rights. The UDHR has value as *lex ferenda*, showing how states would like the law to develop.⁴⁷

³⁸ Larry F. Martinez, “Legal Regime Sustainability in Outer Space: Theory and Practice” (2019) 2 *Global Sustainability*, 3.

³⁹ Thürer (n 15) 162; Marboe (n 28) 439; Alan Boyle, “Soft Law in International Law-Making” in Malcolm D Evans (ed), *International law* (Oxford University Press 2018), 214.

⁴⁰ Jürgen Friedrich, *International Environmental "Soft Law."* (Springer-Verlag Berlin 2016), 46.

⁴¹ Friedrich (n 40) 46.

⁴² *Ibid* 157.

⁴³ Ferrazzani (n 12) 105.

⁴⁴ Friedrich (n 40) 8; Hertzfeld/Jones (n 17) 645.

⁴⁵ Wolfgang Heusel, *"Weiches" Völkerrecht: Eine Vergleichende Untersuchung Typischer Erscheinungsformen* (Nomos 1991), 23.

⁴⁶ Daniel Porras, “The United Nations Principles Relevant to the Use of Nuclear Power Sources in Outer Space” in Irmgard Marboe (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 208.

⁴⁷ Stephan Hobe, “Space law – an analysis of its development and its future” in Brünner Christian and Alexander Soucek (eds), *Outer Space in society, politics and law* (Springer-Verlag 2011), 484.

It created a standard for human rights that states were encouraged to adhere to.⁴⁸ It also influenced public opinion by creating an instrument of moral authority in the international community as seen from violations of the South African government during apartheid.⁴⁹ The highest form of soft law therefore are UN GA resolutions, declaring basic principles, which have enough consent and authority to be adhered to in practice.⁵⁰ Nevertheless an acceptance by all states still does not change the non-binding character of the document, as voting behaviour of states does not automatically constitute state practice for the establishment of CIL.⁵¹ Even if all states agree on these principles, they do not agree to be legally bound to them.⁵²

Soft law instruments such as the “Space Debris Mitigation Guidelines”, while not as significant, fulfil a similar set of criteria as they identify the problems, declare basic principles aiming to improve the issue and have reached enough practice by the international community.⁵³ As an example, Guideline 1 of the Space Debris Mitigation Guideline states that there is “*recognition of the threat posed by such objects*” thus acknowledging the problem of space debris, then offers a guideline to resolve this issue “*systems should be designed not to release debris during normal operation*”.⁵⁴ States such as France, Japan, US, the UK and other space-faring nations have adopted these guidelines into their national space legislations and perform a somewhat uniform practice according to these guidelines.⁵⁵

Soft law instruments avoid the political problems of having to involve the national government in signing and ratifying the treaty.⁵⁶ Politics can interfere with the objective of the treaty and make politically charged topics difficult to negotiate. Agreeing on a hard law treaty which all the parties are bound to is significantly harder than on a soft law instrument which imposes.⁵⁷ Also it takes exceedingly more time and resources to negotiate a hard law treaty which results in significantly more costs.⁵⁸ As soft law instruments can be developed quickly, they can be applied immediately, which is an advantage compared to the time consuming process of

⁴⁸ Ulrike Bohlmann, “Legal Aspects of the ‘Space Exploration Initiatives’” in Benkö Marietta and others (eds), *Space law current problems and perspectives for future regulation* (Eleven International Publishing 2005), 240.

⁴⁹ Freeland (n 35) 22; Gary Sugarman “Universal Declaration of Human Rights and the Policy of Apartheid in the Republic of South Africa,” *Journal of Legislation*: Vol. 17: Iss. 1, Article 5. (1991).

⁵⁰ Schroeder (n 5) 126.

⁵¹ Boyle (n 39) 214.

⁵² Tronchetti (n 2) 621.

⁵³ Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, UNGA Res 1962 (XVIII) (13 Dec 1963) UN Doc A/AC.105/572/Rev 1.

⁵⁴ Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space, UNGA Res (22 Dec 2007) UN Doc A/RES/62/217.

⁵⁵ Frans von der Dunk, “Contradictio in Terminis or Realpolitik?” in Irmgard Marboe (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012) 54.

⁵⁶ Boyle (n 39) 214.

⁵⁷ Hobe (n 47) 439.

⁵⁸ Ingo Baumann, “Diversification of Space Law” in Benkö Marietta and others (eds), *Space law current problems and perspectives for future regulation* (Eleven International Publishing 2005), 48.

ratification.⁵⁹ This can be very useful to find solutions for urgent matters, like the mitigation of space debris.

Negative Aspects

However these non-binding instruments have been criticised for lack of specificity and being confusing in terms of who adheres to which principles.⁶⁰ Consistency is key, as confusion may be caused by disparate standards promulgated by different instruments.⁶¹ A drawback of soft law is also the lack of a secondary enforcement mechanism which identifies violations and can elaborate principles.⁶² This is problematic as soft law instruments often avoid definitions and have vague guidelines and aspirational goals instead of clear measures.⁶³ While this allows states enough freedom to choose the methods of achieving these goals, there may be a difference in interpretation and practice.⁶⁴ Thus clarity and precision of the text are of the utmost importance to guarantee uniform application of the norm.⁶⁵

A downside of the flexibility of soft law is that in times of upheaval in the future it may lose predictability and cause instability.⁶⁶ There are no sanctions, and it is up to the space-faring nations to follow the guidelines. Therefore, it can be concluded that soft law is adequately adhered to in times of peace, however so far there have not been any major conflicts between the leading actors in space activities and one cannot attest to how these guidelines will be adhered to in tempestuous times.⁶⁷ For example, Principle 5 of the “Principles for the use of NPS” relies on international cooperation to notify other states of an accident.⁶⁸ If international relations are strained due to a conflict, there are no guarantees that any non-binding instrument will be adhered to.⁶⁹ So far, a situation of this sort has not arisen as these principles are seldom invoked.⁷⁰

Another criticism is that these soft instruments are drafted to be politically and economically neutral. Therefore, consent can only be adopted to the lowest possible common denominator, which waters down the provisions and meaning of the document so it can be accepted by all states.⁷¹

⁵⁹ Viikari (n 9) 241; Hertzfeld/Jones (n 17) 641.

⁶⁰ von der Dunk (n 55) 34.

⁶¹ Viikari (n 9) 248; Marboe (n 28) 439.

⁶² Brünner/Königsberger (n 3) 94.

⁶³ Friedrich (n 40) 114.

⁶⁴ Lyall/Larsen (n 6) 51; Bohlmann, (n 48) 240.

⁶⁵ Thürer (n 15) 162; Bryan (n 1) 36.

⁶⁶ von der Dunk (n 55) 47; Heusel (n 45) 284.

⁶⁷ Lyall/Larsen (n 6) 49.

⁶⁸ Principles Relevant to the Use of Nuclear Power Sources in Outer Space, UNGA Res (14 December 1992) UN Doc A/ RES 47/68 (NPS Principles).

⁶⁹ NPS Principles (1992).

⁷⁰ Porras (n 46) 232.

⁷¹ Porras (n 46) 223.

Nevertheless, soft law instruments can be drafted in a similar form of complexity and completeness as binding treaties.⁷²

Having too high standards could be inefficient as some space-faring states have sufficient budgets to adhere to the highest possible technical requirements, whereas some nations have fewer financial means and nevertheless have started or are intending to start space exploration programs. These states would be therefore excluded and might be disadvantaged from taking part in international cooperation schemes. However, more affluent states, which have adequate financial means should still be encouraged to strive for a higher standard than the minimum mandated. The fact that these guidelines and principles only address the minimum standard should be testament to their importance as many soft law instruments such as the “Principles on NPS” were created with the guidance of experts in the field.

Need for Hard Law

While there is a plethora of soft law documents, the question of whether they suffice persists. Space activities have received increasing attention from emerging countries, due to the affordability of new technologies, encouraging them to start space exploration initiatives. There also have been increasing investments from the private sector, which aim to commercialise space activities (e.g.: suborbital flights).⁷³ The increase of actors and thus diverging interests from states, investors and experts have caused a rift about the use of space technology and resources.⁷⁴ While the sufficiently ratified UN treaties on outer space outline the main principles, they were adopted in the 1960-70s and are not equipped to deal with emerging issues fuelled by rapid technological developments. There are significant sectors and issues in space law which have therefore been left unregulated by binding treaties.

There is a need for codified hard law, however many scholars believe that the adoption of another treaty is currently unrealistic.⁷⁵ The last of the UN treaties from the golden age of space law, namely the Moon Agreement, is often considered a failure.⁷⁶ This treaty has few ratifications, furthermore none of these states are major players in the field of space law which denotes this treaty to have insignificant impact on the development of space law.⁷⁷ Soft law

⁷² Viikari (n 9) 114.

⁷³ Steer (n 1) 19; Ulrike Bohlmann and Gina Petrovici, “Developing Planetary Sustainability: Legal Challenges of Space 4.0” (2019) 2 *Global Sustainability*, 5.

⁷⁴ Anja Nakarada Pecujlic, “European Space Policy Institutes’ Comprehensive Analysis on Adopting new Binding International Norms regarding space activities” in *Recent Developments in Space Law: Opportunities and Challenges*, 144; Franz Xaver Perrez, “The Role of the United Nations Environment Assembly in Emerging Issues of International Environmental Law” (2020), 4.

⁷⁵ Hobe (n 28) 44.

⁷⁶ Marboe (n 28) 439; Von der Dunk (n 35) 356; Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, (opened for signature 19 December 1979, entered into force 11 July 1984) 1363 U.N.T.S. 22. (Moon Agreement).

⁷⁷ Moon Agreement (1979).

therefore has the task to bridge this gap of unregulated grey area, by creating a legal instrument which can still guide behaviour.

There is an established practice of these soft law norms as most states already adhere to these norms.⁷⁸ While soft law is crucial for the regulation of space activities and is sufficient and sometimes more efficient than a hard law treaty, it would be commendable if these soft law instruments would be laid down as hard law. States should be encouraged to incorporate the guidelines that they already follow into national hard law.⁷⁹ This means one would not have to debate whether a custom has transitioned into CIL and concretize the guidelines with more definite language and comprehensive norms.

Soft Law Adopted into National Legislation

The responsibility of states acts as an incentive to implement national space laws which impose requirements on private actors pursuing space exploration. Soft law instruments show what measures can and should be taken by the government and act as a guide when developing national space law.⁸⁰

It can be argued that the Guideline on the Mitigation of Space Debris is slowly becoming CIL. Many states have created hard law based on these provisions, an example of this is the USA's 1995 "Guidelines and Assessment Procedures for Limiting Orbital Debris" and ESA's European Code of Conduct for Space Debris Mitigation.⁸¹ In Austria this is regulated in §5 Weltraumgesetz, which requires space operators to take precautions to reduce space debris. This demonstrates a willingness to adopt soft law guidelines. Soft law may therefore aid harmonisation of national space legislations and help develop a new international standard.⁸²

With the increase in private actors, harmonisation of national law is important to avoid the "flag of convenience" problem. With disparate standards concerning safety and environment, private companies will want to choose to conduct their business in states with lenient regulations to avoid costs.⁸³ This might lead governments to lower their standards to attract foreign investors, while risking damage to the environment for profits.⁸⁴ By having to adhere to a minimum standard this creates a level playing field for all states to compete in and secures a safe and sustainable development of space exploration. However, others argue that these regulations might constitute an encroachment on the freedom of investment and overregulation which might lead to a lack of incentive to invest.⁸⁵

⁷⁸ Brünner/Königsberger (n 3) 54; Brus (n 2) 250.

⁷⁹ Von der Dunk (n 35) 359.

⁸⁰ Friedrich (n 40) 110.

⁸¹ Su (n 31) 78; Viikari (n 9) 105-110.

⁸² Thürer (n 15) 177.

⁸³ Friedrich (n 40) 104.

⁸⁴ Pecujlic (n 74) 143.

⁸⁵ Friedrich (n 40) 106.

Soft Law in Environmental Law

Space law and environmental law are closely interlinked.⁸⁶ Space exploration causes a pollution of the orbit through space debris, emissions when launching space objects and in case of a crash of an object with NPS there is danger of radioactive contamination.⁸⁷ Soft law instruments of space law therefore have an environmental context which needs to be considered.

In environmental law, soft law has a significant impact. The Rio Declaration and the Stockholm Declaration are both important non-binding instruments which have laid down crucial principles for environmental protection.⁸⁸ These principles first established in soft law documents have found their way into international hard law treaties. However there still is a lack of consequent enforcement of hard law, which is why the norms still heavily rely on the responsibility of each state to adhere with the provisions set forth in the treaties.⁸⁹ One could argue that for the field of space law, soft law instruments can suffice if there is ample compliance.

Many states refused to be bound to a hard law treaty concerning the protection of forests, which is why voluntary certification schemes like the Forest Stewardship Council (FSC) were introduced.⁹⁰ Voluntary certification schemes may be implemented to regulate various issues of space exploration.⁹¹ Especially with the emergence of commercial space activities, these certifications as soft law instruments can be used to steer consumer behaviour and incentivize companies to adhere to stricter safety measures.⁹² Consumers therefore can use their spending power as a tool to selectively support those companies whose ethics align with theirs. These certifications are valuable not only as a steering mechanism for consumer behaviour, but also between states as these might certify an exceptional code of conduct.

Space exploration has only started getting traction for the past few decades and many practises are just being established. This can give states the opportunity to establish sustainable measures from the start, which may be easier than having to change established patterns of behaviours and mindsets. By creating guidelines, sustainable practises can be introduced from the get-go. Especially for newer actors creating space programs it might be cost efficient to start building

⁸⁶ Lyall/Larsen (n 6) 276.

⁸⁷ Viikari (n 9) 29.

⁸⁸ Gerhard Loibl, "Internationales Umweltrecht" in August Reinisch (ed), *Österreichisches Handbuch des Völkerrechts Band I* (Manz 2021), 550; Freeland (n 35) 21.

⁸⁹ Bohlmann (n 48) 240; Sylvia Karlsson, "J. J. Kirton and M. J. Trebilcock 2004, Hard Choices, Soft Law" (2008) *International Environmental Agreements*, 415.

⁹⁰ Karlsson (n 89) 414.

⁹¹ Viikari (n 9) 249.

⁹² Maurice Lineman and others, "Talking about Climate Change and Global Warming" (2015); "Mastercard-Studie: 86 % Der Österreicherinnen möchten Maßnahmen zum Schutz der Umwelt setzen" (Mastercard USA); <https://www.mastercard.com/news/europe/de-at/newsroom/pressemitteilungen/de-at/2021/april/priceless-planet-coalition/>> accessed February 8, 2022.

up the programs with a sustainable mindset, which comply with soft law guidelines. This can attract investors looking for sustainable options and encourage other states to cooperate with them.⁹³

States with older space programs must first switch from their previously established systems, which is why newer space programs might therefore have an advantage to be able to compete in the field. Yet additional safety regulations also raise costs of the program in general, which is why having a new high standard might exclude developing states from participating together with the international community.⁹⁴ Unfortunately these long-term advantages might not be enough for some businesses to justify the costs, as commercial space exploration is an unpredictable venture with no security of the long-term outcome.⁹⁵

Customary International Law

Principles of soft law can be important as an indicator of emerging CIL or even become hard law with state practice.⁹⁶ The ICJ used a GA resolution in the judgement of the Nicaragua Case, which in its verdict used the term “aggression” as defined in a non-binding GA resolution.⁹⁷ In environmental law, the Stockholm and Rio Declaration furthered the development of customary environmental law.⁹⁸ According to Art III OST when conducting space activities international law has to be considered.⁹⁹ Therefore environmental customary law like Principle 21 of the Stockholm declaration is applicable to space exploration.¹⁰⁰ Principle 21 declares that states have the “*responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction*”.¹⁰¹ As outer space is *res communis omnium*, it is recognized that beyond their territorial sovereignty, states have the customary law obligation to avoid harm to the orbital environment.¹⁰² The applicability of this principle as CIL was evidenced in the ICJ Gabcikovo-Nagymaros Case.¹⁰³

Many provisions of the OST have become customary international law.¹⁰⁴ The question arises

⁹³ Pecujlic (n 74) 144.

⁹⁴ Schrogl (n 21) 606.

⁹⁵ Ibid.

⁹⁶ Schroeder (n 5) 108; Steer (n 1) 20.

⁹⁷ Friedrich (n 40) 149; Jean-Marie Henckaerts, “Study on Customary International Humanitarian Law” (2005) 87 International Review of the Red Cross, 183; Nicaragua Case (USA v Nicaragua) (Merits) [1986] ICJ.

⁹⁸ Friedrich (n 40) 147.

⁹⁹ Soucek (n 7) 382; von der Dunk (n 35) 354; OST (1967).

¹⁰⁰ Friedrich (n 40) 147.

¹⁰¹ United Nations Conference on the Human Environment, UNGA Res 1972 (XXIV) (15 December 1972) UN Doc A/RES/2994.

¹⁰² Su (n 31) 75.

¹⁰³ Hobe (n 28) 33; Bohlmann (n 48) 240; Gabcikovo-Nagymaros Case (Hungary v Slovenia) [1997] ICJ.

¹⁰⁴ Steer (n 1) 8.

whether soft law instruments adopted as GA resolutions have value as hard law in the form CIL. To become CIL soft law needs *opinio juris* and state practice as established by the North Sea Continental Shelf case.¹⁰⁵ The main actors engaging in such activities used to be states, wherefore the identification of state practice was easy. Through consistent state practice provisions of the OST have become CIL. However nowadays an overwhelming amount of space activities are conducted by private actors. According to Freeland this behaviour does not constitute state practice.¹⁰⁶ However, according to Art VI OST “*states parties to the Treaty shall bear international responsibility for national activities in outer space, (...) whether such activities are carried on by governmental agencies or by non-governmental entities*”, therefore indirectly mentioning that the actions of private actors are accountable to states.¹⁰⁷ States have international responsibility over the conduct of space activities and the actions of non-state actors may inadvertently reflect on the behaviour of the responsible state.

Consistent behaviour of states following these guidelines in all their space activities whenever possible constitutes *opinio juris* and confirm that there is a subjective conviction to conform behaviour.¹⁰⁸ The NPS Principles, except Principle 4 are not to be considered customary law, due to the lack of state practice.¹⁰⁹ The “Space Debris Mitigation Guidelines” may be considered *opinio iuris*, since there is a high level of practice.¹¹⁰ Some scholars argue that *opinio juris* can be established in a quick time frame when there is uniform consent of states to a GA resolution (“instant customary law”).¹¹¹ However most scholars are of the conviction that it cannot be established, as space activities are a new phenomenon, so this does not effectively display the opinion and practice of the international community.¹¹² Scholars nevertheless agree that soft law agreed upon by international cooperation with high rates of consent and uniform practice can form customary law over time.¹¹³ Pre-existing CIL can also be “codified” and made easily accessible and more practicable with improved precision by being collected into soft law documents.¹¹⁴

Mitigation of Space Debris

The Inter-Agency Space Debris Coordination Committee agreed to reduce the amount of space

¹⁰⁵ Bruno Simma, “Das Völkergewohnheitsrecht” in August Reinisch (ed), Österreichisches Handbuch des Völkerrechts Band I (Manz 2021), 43; North Sea Continental Case (Germany v Denmark; Germany v Netherlands) (Merits) [1969] ICJ.

¹⁰⁶ Freeland (n 35) 27.

¹⁰⁷ OST (1967).

¹⁰⁸ Von der Dunk (n 35) 370; Ferrazzani (n 12) 105.

¹⁰⁹ Hobe (n 28) 110.

¹¹⁰ Ferrazzani (n 12) 115.

¹¹¹ Brian Lepard, “The Legal Status of the 1996 Declaration on Space Benefits” in Irmgard Marboe (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 292; Cheng (n 23) 135.

¹¹² Ibid 292.

¹¹³ Steven Freeland, “The Crystallisation of General Assembly Space Declarations into Customary International Law” 54th International Astronautical Congress of the International Astronautical Federation (2003), 122.

¹¹⁴ Ibid 111.

debris by setting guiding principles, which were validated by the UN GA. Whilst being non-binding, the importance of this document should not be underestimated, as an overwhelming number of states follow the principles dictated.¹¹⁵ While these guidelines cannot improve existing space objects, they can help mitigate the effects for future space objects. In particular non-maneuvrable objects and small fractured pieces are dangerous as unpredicted collisions may occur and have grave consequences.¹¹⁶ It is important to create guidelines to avoid collisions, damage and severe problems to public life.¹¹⁷ Especially with an increase of various actors engaging in space activities there is a definitive need for states to regulate this issue.¹¹⁸ This is vital from an economic and environmental perspective, as space resources should be for the “*benefit and interest of all countries*” according to Art I OST.¹¹⁹ In accordance with Art IX OST states must also “*conduct all their activities in outer space (...) with due regard to the corresponding interests of all other States Parties to the Treaty*”.¹²⁰ These OST Principles are rather imprecise and while the Moon Agreement contains precise guidelines (specifically Article 7), it is insignificant in practice due to the low count of ratifications.¹²¹ Developing countries starting space exploration now might be heavily disadvantaged due to lack of orbital space, which is being polluted by developed countries.¹²² The major space-faring nations therefore have the obligation to mitigate harmful damages. The voluntary debris mitigation guidelines therefore help concretize this.

It is crucial that this urgent matter is effectively addressed. While these are soft law measures, space faring-nations aspire to adhere to them to the greatest possible extent due to the importance of the guidelines and the grave consequences which may occur if not complied with.¹²³ All states have to cooperate to resolve this issue, not only out of respect for one another, but as a self-serving measure to be able to continue to conduct activities in space and secure reciprocity of following the guidelines.¹²⁴

Principles for the Use of NPS

The Cosmos 964 crash inspired the creation of the soft law document on the principles of the safe use of nuclear power sources.¹²⁵ As a tech-based soft law instrument, its content is highly technical and includes expert recommendations by the Commission on Radiological Protection to promote a safe use of NPS technology.¹²⁶

¹¹⁵ Soucek (n 7) 360.

¹¹⁶ Hobe (n 28) 113.

¹¹⁷ Hutagalung (n 26) 3.

¹¹⁸ Von der Dunk (n 35) 347.

¹¹⁹ Su (n 31) 73.

¹²⁰ Hobe (n 28) 108; OST (1967).

¹²¹ Ibid 90; Moon Agreement (1979).

¹²² Lyall/Larsen (n 6) 322.

¹²³ Lyall/Larsen (n 6) 49.

¹²⁴ Perrez (n 74) 3.

¹²⁵ Su (n 31) 86.

¹²⁶ Setsuko Aoki, “The Function of Soft Law in the Development of International Space Law” in Irmgard Marboe (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 74.

States shall use these soft law instruments to have a point of reference for their behaviour and to use these guides as orientation for *bona fides* behaviour, which is important in accessing fault for liability.¹²⁷ However for accidents involving radioactive contamination of the environment and other damage on earth by an NPS, the state conducting space activities is “*absolutely liable to pay compensation for damage caused by its space object on the surface of the earth*” according to Art II of the Liability Convention.¹²⁸ Hence, the assessment of fault is only of subordinate importance for this guideline.¹²⁹ However these practises can assure other states that NPS is being used responsibly which facilitates international cooperation. These guidelines help improve safety standards of NPS by improving the design of the objects to restrict radiation impact in the event of a crash (Principle 3 para 1 lit b) and require them to take precautionary measures such as a comprehensive safety assessment (Principle 4).¹³⁰ The guidelines act as precautionary measures to prevent the accident from happening in the first place. The principles of environmental law are applicable to space law, so states have the duty to avoid transboundary harm. The “Principles on the Use of NPS” can therefore outline how states can honour that obligation by avoiding nuclear contamination.¹³¹ It also improves international cooperation by encouraging states to work together and notify each other of any risk of an accident, so that states may have sufficient time to prepare for the incident (Principle 5 para 1 and 2).¹³²

The “Principles on the Use of NPS” as soft law are important for governmental relations but also to keep up the good public perception of the safety of space objects which contain radioactive material.¹³³ After nuclear catastrophes like Fukushima, the public has become wary of nuclear power and according to a survey done in 2011, three in five people oppose the use of nuclear energy.¹³⁴ There have to be strict standards to avoid any nuclear contamination which might damage not only the environment, but also the public's perception of space activities.¹³⁵

Conclusion

While it is disputed whether soft law constitutes as binding law through customary law or as guidelines needing adoption into hard law, there is agreement that soft law plays an important role in the field of space law. The lack of regulation and the increase in space activities without a doubt have elevated soft law instruments to important rules for space exploration. While

¹²⁷ Boyle (n 39) 214.

¹²⁸ Convention on International Liability for Damage Caused by Space Objects, (opened for signature 29 March 1972, entered into force 1 September 1972) 672 U.N.T.S. 119.

¹²⁹ Bohlmann/Petrovici (n 73) 4.

¹³⁰ Su (n 31) 87; NPS Principles (1992).

¹³¹ Su (n 31) 86.

¹³² NPS Principles (1992).

¹³³ Viikari (n 9) 85.

¹³⁴ Patrick Hartmann and others, “Nuclear Power Threats, Public Opposition and Green Electricity Adoption: Effects of Threat Belief Appraisal and Fear Arousal” (2013).

¹³⁵ Leopold Summerer and Ulrike Bohlmann, “The STSC/IAEA Safety Framework for Space Nuclear Power Source Applications” in Irmgard Marboe (ed), *Soft law in Outer Space: The function of non-binding norms in International Space Law* (Böhlau Verlag 2012), 264.

many believe that soft law may only suffice as a temporary solution to fill a gap of hard law, there is a lot of value in soft law beyond its transitional value.

It is an essential tool for space policy and in technical and environmental aspects, it even may be preferable over hard law treaties. For soft law instruments to be effective, they need to be adopted by an organisation with authority and high levels of consent, so that there will be a political commitment to implement and update the measures to accustom them to new situations and technologies. Political and economic influences should be avoided, and documents created by technical experts, which at their heart are committed to sustainable and safe space exploration.

States should re-evaluate what issues may arise in the next few decades, such as environmental regulations and space traffic management systems, and pre-emptively create soft law instruments to create guidelines for required behaviour.¹³⁶ One should avoid the problems before they surface, instead of focusing on mitigating issues like space debris, after they have already become a problem.¹³⁷

As established in this essay, the environmental degradation of outer space will become an important topic in lieu of the dawn of space commercialization. States should prioritise efficient management of global commons and securing sustainable development and recognize the right of developing states to be able to participate in space exploration.¹³⁸ While soft law is overall effective, there needs to be a stronger engagement through concrete measures as in the Kyoto Convention or the commitment of states to instate harmonised national legislations.¹³⁹

(Word count: 6990)

¹³⁶ Hobe (n 28) 216.

¹³⁷ Bohlmann/Petrovici (n 73) 7.

¹³⁸ Viikari (n 9) 26; Schrogl (n 21) 604.

¹³⁹ Bohlmann (n 48) 240; Karlsson (n 89) 415.

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