

Ensuring the Sustainability of Outer Space – The Role of Space Law and Policy

2 June 2022

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Over and Above

Ensuring the Sustainability of Outer Space – The Role of Space Law and Policy

- “Awareness-raising, and capacity-building related to the implementation of the LTS Guidelines” – project sponsored by the UK in partnership with UNOOSA to promote space sustainability
- Approach of the UK
- Space sustainability Kitemark – and forthcoming announcement

“Awareness-raising, and capacity-building related to the implementation of the LTS Guidelines”

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 - project sponsored by the UK in partnership with UNOOSA to promote space sustainability
 - Phase 1 – January 2021 – to identify examples of the sustainable use of outer space through a series of events and outreach efforts and encourage actors to implement the LTS Guidelines
 - Phase 2 – October 2021 – production of an anonymised stakeholder study report on how UNCOPUOS Member States are implementing the LTS Guidelines. UNOOSA conducted a series of interviews with Member States and intergovernmental organisations focusing on their experiences in implementing the LTS Guidelines. The report will be published prior to the Summit for Space Sustainability in London on 22 June 2022
 - The UK is discussing a potential Phase 3 of the project, reinforcing the importance the UK attaches to UNCOPUOS

The changing orbital environment – value of the LTS Guidelines

“Global space sector is moving faster than we could have imaged, with over 80 space programmes at the moment”

Simonetta Di Pippo, Director UNOOSA, Ditchley Conference, UK, January 2021

- “83 states are now involved in space activities and this figure will only grow”. The value of the space environment is recognised more than ever – especially across the COVID Pandemic period.
- **The commercial sector is now key** – government expenditures amount to 20% of overall space expenditure.
- Growth in commercial activities and orbital populations - impact on sustainability of long-term space activities.
- The dynamics of space are changing with:
 - aspiring space nations joining the international space community;
 - new categories of non-state actors: large industrial players; start-ups; and universities; and
 - advent of large constellations, cubesats and small launch facilities.
- There is no substitute to a multi-stakeholder approach and a level playing field dedicated to sustainability in space = need for **LTS Guidelines** (LTS A.2, C.1, C.2)

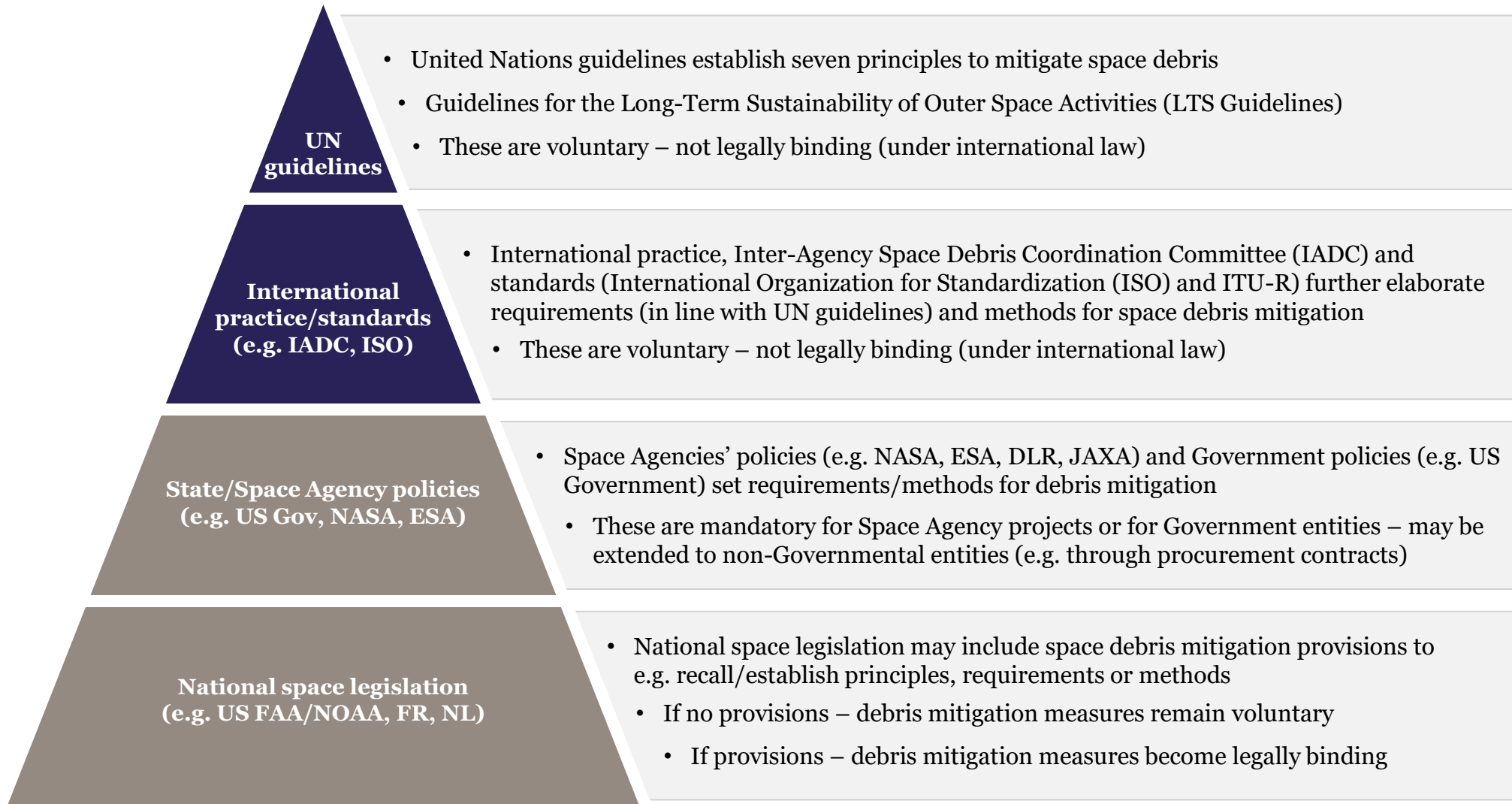
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UK approach – outcomes-based approach to regulation

(LTS A.1, A.2, A.3)

- Guidelines should be implemented in national law and regulation “**to the greatest extent feasible and practicable**” – using an outcomes-based approach
- National regulatory and policy frameworks need to:
 - ensure the **sustainable** use of the space environment
 - **anticipate technology and regulatory change**, and changes to the orbital population with some flexibility
 - allow and encourage international collaboration and engagement with industry internationally
 - encourage commercial **growth** and stimulate **innovation and research**
 - create certainty and **transparency** and **reduce investment risks**
 - be **accessible** – easily understood and commercially applicable
 - protect **security** interests
 - be **reasonable and proportionate**

Importance of national implementation “to the greatest extent feasible and practicable”



■ = International level ■ = Regional, Space Agency or National level

Approach of the UK in relation to its regulatory framework and supervision of national space activities (LTS A.2, A.3)

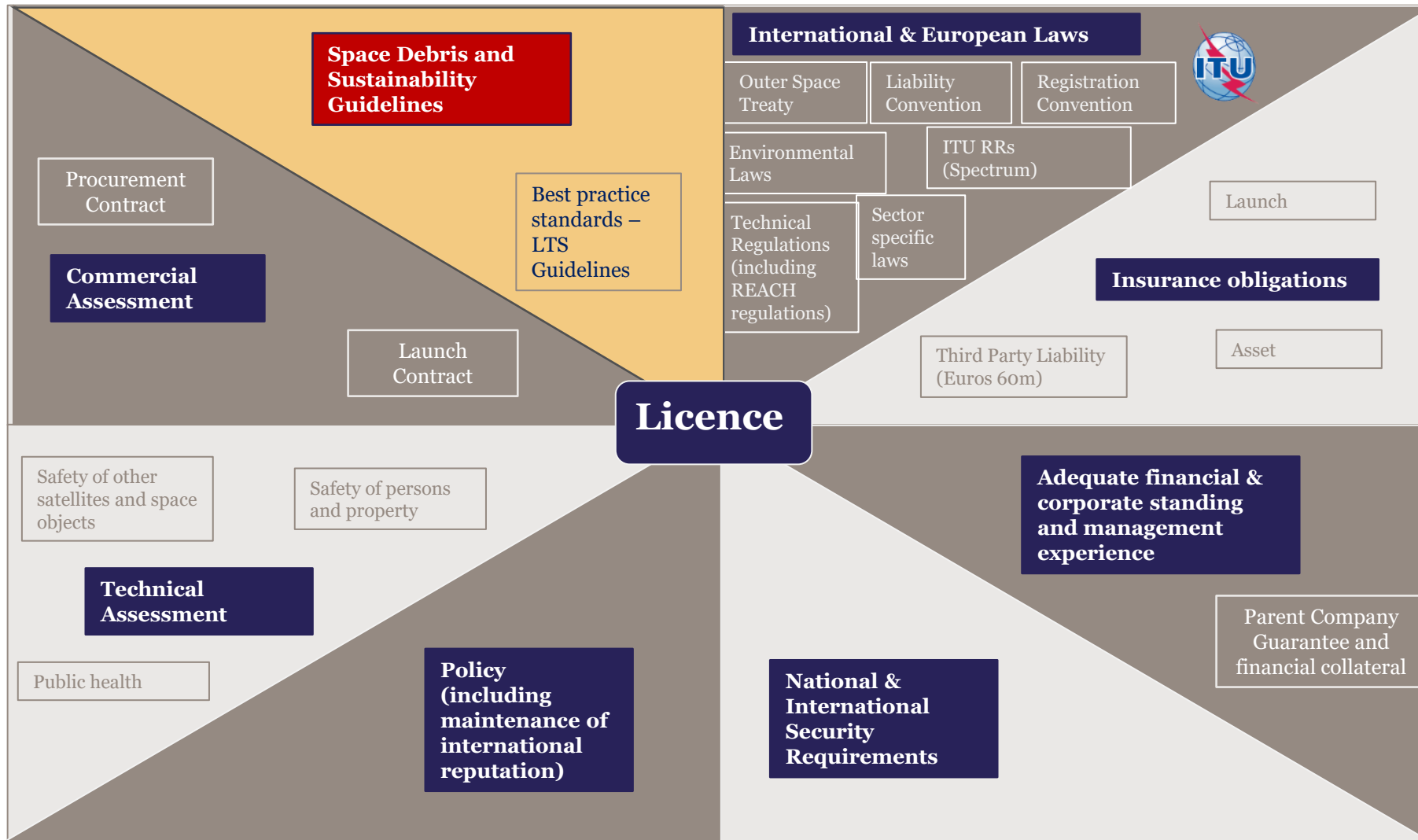
*A.3. “1. In supervising space activities of non-governmental entities, States should ensure that entities under their jurisdiction and/or control that conduct outer space activities have the **appropriate structures and procedures** for planning and conducting space activities in a manner that **supports the objective of enhancing the long-term sustainability** of outer space activities, and that they have the **means to comply with relevant national and international regulatory frameworks**, requirements, policies and processes in this regard.” (LTS A.3.1)*

- In supervising private commercial space activities, the UK seeks to ensure that:
 - entities/licenses have appropriate corporate, commercial and technical structures and procedures in place for conducting space activities;
 - the structures and procedures support the objective of long-term sustainability; and
 - entities/licenses have the means, including the financial and management means, to comply with relevant national and international regulatory frameworks.

Approach of the UK: general licensing criteria

Balance:

- Government risk, safety, security and sustainable use and access to space; against
- Encouragement of commercialisation, innovation and growth. (LTS A.1, A.2, A.3)



UK approach - appropriate technical structures and procedures for planning and conducting space activities

- **Can the applicant safely conduct the launch into orbit of the proposed vehicle and associated payload/platform? (LTS A.3, B.4, B.5)**
 - Understanding of hazards involved
 - Evidence how operations will be performed safely and sustainably
 - Demonstrate that commercial launch operations pose no unacceptable threat to public
- **Operational considerations for liability risk (LTS B.4, B.5):**
 - Possibility of encountering another object
 - Probability of a collision occurring
 - Likelihood of a resulting damage claim
- **Operational considerations for in orbit phase assessment (LTS B.8, B.9):**
 - **Ejection phase** – ejection of platforms from launch vehicle
 - **Orbit-raising phase** – criteria to initiate the orbit-raising phase; who commands and monitors the orbit-raising; how is it performed
 - **Constellation maintenance** – commanding and monitoring
 - **Planned and unplanned disposal** – process/mechanism for disposal; mechanisms to manage conjunctions

Space Sustainability Kitemark

Industry-led sustainability kitemark, devised by industry in collaboration with the UK Civil Aviation Authority (CAA), to cover all aspects of the design, manufacture, launch, operation and demise of satellites, taking into account ISO and IADC standards, the Space Sustainability Rating (World Economic Forum) and the LTS Guidelines - while providing a consolidated standard.

Kitemark will offer a standard which evidences compliance with international sustainability best practice, recognised by regulators and accepted by investors. The standard will initially comprise of a BSI PAS (Publicly Available Specification) – a fast-track standard. The kitemark will include the below considerations.

Design and manufacture	Launch	Operation	Demise
<ul style="list-style-type: none"> • Design for demise of the satellite • Advanced digital design standards • Automation and robotics in manufacture and testing • Impact on ground based science 	<ul style="list-style-type: none"> • Rocket fuel • Launch-originated debris • Reusability • Horizontal launch systems • Standardisation and global coordination of launch safety frameworks for nuclear powered space systems. 	<ul style="list-style-type: none"> • Manoeuvrability of small satellites (in LEO) • Risk assessment at platform level or aggregation over “constellation” • Trackability of small satellites • Debris aspects of close proximity operations • Propulsion • IOS • Sustainability of spectrum 	<ul style="list-style-type: none"> • Reliability of disposal systems at End of Life (EOL) • Effectiveness of drag (aerodynamic/ electrodynamic) enhancement devices • ADR

Space sustainability Kitemark - importance to finance, liability, insurance and market access

Finance Investors and financial markets are increasingly requiring a compelling environmental, social and governance (ESG) plan. Investors are applying such non-financial factors to identify material risks and growth and investment opportunities. A "kitemark" can offer a stamp of approval recognised by regulators offering confidence to investors.

Insurance Insurance requirements for licensing can be linked to compliance with sustainability standards, particularly when considering liability “bands”. This offers financial incentives to manufacturers and operators to meet sustainability criteria to benefit from lower insurance requirements.

Licensing Requirements

The setting of operators’ liability limits using liability “bands” commensurate with risk and probability of loss and compliance with sustainability requirements – incentivising sustainable behaviour.

Market Access

Compliance with space sustainability standards allows market access and terrestrial licensing in several jurisdictions globally.

Reputation

Compliance with space sustainability is increasingly important in relation to a company’s reputation and ESG planning.

An aerial photograph of Earth's surface, showing a vast, arid landscape. A prominent river system winds through the terrain, which is characterized by brown and tan hues. The horizon line is visible at the top of the frame, showing the curvature of the Earth and a thin layer of atmosphere. The text "Thank you" is overlaid on the left side of the image.

Thank you

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