A Human Rights Approach in Space to Address Climate Challenges

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The intersection of space applications and international space law (ISL) provides a unique environment for the realization of a governance framework, relevant to both individual States and the international community, addressing climate change challenges across local communities. Accordingly, the fulfillment of the UN Sustainable Development Goals (SDG) can be supported through the development of corresponding human rights principles, advancing the right to clean air and the right to a healthy environment (RHE).

The role of space applications (space technologies and space law) in developing RHE has long provided the means for implementing robust policy changes in environmental governance. Space provides policymakers with the scientific foundations to support strategic decisions, operationalize environmental initiatives, and enforce adherence with climate change initiatives under SDG-13.

SDG-13 calls upon the international community to "take urgent action to combat climate change and its impacts". Herein, the realization of a human rights-centric approach may support target SDG-13.2 – calling for the integration of climate change measures into national policies, strategies, and planning – where space applications can be leveraged as a supportive tool for community-level human rights enforcement. Such an approach directly addresses environmental impacts on the life of communities and individuals, promotes the rule of law in environmental practice, and broadens economic and social rights in embracing elements of the public interest in environmental protection.

Conversely, the realization of human rights values and principles can help to address broader climate change initiatives. The rising threat of climate change has facilitated an emergent realization on the critical relationship between human rights and the environment, where the difficulty of populations to access clean air, soil or water has necessitated the use of space applications to support the fulfilment of basic human rights. Where human rights are inherent, inalienable, and universal; the use of space applications in support of human rights provides a compelling blueprint in addressing climate change across local communities.

Context

SDG-13 urges governments and communities to combat climate change and its impacts. Accordingly, climate change represents an issue of international concern, wherein space technologies have governed terrestrial affairs through climate monitoring, energy utilization, resource management, and agriculture (UNOOSA, 2020). The importance of space applications in fulfilling the SDGs are demonstrated under Article 76 of the 2030 Agenda for Sustainable Development, wherein the international community voiced support for developing countries access to "Earth observation and geospatial information".

Earth observation technologies have elevated the supervision and enforcement of economic, social and cultural rights under the SDGs – supporting international efforts to observe and monitor climatic conditions, conduct weather forecasting, communicate climate-related research and data, enhance disaster management, and support search and rescue operations. Satellites provide evidence of climate

change, supply scientists with the data to understand the global ecosystem, and present decision-makers with information critical to policy formation (ESA, 2018) (UNOOSA, 2018).

Acknowledging that outer space activities must benefit all member states, regardless of their development level (UN, 2019), the uniform enforcement of international climate change standards through space applications is achievable under the international human rights framework. Ongoing development of RHE brings together the environmental dimensions of civil, cultural, economic, political, and social rights, and protects the core elements of the natural environment that enable a life of dignity. Diverse ecosystems and clean water, air, and soils are indispensable for human health and security (HRW, 2018).

International Space Law and Environmental Law – Human Rights

Space technologies in the context of human rights have often been highlighted in the context of international humanitarian law – covering the monitoring of interstate civil and political conflicts. Indeed, Satellite imagery has been used by Human Rights Watch to monitor and document the destruction of residential property in Myanmar – highlighting ongoing human rights violations against the ethnic Rohingya population (HRW, 2020). Herein, Earth observation technologies provide the evidentiary basis for international action and human rights enforcement.

Concerning ISL, the preamble of the 1967 Outer Space Treaty (OST) outlines the intent of the instrument to facilitate the use of outer space for "peaceful purposes". Further, the "due regard" environmental protection clause under Article IX of the OST calls for the avoidance of "harmful contamination" resulting from human activities. In interpreting these articles, attention must be directed to Article 31 of the 1969 Vienna Convention, which specifies an interpretation of the phrase in accordance with its ordinary meaning (Hans-Joachim, 2001). Accordingly, the absence of codified human rights principles across the core space law agreements enables the abuse of and contempt of terrestrial human rights – given their sole focus on the outer space environment (ESA, 2020).

Bridging this intersection between ISL, environmental law, and human rights is achievable under Article III of the OST, which provides that States parties conduct their activities "in accordance with international law" – challenging States to draw upon the relevance and applicability of international environmental law and human rights law. Consequently, the applicability of the ISL agreements within a terrestrial context may be furthered from a human rights interpretation.

Utilizing space for "peaceful purposes" elicits the positive general duty to minimize humanity's overall environmental interference across all domains – a contention mirrored within international law under the 1961 Antarctic Treaty (SAT, 2020). In interpreting Article IX, the applicable law includes both international norms applicable to outer space environment and the rules of international law at large (Hobe, 2017), drawing upon international environmental treaties (i.e. UNFCCC, Paris Agreement).

Finally, the relationship between human rights and the environment is acknowledged under international law. Since the 1972 Stockholm Conference the international community has acknowledged that procedural human rights – including the rights to assembly, expression, information – are critical to environmental protection. Additionally, in a 2019 Report to the UN General Assembly, UN Special Rapporteur on Human Rights and the Environment David Boyd highlighted this relationship in the existence of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment. It is recognized that environmental issues, such as pollution and climate change, can affect the full-realization of human rights – including the right to water and health (ECHR, 2020).

Case Examples – Human Rights

Addressing climate change across local communities, by advancing the realization of RHE through the use of space applications, promotes the development of a safe, clean, healthy, and sustainable environment integral to the full enjoyment of a wide-range of human rights.

Firstly, satellite observation data has been utilized to support local climate change and sustainability efforts – in the prediction and management of forest fires in the Amazon jungle (Mataveli, 2017), and in protecting the Amazon's indigenous populations from various initiatives to develop the region (Hettler, 2018). These efforts have limited the destructive scale of human development, contributed to the preservation of intact forests and their biodiversity, and maintained the importance of the Amazon as a significant global carbon sink – thereby mitigating the effects of climate change.

Secondly, satellite observation has promoted poverty alleviation through the encouragement of sustainable practices by farmers and local communities (Edwards, 2017). Satellite data has heightened the ability of local authorities to map the demographics of a region and manage natural resources sustainably in Kenya through enhanced urban planning measures (Palminteri, 2019). Space applications may thus be leveraged to combat climate change by reducing the overall carbon footprint of local communities.

Finally, ongoing efforts to consolidate data on air quality and pollution through satellite observation has been observed in Southeast Asia under the Global Platform on Air Quality and Health. Herein, satellite-derived measurements of PM2.5 concentrations through the use of Aerosol Optical Depth overlay technology has driven sustainable improvements in air quality (AQLI, 2019), and has factored into legal proceedings against the government by local communities (The Canberra Times, 2019).

Recommendations

The utilization of space applications to realize SDG-13 may therefore be advanced through a human rights-based approach, where the supporting regional and local efforts to realize RHE strengthens the universal implementation of measures addressing climate change and sustainable environmental governance. Likewise, the realization of SDG-13 through the use of space applications supports the monitoring, development, and realization of individual human rights. Accordingly, the integration of climate change measures into national policies, strategies, and planning will benefit from the following measures.

Firstly, IGOs must encourage broader multilateral transparency building and confidence initiatives, focused on exploring the intersection between outer space, the environment, and human rights. This includes amending the OST to consider environmental measures advanced under the 1992 Rio Declaration – including incorporating environmental consultation clauses, and the application of the "precautionary principle" to the outer space context (Chung, 2017).

Secondly, ongoing international sustainability efforts will benefit from the establishment of a UN treaty-based body dedicated to addressing the intersection between human rights and outer space. This includes appointment of a special rapporteur to examine, monitor, advise and publicly report on human rights relating to outer space affairs.

Third, UNOOSA must support the localized development of sustainable practices, in educating community organizations on the utility of space applications to address climate change through the advancement of human rights under RHE. Where community organizations are well-positioned to proactively promote rights through individual and systemic advocacy, they also exist as the primary means of addressing climate change locally. It is concluded that space applications, including Earth observation and advanced analytics, have thus provided policymakers and local communities with new tools to develop and protect human rights under RHE – by enabling new forms of advocacy, accountability, and action (Zolli, 2018).

Recognizing the mutually supporting relationship between space applications and human rights under RHE is integral to addressing climate change across local communities, providing a universal standard that holds governments accountable to their citizens and the international community.