Response to Questions for the Record
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Subcommittee on Oversight and Investigations
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On "The Mineral Supply Chain and the New Space Race"

I appreciate this opportunity to respond to additional questions for the record.

Questions from Rep. Gosar

1. How are space resources natural resources?

Encyclopedia Britannica defines a natural resource as "any biological, mineral, or aesthetic asset afforded by nature without human intervention that can be used for some form of benefit, whether material (economic) or immaterial.[1] Merriam Webster states that natural resources are "industrial materials and capacities (such as mineral deposits and waterpower) supplied by nature."[2] And while, as Britannica points out, what is considered a "resource" has varied over time and from one society to another, natural resource laws and policy categorize resources by their character and properties – and not by where they are located. Aluminum, beryllium, tungsten, zinc and many other critical minerals are natural resources wherever they occur, even if they occur beyond areas of national jurisdiction, whether that area is the high seas, or space.

Natural resources do not change their nature or their qualities based on where they are found. As the natural resources on Earth are depleted, as we know they will be over time, humanity must be open to looking for other sources and this Committee is well-placed to lead this paradigm adjustment.

2. How can the House Committee on Natural Resources help America secure the celestial mineral supply chain?

The US Geological Survey (USGS), the administration of which is within the jurisdiction of this Committee, already implements activities beyond national jurisdiction as it is tasked specifically with researching seafloor mineral resources that occur in the high seas, domains recognized under international law as not subject to sovereign or territorial claim. This Committee can expand the parameters of this research to all areas beyond national jurisdiction, including outer

[1] https://www.britannica.com/science/natural-resource
[2] https://www.merriam-webster.com/dictionary/natural%20resource

space. As with research conducted on marine mineral resources, findings by the USGS about mineral wealth in space should be shared with stakeholders, including industry.

The fact that humans will deplete Earth supplies, even those found in the high seas, is inevitable. For example, in 2022, the USGS released a list of 50 critical minerals, natural resources, defined as those that are essential to the economic and national security of a nation but that have a supply-chain vulnerable to disruption.[3] Demand for these critical minerals is increasing, and one of the roles of the USGS is to address the need for more up-to-date information on access to critical mineral resources. The Committee could propose legislation to expand USGS research to include the space domain in its effort to define and prioritize focus areas with resource potential for these 50 critical minerals.

While some might argue that this is premature as we are many years away from being able to successfully mine natural resources beyond Earth, identifying mineral rich areas in space as soon as possible offers many benefits, among others: first, it provides an incentive for the development of space mining technology; second, it assures that once the technology is ready, we will know where to go; third, it can alleviate US dependence on foreign-sourced supply chains; fourth, as our understanding of human reliance on the ocean eco-system increases, we can avoid disrupting the marine environment with mining operations; and finally, understanding what resources exist in beyond Earth and how accessible those resources are can do much to alleviate present tensions regarding resources. If it is established that these resources are in great abundance, as we believe them to be, potential for conflict will wane.

It is also important to point out that the Chinese government has made very clear its intent to "Exploit the Works of Nature" through a public roadmap that sees "a comprehensive space resources system spanning the solar system by the year 2100."[4] This is a long game and this Committee is well-poised to oversee US efforts in this regard. Space resource utilization is the future and we jeopardize that future with inaction.

The space domain is an international domain and as this Committee has jurisdiction over international fisheries agreements, the UN Convention on the Law of the Sea, and cooperative efforts to encourage, enhance and improve international programs for the protection of the environment and the conservation of natural resources, it is a perfect starting point to open discussion of how international cooperation in the management of the natural resources of space might be structured. The Committee should hold hearings on how to manage natural resources in the space domain under the framework of the international space treaty regime.

Finally, given the Committees jurisdiction over relations of the United States with Native American and Native American tribes, this provides the perfect opportunity to assure that indigenous communities are included in the discussion of space resource utilization. The Committee can work directly with indigenous communities to assure contribution from this group that is woefully under-represented in space activities.

[3] https://www.federalregister.gov/documents/2022/02/24/2022-04027/2022-final-list-of-critical-minerals
[4] https://interestingengineering.com/innovation/china-reveals-grand-vision-for-space-resource-utilization

Questions from Rep. Lamborn

1. What are the opportunities and barriers to greater coordination and investment in space resources research within academia?

The United States has the finest academic institutions in the world and has always been at the forefront of both space activities and space governance. Three leaders come to mind. The Colorado School of Mines offers the only space resource graduate program in the world. The University of Mississippi has one of the oldest space law programs in the world and is home to the only ABA-accredited law school to offer a JD Concentration and an LL.M. in Air and Space Law. Finally, the Thunderbird School of Global Management hosts the only executive master of global management in space leadership program. Combining these three superlative and unique academic centers provide boundless cross-disciplinary opportunity at minimal cost to the taxpayer. Working directly with USGS, these three institutions could help lay the groundwork for a sustainable space governance framework that meets the requirements of international law without ceding US leadership in the space domain.

US leadership is vital because we have, at present, the most representative government in the world. Every human, wherever located, will be impacted by space resource activities. In the US we work hard to give voice to all humans – albeit not always successfully. Nevertheless, our system of governance provides more opportunity than any other in the world. If we want to see an equitable and fair management and distribution of space resources, we want to raise awareness and encourage discussion of all space activities.

The only barrier to greater coordination is the lack of funding and direction from the government.

2. This committee especially understands the necessity of specific but clear laws and regulations when it comes to mining. It is important to walk that fine line of providing guidance and oversight to the mining industry without stifling the growth. Besides the Artemis Accords, which we see NASA is using to set the standard for extraction of minerals such as these, what else should this body be working on to protect the rights of private companies to extract and sell these critical minerals?

Given this Committee's jurisdiction over aspects of the Convention on the Law of the Sea and in particular the remit to encourage, enhance and improve international programs for the protection of the environment and the conservation of natural resources, this Committee should take an active role in developing the foundation for space resource management and utilization in keeping with US treaty obligations. While arguments have been made that anything space-related should be relegated to the House Committee on Science Space and Technology, this gravely narrows our perception of space and its importance in human society. It is this Committee that manages natural resources, and its jurisdiction should not be narrowed by where those natural resources might be located. Respectfully, this Committee cannot properly oversee the management of natural resources if it ignores such resources just because they occur beyond Earth and beyond sovereign jurisdiction. There exists an opportunity to assure that space activities truly benefit all humanity, and this Committee should seize it.