# 1NC-r1-Peninsula-vs-Tays KM

## CP-PPP Debris

#### The United States federal government ought to –

#### 1] Increase funding for public-private partnerships (ppp) to test and refine SSA technologies and small satellites, utilizing tax credits.

#### 2] Create a legal partnership with countries in the EU, Japan, and India that shares SSA info and enhance federal cooperation and sharing of this info.

#### The counterplan solves space debris and addresses the current lack of progress.

Long 19 ― George Long, Managing Member at Legal Parallax, B.A. in Political Science from Duke University, LL.M. in International Law from American University, LL.M. in Space, Cyber, and Telecommunications Law from the University of Nebraska, 2019. (“Monetizing Space Debris: Getting Tax Credits On Board”, *Space Traffic Management Conference*, February 27th, 2019, Available Online at: <https://commons.erau.edu/cgi/viewcontent.cgi?article=1262&context=stm>)

It is said that there is nothing harder to stop than an idea whose time has come. It cannot be disputed or denied that the time has now arrived for active harvesting of orbital debris to ensure the continual unfettered access to and the use, exploitation and exploration of outer space. The volume of space debris will not stagnate especially since there is no foreseeable decrease in the number of space launches which will traverse Earth’s gravity barrier and deploy new objects in orbit. While there has been marginal progress with mitigating the creation of new orbital debris arising from the decommissioning of satellites, much talk and little substantive action comprise the emerging legacy for extracting orbital debris. To date, it has been a governmental obligation to address the orbital debris problem which is consistent with the United States international obligations relating to the use and exploration of outer space. However, the lack of progress with the actual removal of orbital space debris demonstrates the importance of establishing a true public/private partnership with the sole focus on extracting orbital debris. This necessitates monetizing space debris extraction to attract the attention, energy and focus of prospective investors, startup firms and established actors in the space industry. As discussed and examined above, **tax credits** are one-means of monetizing the extraction of orbiting debris.

#### Tax credits motivate the private sector – solves case.

Long 19 ― George Long, Managing Member at Legal Parallax, B.A. in Political Science from Duke University, LL.M. in International Law from American University, LL.M. in Space, Cyber, and Telecommunications Law from the University of Nebraska, 2019. (“Monetizing Space Debris: Getting Tax Credits On Board”, *Space Traffic Management Conference*, February 27th, 2019, Available Online at: <https://commons.erau.edu/cgi/viewcontent.cgi?article=1262&context=stm>)

The dislike for taxation has a long history in the United States as it is one of the motivating basis for the country’s founding. Indeed, the slogan “[n]o taxation without representation” is embedded in the teaching of American history. Although taxation is now imposed by elected representatives, it seems taxation is assessed as a solution for many significant governmental undertaking for the common good. This view of taxation as the cure for a problem or to modify private sector behavior has surfaced in connection with orbital debris remediation. For instance, it has been suggested that the United States should levy a tax on satellite launches to generate revenue for governmental efforts to remove orbital debris or to mitigate the creation of new debris by modifying the behavior of private sector space actors.6 Since the use and exploration of space is a partnership between the government and the public sector, allocating some governmental financial resources to combat orbital debris is reasonable especially given NASA’s shrinking budgetary allotment.7 Imposing and collecting a tax on space actors, however, should not be the mechanism for or source of the government’s allocation of financial resources to address the problem. Assessing a tax on satellite launches should not be the source of governmental funding for orbital debris remediation. Instead, consideration should be focused on implementing tax credits as the potential source for the government’s financial contribution to remedying the orbital debris problem. Tax credits should not only serve to spur private sector investment associated with developing and, most importantly, implementing technology and procedures for removal and/or mitigation of space debris, but they are also consistent with the government’s obligation under the Space Resource Exploration and Utilization Act of 2015 (“Space Resource Act of 2015").8 Among other things, the Space Resource Act of 2015 mandates that the government: 1) facilitate commercial activities of U.S. citizens engaged in the exploration and recovery of space resources, and 2) discourage government barriers to American companies developing “economically viable, safe, and stable industries” for the exploration and recovery of space resources for commercial purposes.9 Tax credits associated with orbital debris remediation, therefore, can assist in satisfying an express governmental policy relating to the commercial use, exploration, and exploitation of outer space.

#### The counterplan achieves economies of scale that remove up to half of current space debris

Dunlop 15 ― Dave Dunlop, managing Track Chair of the Lunar Sub-Track, M.A in Science Education from the University of Illinois at Chicago, 2015. (“Overcoming non-technical challenges to cleaning up orbital debris”, *The Space Review*, November 9th, 2015, Available Online at: [http://www.thespacereview.com/article/2863/1](http://www.thespacereview.com/article/2863/1%20Accessed%209-8-2019))

Launching governments, through their classification of technological secrets and their dual-use technology transfer rules, have shown themselves to be very sensitive about the attributes and capabilities of their satellites, especially military ones. Therefore, to induce international cooperation to remove, repurpose, recycle, or rehabilitate large debris objects, it is best to start with these much less sensitive, but still dangerous, upper stages, which make up about half of the LEO debris mass. Capturing aluminum tanks would also be a lot less complicated than grabbing or manipulating satellites with solar arrays or antennas. In addition, on-orbit recycling may be more practical with such tanks than with most other materials or objects. We recommend that the US openly and transparently begin removing, through public-private space agreements, old US rocket bodies and dead satellites from LEO, which accounts for just over half of the non-Russian mass in LEO. This removal will set an example, while testing the requisite technology. The use of public-private partnerships, similar to those used by NASA’s Commercial Orbital Transportation Services (COTS) program, could offer a significant reduction in costs compared to conventional government-led programs.

#### Improving SSA and SSA collaboration solves collisions.

Anzaldua 19 ― Alfred Anzaldua, Executive Vice President of the National Space Society, Member of the Tucson Amateur Astronomy Association, B.A. in International Affairs from Bradley University, M.A. from the University of Arizona, 2019. (“How defense and civil space offices can work together to on space situational awareness and space commerce”, The Space Review, May 20th, 2019, Available Online at: <http://www.thespacereview.com/article/3715/1>)

The legislation proposed by the Commerce Department to create and fund the Bureau of Space Commerce is a major step in the right direction to consolidate executive space offices and facilitate commercial space activity in the United States. However, other space offices are housed in Department of Transportation, NASA, the FCC, and the Department of State.[8] Therefore, even after the Bureau of Space Commerce comes into existence and receives adequate funding, further reorganization and coordination among executive space offices would be needed to adequately address the daunting national and international issues involved with fostering safe and effective SSA, orbital debris mitigation and removal, and STM worldwide. Such reorganization could be carried out by evolving the NOAA Commissioned Officer Corps into a transparently operating umbrella entity to coordinate all executive space offices, an act potentially achievable by the Commerce Secretary simply adapting its mission.[9] Space Policy Directive-3 mandates for DoC As mentioned above, SPD-3 directs the Commerce Department to facilitate enhanced data sharing by becoming “responsible for the publicly releasable portion of the DoD [space object] catalog.”[10] SPD-3 further directs DoC to carry enhanced data sharing by establishing and managing an “open architecture [SSA] data repository.”[11] A “data repository” can consist of a set of databases, spreadsheets, and even text files. An OADR for space objects and related SSA information would be a non-proprietary, shared data repository, allowing all predetermined users, including those in competition with one another, to add or update data and sources of space domain information to increase the repository’s functionality, capacity, flexibility, interoperability, and sustainability. Using a blockchain ledger to keep track of all SSA data in the OADR would appear to be the most efficient way to maintain the data secure, while sharing it in real time. The non-profit OADR manager and the donors and users of the blockchain ledger would instantly see any deviant SSA report, making it very difficult for a malevolent actor to pollute the data pool with the aim of gaining advantage over, or harming the interests of, other OADR stakeholders. Why would DoC need a consortium to provide effective space situational awareness? Consider the public-private consortium Space Data Association (SDA), an international organization that connects multiple satellite operators, as well as NASA and NOAA. Formed in 2009, SDA aims to enhance safety of flight via sharing of operational data and promotion of best practices across the industry. SDA also works to improve the accuracy and timeliness of collision warning notifications, as well as working with all interested entities to help define the next generation of STM systems and capabilities. The bottom line is that some satellite operators consider SSA data from SDA to be more actionable than SSA data from the DoD catalog alone. But SDA is not the only consortium producing enhanced SSA data, such as resident space object characterization and mission assurance services to monitor threats and sustain safety in space. Consider also AGI ComSpOC with its own network of space object sensors to produce such actionable SSA data. Finally, consider a public-private consortium with university ties, like the Australia-based Space Environment Research Centre (SERC), producing actionable SSA data. These SSA-sharing entities are structured as consortia for a reason: to have multiple sources of SSA data from which to pick, choose, and analyze. Academia has the advantage of being able to use university human and material resources already in place and funded by other entities. The DoC must have an SSA analyzing and sharing capacity better than these three entities. Otherwise, why should countries and space businesses turn to the United States for actionable SSA data? Once satellite operators and state entities begin using and gaining confidence in DoC-connected, standardized, and curated SSA data, it will be easier to bring them in for other space-related business and establish US leadership internationally. Yet, with any executive expansion of duties, there will be great pressure to beat the competition with the least cost to taxpayers. That's where academia comes in. How can academia cost-effectively enhance an SSA-sharing consortium? Any OADR where the data from the space catalog is simply accumulated in a jumble would be of little practical use. To be useful, the data in the shared repository must be curated. That is, independent personnel must find, group, organize, and then share the best and most relevant data. This should also involve tagging the data so that it can be tracked from its origin, evaluated as to its usefulness through time, and after that assessment, traced back to specific sources and methods for further ongoing evaluation that can be used to select more data for the OADR. In other words, data in an OADR also needs to be interpreted by independent personnel and standardized to be truly useful as a basis for SSA-relevant actions, such as actionable conjunction warnings, launch window timing, or safe orbit placement. Moreover, such OADR data curation and Space Catalog sharing must be carried out cost effectively to be practical, and here academia has the advantage of being able to use university human and material resources already in place and funded by other entities.[12] For example, an academia-involved consortium put together by a cooperative agreement, like that used by the NASA Astrobiology Institute, could carry out such work with less expense[13] and more intellectual freedom than traditional national research frameworks like federally funded research and development centers and national laboratories, although these should serve as so-called affiliate members to provide technical guidance and stewardship.[14] Moreover, a university-involved consortium managed by a DoC-selected or -created non-profit would have the advantage of drawing from a variety of sources for SSA data to feed its OADR, including public and private entities and even other consortia. However, whatever SSA resource is used, “sanitizing” all national security sensitive data must be the first and primary function for DoD, before it hands over SSA data to the consortium. The National Space Council should seriously consider 1) selecting or creating a non-profit entity with academic links to form and manage an SSA data-sourcing and sharing consortium and 2) directing that non-profit entity to establish and manage an OADR to curate and share of non-militarily sensitive SSA data via a blockchain ledger connecting carefully selected SSA providers and recipients. A notional DoC non-profit entity, tentatively called the “Space Situational Awareness Institute (SSAI), could collect, curate, and interpret non-militarily sensitive space catalog/OADR data for the DoC, in coordination with AST and DoD. The SSAI could be advised by a leading and globally-recognized expert US academic institution in this topic area, like the Cockrell School of Engineering at the University of Texas at Austin or the University of Arizona Defense and Security Institute. For example, a current collaborative effort with the US government is ASTRIAGraph, initially funded by the FAA Center of Excellence in Commercial Space Transportation. ASTRIAGraph is a multi-source information knowledge graph database that collects, curates, and displays hypotheses on space objects and events, publicly accessed at. This system is located at the Texas Advanced Computing Center at the University of Texas at Austin, which recently received $60 million in NSF funding.[15] This investment could be directly leveraged for the DoC SSAI, or even form the basis of a DoC non-profit entity in coordination with FAA. Via cooperative agreements approved by US government agencies, SSAI could link transparently with other universities with SSA programs throughout the world, such as the Technical University at Braunschweig Germany (developer of the ESA MASTER Space Debris Model)[16] , the Astronomical Institute of the University of Bern, Switzerland, the SERC Australia, and others already in collaboration with US academic institutions. Actionable SSA data provided by the proposed SSAI will foster the safety and profitability of space operations.

## DA - BBB

#### Biden passes Build Back Better using his PC to secure a narrow majority.

---Focus link---Biden has to focus his efforts on Manchin, the plan trades off

---Good faith link---lobbying spurred by the plan drives a wedge between Dems that undermines good faith negotiation

Fedor & Politi 12-13 [Lauren\*, US Political Correspondent @ FT, James\*\*, Washington Bureau Chief @ FT; December 13, 2021; “White House scrambles to salvage $1.75tn Build Back Better bill by Christmas,” <https://www.ft.com/content/91c5f083-b783-4293-a007-9802ac9ad1f8>] brett

The White House is rushing to save its plans to pass Joe Biden’s $1.75tn Build Back Better bill by the end of the year, with time running low to win over Democratic holdouts worried about excessive spending and persistent inflation.

On Monday afternoon, the US president spoke with Joe Manchin, the Democratic senator from West Virginia who has proved a frequent obstacle to passing Biden’s domestic agenda.

“The president and Senator Manchin had a good, constructive phone call and agreed to follow up with one another in the coming days,” Andrew Bates, a White House spokesperson, told the Financial Times.

Manchin told reporters on Monday that he had a “good conversation” with the president and remained “engaged” in negotiations.

“We are still talking about different iterations, that’s all,” the senator said. When asked whether a deal could still be done by Christmas, Manchin replied: “Anything is possible.”

The call marked the president’s latest attempt to reach a deal on his flagship economic proposal, which directs large-scale government investment into safety-net programmes and measures to fight climate change.

But the fate of the legislation, which would be paid for largely with tax rises on the wealthy and big businesses, is still uncertain with less than two weeks to go until Democrats’ self-imposed deadline to pass it before Christmas.

Charles Schumer, the Senate majority leader, had initially suggested the upper chamber of Congress would begin poring over the bill this week after the House of Representatives passed it last month.

But many in Washington remain sceptical the bill will arrive on the president’s desk before the end of the year, given Manchin’s resistance.

“I know people have been in a hurry for a long time to do something, but I think basically we are seeing things unfold,” Manchin told reporters on Capitol Hill earlier on Monday. “I basically go and have conversation whenever the president calls me or wants to visit . . . we talk genuinely, as person to person, as two people who have had the experience of being in the Senate.”

Jen Psaki, White House press secretary, said the Biden administration remained “fully supportive” of Schumer’s effort to pass the legislation by the end of the month, and said speculation that the negotiations might stretch into next year was premature.

She was also upbeat about Biden’s relationship with Manchin, saying their “conversations have always operated in good faith”.

Democrats are looking to pass the Build Back Better plan without Republican support using a Senate procedure called reconciliation, which would allow them to bypass the 60-vote filibuster threshold. But because Democrats control the chamber by the narrowest of margins — 50-50, with vice-president Kamala Harris able to cast the tiebreaking vote — they need the support of all 50 Democratic senators.

#### The plan trades off -- ratification requires PC and floor time.

---even if popular, even some opposition ensures immense floor time due to Senate procedures.

Kelley & Pevehouse 15 [Judith G.\*, Duke Sanford School of Public Policy; AND Jon C.W.\*\*, University of Wisconsin-Madison; International Studies Quarterly (2015); “An Opportunity Cost Theory of US Treaty Behavior,” <https://dukespace.lib.duke.edu/dspace/bitstream/handle/10161/12521/isqu12185.pdf?sequence=1>] brett

An Opportunity Costs Theory

Although existing theories about veto players and political ideology explain the fate of some treaties, they leave some questions open. To complement these theories, we draw on economic theory to offer an opportunity cost theory of treaty ratification. In economics, the opportunity cost of a resource refers to the value of the nexthighest-valued alternative use of that resource. Scholars of domestic legislation have applied this concept to the time and resources of individual policymakers (Schiller 1995) but also to the fixed chamber time. For example, Koger refers to “[T]he foregone uses of the same [chamber] time for legislators as individuals as well as for the chamber collectively” (Koger 2010:22). Indeed, the Senate’s chamber time is not only fixed, but also scarce. A vast portion of its time goes to required routine business. This leaves little opportunity for discretionary activities (Walker 1977). Given that international policy matters have to draw on exactly the same remaining discretionary floor time as domestic policy, we argue that the United States sometimes delays or derails treaty ratification simply because political capital and Senate floor time are fixed and entail opportunity costs (Heitshusen 2013:4). As Koger (2010:33) argues more generally for legislation, “The expected gains from making a proposal must exceed the time and effort legislators invest in preparing it, organizing and coalition to support it, and taking the time of the chamber to debate and pass it.”

For a treaty to progress, the opportunity cost logic thus would mean that the net gains of the treaty must outweigh the opportunity costs of the advice and consent process. Thus, if the President or some Senators assign only low political value to a particular treaty or if they believe that passage of the treaty will take a lot of Senate floor time, they may decide that they would rather spend their political capital on other matters. If they think they have to fight a war of attrition to overcome opposition, this cost in terms of time and resources may tip the scales against moving the treaty forward. Under these conditions, the opportunity cost of processing the treaty may be too high for the treaty to gain attention, even if the President or more than the required two-thirds of the Senators think the treaty yields some benefits. As a result, whether or how fast a treaty makes it through the process depends on whether it has sufficient support to pass the constitutional process and on whether its value to politicians outweighs the opportunity cost of their political resources: legislative floor time and political capital.

The Fixed Political Agenda Space and Policy Priorities

Why do treaties incur these opportunity costs? Opportunity costs arise when resources are fixed and fully employed. Political agenda space is such a resource; there are only so many policy priorities a President can promote, and only so much Senate floor time to consider them. The media will pay attention to only so many issues on the Washington agenda. Both the President and the Senate must protect their legislative opportunities. They each face opportunity costs.

For the President, the transmittal process is not simple. If the United States signs an international agreement that falls under Article II of the Constitution, the President must transmit it to the Senate for advice and consent before the United States can ratify it. This process entails an analysis of the implications of the treaty including possible implementation legislation required, and the writing of a transmittal letter that serves as a report to the Senate Foreign Relations Committee (SFRC). Because of these requirements, usually there has to be some push from the White House (Halloran 2011), and this can take precious time away from domestic legislative priorities. Thus, transmittals can be costly, especially in the face of expected opposition. Indeed, in 1995 when President Clinton wanted to transmit the UN Convention on the Rights of the Child to the Senate, Jessie Helms, who chaired the SFRC, and 26 cosponsors introduced a resolution urging him to not transmit the Convention. Such opposition can be distracting or politically harmful for the President. Furthermore, because the President usually endorses the treaty in the transmittal letter, he may incur a reputational cost by transmitting treaties that stall (Krutz and Peake 2009:140). Dealing with treaties thus involves political costs, and withholding transmittal can conserve political capital.

For the Senate, floor time is of the essence. After transmittal, the SFRC must hold a meeting on the treaty, and eventually issue its own analysis and recommendation, and (if it has enough support) pass it out of committee. The treaty then has to be scheduled for debate, possible amendments, and a vote. To gain Senate advice and consent, the treaty must pass with at least a two-thirds majority. Crucial to differentiating the opportunity cost argument from a straight veto player model, the Senate rules for debate and passage enable opponents to increase the time expended on a treaty, even if they do not have the ability to vote it down on the floor. Dealing with a treaty thus ties up the SFRC time, but even more importantly, it could potentially take up scarce discretionary time on the Senate floor. Senators seek to maximize their reputational returns from the issues they spend time on, favoring issues that have broad appeal (Walker 1977:430). Before scheduling a treaty for debate and a vote, the relevant actors therefore have to consider the opportunity cost of dealing with the treaty: What else could the Senate accomplish with that time? Even if the Senate is not being productive in terms of passing legislation, what else does the Senate want to be seen focusing on at that moment? Even if there is strong support for a treaty, Senators may hold back if they anticipate serious and potentially time consuming opposition—opposition that can result in any number of procedural maneuvers that could take up costly time in the Senate. This explains why so few treaties ever take up much floor time for debate. If senators expect them to take time, they do not schedule them.

Thus, both the President and the Senate face opportunity costs of fixed resources: Presidents are concerned with “misusing” political capital and opportunities. The Senators are protective of floor time, or how they are seen to be using their time by a public foremost focused on domestic matters. At the same time, the political benefits of treaty ratification are uncertain. Treaty ratification is often invisible, because the media rarely covers such events and whatever benefits treaties may bring may never be attributed to the treaty advocates directly.

The implication of these political calculations is central to our argument: Contrary to standard assumptions of international relations, the decision to push a treaty through the advice and consent process may be less about an isolated examination of costs and benefits of the treaty itself than about the political benefit of spending time on the treaty relative to the benefit of other possible agenda activity that may produce important domestic legislation such as health-care reform, for example. In other words: Senate advice and consent and, by association, transmittal decisions depends on the associated legislative opportunity cost.

The opportunity cost can manifest itself for many types of treaties. Even nondivisive treaties require some Presidential attention and Senate floor time to move through the process (Johnson 2010), and therefore even these may fall by the wayside, which is of course even more likely to occur if they are not considered particularly vital. More important treaties might also be affected by the opportunity cost, however. Even if opponents might not command the requisite 1/3 of Senators to block the treaty, their willingness to obstruct it (even the threat to do so) may impose such high costs in terms of time that supporters are reluctant to spend time on it when they have many competing priorities. In a time-constrained Senate, minimal winning coalitions that reach supermajority status have become less important. Each piece of legislation must compete with all other legislation and having only a minimum backing can deprioritize legislation on the agenda, slowing it down (Oppenheimer 1985:410). And although the Senate can use a cloture vote to end filibustering and technically should be able to do so easily if the treaty commands two-thirds support, Senators may be reluctant to push for treaties that push these boundaries (for example, by objecting to a unanimous consent request (Heitshusen 2013:4)).

#### Opposition is guaranteed. NewSpace companies will lobby for their survival against the plan.

GC 17 [GC Magazine; Autumn 2017; Business thinking, In-house management, Published by legal500; “The new space race,” <https://www.legal500.com/gc-magazine/feature/the-new-space-race/>] brett

The upshot is that the ability to engage with legislators and policymakers will be essential for the long-term viability of companies like Planetary Resources.

‘We’re seeing already that with a regulatory framework laid out for a very quickly growing and expanding sector, there’s a lot of opportunity for policy engagement. That’s equally true in other countries too, which are either enacting their first national space laws or overhauling them,’ says Israel.

Before Israel joined the company, Planetary Resources was heavily involved in lobbying the US Congress to support the Spurring Private Aerospace Competitiveness and Entrepreneurship Act – better known as the SPACE Act.

That piece of legislation explicitly granted permission to US entities to ‘engage in the commercial exploration and exploitation of “space resources”.’ But the international community remains divided over whether the SPACE Act runs contrary to the obligations imposed on the US under the Outer Space Treaty.

‘The Americans are a sovereign state and according to their international treaty commitments, it’s hard to say that their domestic law is compatible with international law,’ says Smith.

Lobbying, both at a domestic and international level, stands to become increasingly critical, particularly as the US is in the process of crafting a framework for supervising non-governmental space activities, while ensure conformity with the Outer Space Treaty.

image of cartoon Mars Rover

‘It is incumbent on Congress to use the 50-year anniversary of the Outer Space Treaty to properly determine our actual international obligations, decide if specific articles in the Treaty are self-executing or not, and ensure that our domestic policy moving forward creates an environment that provides certainty for industry while protecting our national security,’ said Senator Ted Cruz, earlier this year.

‘The design and objectives in doing this must not only be to implement the government’s obligations, but to do so in a way that is not unduly burdensome on emerging space activities,’ adds Israel.

‘This is particularly relevant when the exact contours of how the activity will be carried out are not known, which makes it imperative that the regulators do not get too far ahead of the technology and make guesses about how it will be done, what is feasible, then lock in standards that are ultimately irrelevant and unworkable.’

#### Prevents existential climate disaster.

Moncrief ’11-11 [Aliki; 2021; executive director of Florida Conservation Voters; Orlando Sentinel, “Build Back Better Act would help in climate crisis,” https://www.orlandosentinel.com/opinion/guest-commentary/os-op-climate-change-congress-act-now-20211111-44u6bgyn5fdvnp3eqievkebqpe-story.html]

Last week, Congress passed the Infrastructure Investment and Jobs Act. This bipartisan bill will address upgrades to things like our transportation system, rural broadband, public transit, and clean-water infrastructure. These are badly needed, overdue investments that will make our communities more resilient to the climate impacts we are already seeing. But we know much more is needed.

It’s not enough to just respond to extreme weather — we need to cut the pollution driving it in the first place. That’s why Congress must also pass the Build Back Better Act, the most transformational climate and jobs legislation in our nation’s history. By investing in clean energy and things like electric vehicles and more energy-efficient homes and businesses, we can stop making the problem worse and avoid a growing disaster. We don’t have time for half measures, and Floridians know it — more than 75% of registered voters in the state support bold congressional action on climate change.

The Build Back Better Act takes bold steps to dramatically reduce climate pollution for everyone. But it also centers those who have been disproportionately impacted by this crisis by taking steps to address the decades of unchecked environmental injustice, ensuring at least 40% of the benefits of this bill go to those communities hardest hit by pollution and climate change.

Building a clean energy economy is an investment that will pay dividends for families today and for generations to come. Preventing the most catastrophic hurricanes, floods and heat waves will help ensure that we still bring people from all over the world to our beaches, the Everglades, and every amazing destination across our state that supports our multi-billion dollar tourism industry.

And the robust clean-energy investments in the Build Back Better Act will create millions of good-paying jobs for Floridians in every corner of our state. Florida already ranks fourth in the nation for clean-energy employment, and this legislation would help this industry grow exponentially by tapping into the Sunshine State’s solar power potential.

Orlando has some great members of Congress who understand that climate change is an existential threat to our state and they ran on being a part of the solution to this crisis. Now, we are counting on them to take bold action and pass the Build Back Better Act. This is a win-win-win that creates jobs, lowers energy bills for Floridians, and begins to address the climate crisis at the same time.

## DA-China (US PIC)

#### US funding is key to beat China and protect against Chinese REM gatekeeping

Stavridis 21 [(James, retired US Navy admiral, chief international diplomacy and national security analyst for NBC News, senior fellow at JHU Applied Physics Library, PhD in Law and Diplomacy from Tufts) “U.S. Needs a Strong Defense Against China’s Rare-Earth Weapon,” Bloomberg Opinion, March 4, 2021, https://www.bloomberg.com/opinion/articles/2021-03-04/u-s-needs-a-strong-defense-against-china-s-rare-earth-weapon] TDI

You could be forgiven if you are confused about what’s going on with rare-earth elements. On the one hand, news reports indicate that China may increase production quotas of the minerals this quarter as a goodwill gesture to the Joe Biden administration. But other sources say that China may ultimately ban the export of the rare earths altogether on “security concerns.” What’s really going on here?

There are 17 elements considered rare earths — lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, scandium and yttrium — and while many aren’t actually rare in terms of global deposits, extracting them is difficult and expensive. They are used across high-tech manufacturing, including smartphones, fighter aircraft and components in virtually all advanced electronics. Of particular note, they are essential to many of the clean-energy technologies expected to come online in this decade.

I began to focus on rare-earth elements when I commanded the North Atlantic Treaty Organization’s presence in Afghanistan, known as the International Security Assistance Force. While Afghans live in an extremely poor country, studies have assessed that they sit atop $1 trillion to $3 trillion in a wide variety of minerals, including rare earths. Some estimates put the rare-earth levels alone at 1.4 million metric tons.

But every time I tried to visit a mining facility, the answer I got from my security team was, “It’s too dangerous right now, admiral.” Unfortunately, despite a great deal of effort by the U.S. and NATO, those security challenges remain, deterring the large foreign-capital investments necessary to harvest the lodes. Which brings us back to Beijing.

China controls roughly 80% of the rare-earths market, between what it mines itself and processes in raw material from elsewhere. If it decided to wield the weapon of restricting the supply — something it has repeatedly threatened to do — it would create a significant challenge for manufacturers and a geopolitical predicament for the industrialized world.

It could happen. In 2010, Beijing threatened to cut off exports to Japan over the disputed Senkaku Islands. Two years ago, Beijing was reportedly considering restrictions on exports to the U.S. generally, as well as against specific companies (such as defense giant Lockheed Martin Corp.) that it deemed in violation of its policies against selling advanced weapons to Taiwan.

President Donald Trump’s administration issued an executive order to spur the production of rare earths domestically, and created an Energy Resource Governance Initiative to promote international mining. The European Union and Japan, among others, are also aggressively seeking newer sources of rare earths.

Given this tension, it was superficially surprising that China announced it would boost its mining quotas in the first quarter of 2021 by nearly 30%, reflecting a continuation in strong (and rising) demand. But the increase occurs under a shadow of uncertainty, as the Chinese Communist Party is undertaking a “review” of its policies concerning future sales of rare earths. In all probability, the tactics of the increase are temporary, and fit within a larger strategy.

China will go to great lengths to maintain overall control of the global rare-earths supply. This fits neatly within the geo-economic approach of the One Belt, One Road initiative, which seeks to use a variety of carrots and sticks — economic, trade, diplomatic and security — to create zones of influence globally. In terms of rare earths, the strategy seems to be allowing carefully calibrated access to the elements at a level that makes it economically less attractive for competitors to undertake costly exploration and mining operations. This is similar to the oil-market strategy used by Russia and the Organization of Petroleum Exporting Countries for decades.

Some free-market advocates believe that China will not take aggressive action choking off supply because that could precipitate retaliation or accelerate the search for alternate sources in global markets. What seems more likely is a series of targeted shutdowns directed against specific entities such as U.S. defense companies, Japanese consumer electronics makers, or European industrial concerns that have offended Beijing.

The path to rare-earth independence for the U.S. must include: Ensuring supply chains of rare earths necessary for national security; promoting the exploitation of the elements domestically (and removing barriers to responsibly doing so); mandating that defense contractors and other critical-infrastructure entities wean themselves off Chinese rare earths; sponsoring research and development to find alternative materials, especially for clean energy technology; and creating a substantial stockpile of the elements in case of a Chinese boycott.

This is a bipartisan agenda. The Trump administration’s strategic assessment of what needs to be done (which goes beyond just 17 rare earths to include a total of 35 critical minerals) is thoughtful, and should serve as a basis for the Biden administration and Congress.

#### REM access key to military primacy and tech advancement – alternatives fail

Trigaux 12 (David, University Honors Program University of South Florida St. Petersburg) “The US, China and Rare Earth Metals: The Future Of Green Technology, Military Tech, and a Potential Achilles‟ Heel to American Hegemony,” USF St. Petersberg, May 2, 2012, https://digital.stpetersburg.usf.edu/cgi/viewcontent.cgi?article=1132&context=honorstheses] TDI

The implications of a rare earth shortage aren’t strictly related to the environment, and energy dependence, but have distinct military implications as well that could threaten the position of the United States world’s strongest military. The United States place in the world was assured by powerful and decisive deployments in World War One and World War Two. Our military expansion was built upon a large, powerful industrial base that created more, better weapons of war for our soldiers. During the World Wars, a well-organized draft that sent millions of men into battle in a short amount of time proved decisive, but as the war ended, and soldiers drafted into service returned to civilian life, the U.S. technological superiority over its opponents provided it with sustained dominance over its enemies, even as the numerical size of the army declined. New technologies, such as the use of the airplane in combat, rocket launched missiles, radar systems, and later, GPS, precision guided missiles, missile defense systems, high tech tanks, lasers, and other technologies now make the difference between victory and defeat.

The United States military now serves many important functions, deterring threats across the world. The United States projects its power internationally, through a network of bases and allied nations. Thus, the United States is a powerful player in all regions of the world, and often serves as a buffer against conflict in these regions. US military presence serves as a buffer against Chinese military modernization in Eastern Asia, against an increasingly nationalist Russia in Europe, and smaller regional actors, such as Venezuela in South America and Iran in the Middle East. The U.S. Navy is deployed all over the world, as the guarantor of international maritime trade routes. The US Navy leads action against challenges to its maritime sovereignty on the other side of the globe, such as current action against Somali piracy. Presence in regions across the world prevents escalation of potential crisis. These could result in either a larger power fighting a smaller nation or nations (Russia and Georgia, Taiwan and China), religious opponents (Israel and Iran), or traditional foes (Ethiopia and Eretria, Venezuela and Colombia, India and Pakistan). US projection is also key deterring emerging threats such as terrorism and nuclear proliferation. While not direct challenges to US primacy, both terrorism and nuclear proliferation can kill thousands.

The US Air Force has a commanding lead over the rest of the world, in terms of both numbers and capabilities. American ground forces have few peers, and are unmatched in their ability to deploy to anywhere in the world at an equally unmatched pace.

The only perceived challenge to the United States militarily comes from the People’s Republic of China.76 While the United States outspends all other nations in the world put together in terms of military spending, China follows as a close second, and has begun an extensive modernization program to boot.77 The Chinese military however, is several decades behind the United States in air power and nuclear capabilities.78 To compensate, China has begun the construction of access-denial technology, preventing the US from exercising its dominance in China’s sphere of influence.79 Chinese modernization efforts have a serious long-term advantage over the United States; access to rare earth metals, and a large concentration of rare earth chemists doing research.80 This advantage, coupled with the U.S. losing access to rare earth metals, will even the odds much quicker than policymakers had previously anticipated. 81

The largest example is US airpower. With every successive generation of military aircraft, the U.S. Air Force becomes more and more dependent on Rare Earth Metals.82 As planes get faster and faster, they have to get lighter and lighter, while adding weight from extra computers and other features on board.83 To lighten the weight of the plane, scandium is used to produce lightweight aluminum alloys for the body of the plane. Rare Earth metals are also useful in fighter jet engines, and fuel cells.84 For example, rare earths are required to producing miniaturized fins, and samarium is required to build the motors for the F-35 fighter jet.85 F-35 jets are the next generation fighter jet that works together to form the dual plane combination that cements U.S. dominance in air power over the Russian PAK FA.86

Rare earth shortages don’t just affect air power, also compromising the navigation system of Abrams Tanks, which need samarium cobalt magnets. The Abrams Tank is the primary offensive mechanized vehicle in the U.S. arsenal. The Aegis Spy 1 Radar also uses samarium.87 Many naval ships require neodymium. Hell Fire missiles, satellites, night vision goggles, avionics, and precision guided munitions all require rare earth metals. 88

American military superiority is based on technological advancement that outstrips the rest of the world. Command and control technology allows the U.S. to fight multiple wars at once and maintain readiness for other issues, as well as have overwhelming force against rising challengers. This technology helps the U.S. know who, where, and what is going to attack them, and respond effectively, regardless of the source of the threat.

Rare Earth Elements make this technological superiority possible.

To make matters worse, the defense industrial base is often a single market industry, dependent on government contracts for its business. If China tightens the export quotas further, major US defense contractors will be in trouble.89 Every sector of the defense industrial base is dependent on rare earth metals. Without rare earths, these contractors can’t build anything, which collapses the industry.90

Rare Earth shortages are actually already affecting our military, with shortages of lanthanum, cerium, europium and gadolinium happening in the status quo. This prevents us not only from building the next generation of high tech weaponry, but also from constructing more of the weapons and munitions that are needed in the status quo. As current weapon systems age and they can’t be replaced, the US primacy will be undermined. Of special concern is that U.S. domestic mining doesn’t produce “heavy” rare earth metals that are needed for many advanced components of military technologies. Given the nature of many military applications, substitutions aren’t possible. 91

#### Primacy and allied commitments solve arms races and great power war – unipolarity is sustainable, and prevents power vacuums and global escalation

Brands 18 [(Hal, Henry Kissinger Distinguished Professor at Johns Hopkins University's School of Advanced International Studies and a senior fellow at the Center for Strategic and Budgetary Assessments) "American Grand Strategy in the Age of Trump," Page 129-133]

Since World War II, the United States has had a military second to none. Since the Cold War, America has committed to having overwhelming military primacy. The idea, as George W. Bush declared in 2002, that America must possess “strengths beyond challenge” has featured in every major U.S. strategy document for a quarter century; it has also been reflected in concrete terms.6

From the early 1990s, for example, the United States consistently accounted for around 35 to 45 percent of world defense spending and maintained peerless global power-projection capabilities.7 Perhaps more important, U.S. primacy was also unrivaled in key overseas strategic regions—Europe, East Asia, the Middle East. From thrashing Saddam Hussein’s million-man Iraqi military during Operation Desert Storm, to deploying—with impunity—two carrier strike groups off Taiwan during the China-Taiwan crisis of 1995– 96, Washington has been able to project military power superior to anything a regional rival could employ even on its own geopolitical doorstep.

This military dominance has constituted the hard-power backbone of an ambitious global strategy. After the Cold War, U.S. policymakers committed to averting a return to the unstable multipolarity of earlier eras, and to perpetuating the more favorable unipolar order. They committed to building on the successes of the postwar era by further advancing liberal political values and an open international economy, and to suppressing international scourges such as rogue states, nuclear proliferation, and catastrophic terrorism. And because they recognized that military force remained the ultima ratio regum, they understood the centrality of military preponderance.

Washington would need the military power necessary to underwrite worldwide alliance commitments. It would have to preserve substantial overmatch versus any potential great-power rival. It must be able to answer the sharpest challenges to the international system, such as Saddam’s invasion of Kuwait in 1990 or jihadist extremism after 9/11. Finally, because prevailing global norms generally reflect hard-power realities, America would need the superiority to assure that its own values remained ascendant. It was impolitic to say that U.S. strategy and the international order required “strengths beyond challenge,” but it was not at all inaccurate.

American primacy, moreover, was eminently affordable. At the height of the Cold War, the United States spent over 12 percent of GDP on defense. Since the mid-1990s, the number has usually been between 3 and 4 percent.8 In a historically favorable international environment, Washington could enjoy primacy—and its geopolitical fruits—on the cheap.

Yet U.S. strategy also heeded, at least until recently, the fact that there was a limit to how cheaply that primacy could be had. The American military did shrink significantly during the 1990s, but U.S. officials understood that if Washington cut back too far, its primacy would erode to a point where it ceased to deliver its geopolitical benefits. Alliances would lose credibility; the stability of key regions would be eroded; rivals would be emboldened; international crises would go unaddressed. American primacy was thus like a reasonably priced insurance policy. It required nontrivial expenditures, but protected against far costlier outcomes.9 Washington paid its insurance premiums for two decades after the Cold War. But more recently American primacy and strategic solvency have been imperiled.

THE DARKENING HORIZON For most of the post–Cold War era, the international system was— by historical standards—remarkably benign. Dangers existed, and as the terrorist attacks of September 11, 2001, demonstrated, they could manifest with horrific effect. But for two decades after the Soviet collapse, the world was characterized by remarkably low levels of great-power competition, high levels of security in key theaters such as Europe and East Asia, and the comparative weakness of those “rogue” actors—Iran, Iraq, North Korea, al-Qaeda—who most aggressively challenged American power. During the 1990s, some observers even spoke of a “strategic pause,” the idea being that the end of the Cold War had afforded the United States a respite from normal levels of geopolitical danger and competition. Now, however, the strategic horizon is darkening, due to four factors.

First, great-power military competition is back. The world’s two leading authoritarian powers—China and Russia—are seeking regional hegemony, contesting global norms such as nonaggression and freedom of navigation, and developing the military punch to underwrite these ambitions. Notwithstanding severe economic and demographic problems, Russia has conducted a major military modernization emphasizing nuclear weapons, high-end conventional capabilities, and rapid-deployment and special operations forces— and utilized many of these capabilities in conflicts in Ukraine and Syria.10 China, meanwhile, has carried out a buildup of historic proportions, with constant-dollar defense outlays rising from US$26 billion in 1995 to US$226 billion in 2016.11 Ominously, these expenditures have funded development of power-projection and antiaccess/area denial (A2/AD) tools necessary to threaten China’s neighbors and complicate U.S. intervention on their behalf. Washington has grown accustomed to having a generational military lead; Russian and Chinese modernization efforts are now creating a far more competitive environment.

#### Counterplan solves climate – climate solutions rely on REMs

Arrobas et al 17 [(Daniele La Porta Arrobas is a senior mining specialist with the World Bank based in Washington DC and has degrees in Geoscience and Environmental Management, Kirsten Hund is a senior mining specialist with the Energy and Extractives Global Practice of the World Bank and holds a Master’s in IR from the University of Groningen in the Netherlands, Michael Stephen McCormick, Jagabanta Ningthoujam has an MA in international economics and international development from JHU and a BS in MechE from Natl University of Singapore, John Drexhage also works at the Intl Institute for Sustainable Development) “The Growing Role of Minerals and Metals for a Low Carbon Future,” World Bank, June 30, 2017, <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/207371500386458722/the-growing-role-of-minerals-and-metals-for-a-low-carbon-future>] TDI

* Full report - https://documents1.worldbank.org/curated/en/207371500386458722/pdf/117581-WP-P159838-PUBLIC-ClimateSmartMiningJuly.pdf

Climate and greenhouse gas (GHG) scenarios have typically paid scant attention to the metal implications necessary to realize a low/zero carbon future. The 2015 Paris Agreement on Climate Change indicates a global resolve to embark on development patterns that would significantly be less GHG intensive. One might assume that nonrenewable resource development and use will also need to decline in a carbon-constrained future. This report tests that assumption, identifies those commodities implicated in such a scenario and explores ramifications for relevant resource-rich developing countries. Using wind, solar, and energy storage batteries as proxies, the study examines which metals will likely rise in demand to be able to deliver on a carbon-constrained future. Metals which could see a growing market include aluminum (including its key constituent, bauxite), cobalt, copper, iron ore, lead, lithium, nickel, manganese, the platinum group of metals, rare earth metals including cadmium, molybdenum, neodymium, and indium—silver, steel, titanium and zinc. The report then maps production and reserve levels of relevant metals globally, focusing on implications for resource-rich developing countries. It concludes by identifying critical research gaps and suggestions for future work.

## CASE

AT DEBRIS:

### [1] CP solves the advantage, No Solvency

#### Public sector mining thumps - they’ll just continue after the Moon treaty is passed

**NASA 19** [“NASA Invests in Tech Concepts Aimed at Exploring Lunar Craters, Mining Asteroids,” NASA, June 11, 2019, <https://www.nasa.gov/press-release/nasa-invests-in-tech-concepts-aimed-at-exploring-lunar-craters-mining-asteroids>] TDI

NASA Invests in Tech Concepts Aimed at Exploring Lunar Craters, Mining Asteroids Robotically surveying lunar craters in record time and mining resources in space could help NASA establish a sustained human presence at the Moon – part of the agency’s broader [Moon to Mars exploration](https://www.nasa.gov/specials/moon2mars/) approach. Two mission concepts to explore these capabilities have been selected as the first-ever Phase III studies within the [NASA Innovative Advanced Concepts](https://www.nasa.gov/niac) (NIAC) program. “We are pursuing new technologies across our development portfolio that could help make deep space exploration more Earth-independent by utilizing resources on the Moon and beyond,” said Jim Reuter, associate administrator of NASA’s Space Technology Mission Directorate. “These NIAC Phase III selections are a component of that forward-looking research and we hope new insights will help us achieve more firsts in space.” The Phase III proposals outline an aerospace architecture, including a mission concept, that is innovative and could change what’s possible in space. Each selection will receive as much as $2 million. Over the course of two years, researchers will refine the concept design and explore aspects of implementing the new technology. The inaugural Phase III selections are: Robotic Technologies Enabling the Exploration of Lunar Pits William Whittaker, Carnegie Mellon University, Pittsburgh This mission concept, called Skylight, proposes technologies to rapidly survey and model lunar craters. This mission would use high-resolution images to create 3D model of craters. The data would be used to determine whether a crater can be explored by human or robotic missions. The information could also be used to characterize ice on the Moon, a crucial capability for the sustained surface operations of NASA’s Artemis program. On Earth, the technology could be used to autonomously monitor mines and quarries. [Mini Bee Prototype to Demonstrate the Apis Mission Architecture and Optical Mining Technology](https://www.nasa.gov/directorates/spacetech/niac/2019_Phase_I_Phase_II/Mini_Bee_Prototype) Joel Sercel, TransAstra Corporation, Lake View Terrace, California This flight demonstration mission concept proposes a method of asteroid resource harvesting called optical mining. Optical mining is an approach for excavating an asteroid and extracting water and other volatiles into an inflatable bag. Called Mini Bee, the mission concept aims to prove optical mining, in conjunction with other innovative spacecraft systems, can be used to obtain propellant in space. Thse proposed architecture includes resource prospecting, extraction and delivery.

### 2- Solvency

#### **NASA investing in several space debris cleanup projects – if it won’t get solved by the private sector, it’ll be the public sector which means we still get solvency because we don’t limit the public sector.**

Foust 21[(Jeff Foust, ) “NASA team to study new roles for the agency in addressing orbital debris,” SpaceNews, 6-27-2021 https://spacenews.com/nasa-team-to-study-new-roles-for-the-agency-in-addressing-orbital-debris/#:~:text=WASHINGTON%20%E2%80%94%20NASA%20has%20established%20a,debris%20and%20promote%20space%20sustainability.&text=Lal%20didn't%20elaborate%20on,rather%20than%20an%20interagency%20one]

**NASA has established a working group to examine what new roles the agency can take to mitigate the growth of orbital debris** and promote space sustainability. In a talk at the Secure World Foundation’s Summit for Space Sustainability June 23, Bhavya Lal, senior adviser to the NASA administrator for budget and finance, said she is leading a recently established team that **will examine how the agency could take a larger role in efforts to mitigate and remediate orbital debris**. “We’ve assembled an orbital debris review team in-house to evaluate how NASA can be a more effective leader in the area of space sustainability,” she said. “Our goal is to examine how NASA could be a better leader in space sustainability.” NASA’s efforts in orbital debris research, she said, have focused primarily on protecting the agency’s own missions, from the International Space Station to robotic spacecraft. “We are looking in this review team on things that NASA could be doing beyond what we do in protecting our own assets, being leaders in the broader community,” she said. Lal didn’t elaborate on the team’s work beyond that it is an internal NASA effort rather than an interagency one. “We hope to be sharing our thoughts with you in the coming months,” she said. She described tackling the orbital debris problem with a three-prong approach: reducing the creation of new debris, improving tracking of debris and developing ways to remove debris. That’s similar, she argued, to ways of dealing with climate change, with ongoing efforts to reduce emissions, track progress and study ways to sequester greenhouse gases. It’s also the model outlined in a [National Orbital Debris Research and Development Plan](https://trumpwhitehouse.archives.gov/wp-content/uploads/2021/01/National-Orbital-Debris-RD-Plan-2021.pdf), published in January by the White House Office of Science and Technology Policy in the final days of the Trump administration. It identified as three elements of the plan ways to limit the creation of debris, track and characterize debris, and remediate or repurpose debris. That report recommended that agencies work together to address the research areas identified in the report but did not make any formal assignments. The report listed NASA as having a role in 13 of 14 research areas, the exception being work to improve processing of data for space object catalogs. Lal endorsed that report. “It is important that we begin to implement this plan,” she said. One potential area of activity would be active debris removal. **NASA is already developing technologies for satellite servicing that could also be used to remove debris**. That **includes the On-orbit Servicing**, Assembly, and Manufacturing (OSAM) 1 mission, formerly known as Restore-L, currently in development. That’s attracted the attention of some in Congress. “You read in the paper quite a bit — and it seems like more and more — that space debris is becoming a problem,” Sen. Shelley Moore Capito (R-W.V.) said at a June 15 hearing of a Senate appropriations subcommittee on NASA’s budget proposal. “With OSAM-1, since you can repair in-space and elongate the life of a satellite, it could help address that issue.” Asked about NASA’s interest in active debris removal technology, Lal said the agency was focused more on early-stage technology development efforts rather than operational systems. An example she mentioned was NASA funding of several studies through the NASA Innovative Advanced Concepts program for very early stage technologies. NASA has not, unlike some other space agencies, funded demonstrations of debris removal technology. During another panel discussion at the conference June 22, one expert warned the United States was in danger of falling behind other nations in this field. “I do think the U.S. is losing an opportunity” in active debris removal technologies, said Asha Balakrishnan, a research staff member at the Science and Technology Policy Institute. “In order to do it, we need direction, at least in the U.S., on which agency is going to take the lead on doing it and who is going to be funded to do it.” Removing orbital debris brings with it both technical and policy challenges, but Lal also mentioned the high costs of debris remediation. Pilot projects funded by the European Space Agency and Japan Aerospace Exploration Agency to remove objects have a cost of more than $1 million per kilogram, she noted. Given current estimates of more than 8,000 metric tons — 8 million kilograms — of debris in orbit, “we’re talking about trillions of dollars of debris removal,” she said. “This is a challenge, but, of course, it’s also an opportunity,” she said. “**Space is a big, diverse and innovative sector, and together we can come up with amazing approaches that don’t just involve technology but also regulatory, policy and other kinds of innovations.”**

#### [3] even if you don’t buy that, Time frame is key – Kessler effect 200 years away

**Stubbe 17** [(Peter, PhD in law @ Johann Wolfgang Goethe University Frankfurt) “State Accountability for Space Debris: A Legal Study of Responsibility for Polluting the Space Environment and Liability for Damage Caused by Space Debris,” Koninklijke Brill Publishing, ISBN 978-90-04-31407-8, p. 27-31] TDI

The prediction of possible scenarios of the future evolution of the debris p o p ulation involves many uncertainties. Long-term forecasting means the prediction of the evolution of the future debris environment in time periods of decades or even centuries. Predictions are based on models84 that work with certain assumptions, and altering these parameters significantly influences the outcomes of the predictions. Assumptions on the future space traffic and on the initial object environment are particularly critical to the results of modeling efforts.85 A well-known pattern for the evolution of the debris population is the so-called Kessler effect’, which assumes that there is a certain collision probability among space objects because many satellites operate in similar orbital regions. These collisions create fragments, and thus additional objects in the respective orbits, which in turn enhances the risk of further collisions. Consequently, the num ber of objects and collisions increases exponentially and eventually results in the formation of a self-sustaining debris belt aroundthe Earth. While it has long been assumed that such a process of collisional cascading is likely to occur only in a very long-term perspective (meaning a time 1 n of several hundred years),87 a consensus has evolved in recent years that an uncontrolled growth of the debris population in certain altitudes could become reality much sooner.88 In fact, a recent cooperative study undertaken by various space agencies in the scope of i a d c shows that the current l e o debris population is unstable, even if current mitigation measures are applied. The study concludes:

Even with a 90% implementation of the commonly-adopted mitigation measures [...] the l e o debris population is expected to increase by an average of 30% in the next 200 years. The population growth is primarily driven by catastrophic collisions between 700 and 1000 km altitudes and such collisions are likely to occur every 5 to 9 years.89

#### [4]No solvency- they can just put public sector shit in there, doesn’t mean that it won’t cause Kessler effect either way or that private sector uniquely causes Kessler effect

#### 1AC Proper- “Appropriation of outer space” by private entities refers to the exercise of exclusive control of space.

TIMOTHY JUSTIN TRAPP, JD Candidate @ UIUC Law, ’13, TAKING UP SPACE BY ANY OTHER MEANS: COMING TO TERMS WITH THE NONAPPROPRIATION ARTICLE OF THE OUTER SPACE TREATY UNIVERSITY OF ILLINOIS LAW REVIEW [Vol. 2013 No. 4]

The issues presented in relation to the nonappropriation article of the Outer Space Treaty should be clear.214 The ITU has, quite blatantly, created something akin to “property interests in outer space.”215 It allows nations to exclude others from their orbital slots, even when the nation is not currently using that slot.216 This is directly in line with at least one definition of outer-space appropriation.217 [\*\*Start Footnote 217\*\*Id. at 236 (“Appropriation of outer space, therefore, is ‘the exercise of exclusive control or exclusive use’ with a sense of permanence, which limits other nations’ access to it.”) (quoting Milton L. Smith, The Role of the ITU in the Development of Space Law, 17 ANNALS AIR & SPACE L. 157, 165 (1992)). \*\*End Footnote 217\*\*]The ITU even allows nations with unused slots to devise them to other entities, creating a market for the property rights set up by this regulation.218 In some aspects, this seems to effect exactly what those signatory nations of the Bogotá Declaration were trying to accomplish, albeit through different means.219

#### Satelites just occupy a piece of land temporarily meaning that they don’t appropriate anything

Takes out any offence

#### No impact to Ozone hole- also unknown causes

Hand 2/10/16. Eric Hand is a staff writer who writes about planetary issures. <http://www.sciencemag.org/news/2016/02/record-ozone-hole-may-open-over-arctic-spring>, Ben Bernstein

Lingering atmospheric pollutants and a blast of frigid air have carved an unusually deep hole in Earth’s protective ozone layer over the Arctic, and it threatens to get deeper. Atmospheric scientists are analyzing data from weather balloons and satellites for clues to how the ozone will fare when sunlight—a third factor in ozone loss—returns to the Arctic in the spring. But they are already worrying about how extra ultraviolet light might affect humans and ecosystems below and wondering whether climate change will make such Arctic holes more common or severe. Record cold temperatures in the Arctic stratospheric ozone layer, 15 to 35 kilometers up, are the proximate cause for this year’s losses, because they help to unleash ozone-destroying chemicals. “This winter has been stunning,” says Markus Rex, an atmospheric chemist at the Alfred Wegener Institute in Potsdam, Germany. By next week, about 25% of the Arctic’s ozone will be destroyed, he says. This time of year, the stratosphere tends to warm up with the breakdown of the polar vortex, a cyclone that traps cold air. But if a strong vortex persists another month as light returns to the Arctic after the dark winter, ozone losses will get much bigger, Rex says. Conditions are ripe for losses to surpass a record Arctic ozone hole observed in the spring of 2011, he adds. At Earth’s surface, ozone is a caustic chemical and a health hazard. But in the stratosphere, it shields the planet from ultraviolet light. Scientists noticed in the 1980s that chlorine-containing chemicals commonly used in refrigerants were reacting to form compounds that ate away stratospheric ozone, especially over the poles. The 1989 Montreal Protocol led to the phaseout of those chemicals, but their long atmospheric lifetime means that seasonal ozone losses will persist well into this century. Every year, a major ozone hole opens up over Antarctica, where winters are colder and polar vortices are stronger and more stable than over the Arctic. But this year, the Arctic could be the poster child. Cold temperatures have allowed nitric acid, mostly from natural sources, to condense and form the peculiar, iridescent clouds that have been spotted all over northern latitudes this winter. “They’re beautiful, but once I see them, I’m concerned—they’re dangerous,” Rex says. That’s because the clouds catalyze the reactions that mobilize chlorine into active chemicals that can react in the presence of sunlight to destroy ozone. An instrument on the NASA AURA satellite has detected record lows of the inert forms of chlorine and rising amounts of the active ones, notes Gloria Manney, an atmospheric scientist at NorthWest Research Associates in Socorro, New Mexico. “Conditions are primed,” she says. “The last ingredient we need is sunlight.” Weather models are predicting some warming of the stratosphere this week, she adds, but probably not enough to halt the ozone destroying brew. The Arctic vortex tends to behave erratically, with blobs of cold air often dipping into more heavily populated northern latitudes. The influx of ozone-poor air could cause problems for people there, who are unused to wearing sunscreen in March, Rex says. “If we get such a deep minimum, then people need to be informed,” he says. The extra radiation could even adversely affect phytoplankton, which typically bloom in the Arctic Ocean each spring, Rex suggests. Ross Salawitch, an atmospheric chemist at the University of Maryland, College Park, says the health hazards shouldn’t be sensationalized. “The worst-case scenario would be folks in high northern latitudes being in a type of ultraviolet environment that people are exposed to all the time in San Diego.” For Salawitch, the bigger question is what role climate change might be playing. The notoriously mercurial polar weather is the main factor determining how much ozone is destroyed each spring, he says. But climate change is also expected to cool the stratosphere over the long run. The same greenhouse gases that trap heat in the lower atmosphere allow the stratosphere to more effectively radiate energy into space. On its own, the stratospheric cooling could make bad ozone years in the Arctic more common. It should also make polar vortices stronger, and more stable. But there is evidence that storminess at lower latitudes—another thing that is expected to increase in a warming world—will make stable polar vortices less common. Which effects will win out? Salawitch offers a parallel to hurricanes. Climate change is expected to make tropical hurricanes less frequent but more intense. Persistent Arctic vortices, too, could become scarcer but stronger. “When you have cold winters, they tend to be whoppers.” And that could mean that Arctic holes like this year’s could get deeper in the future.

AT UV:

#### No 1AR Theory—

#### [1] The 2NR must overcover theory since they get 3 minute 2ar collapse on one of the layers and persuasiveness advantage of a 3 minute 2ar

#### [2] Responses to my counter interp will be new which means 1ar theory necessitates intervention—-outweighs because it makes the decision arbitrary

#### [3] I only have one chance to respond after it is introduced while they have two chances

#### [4] Deters the 1NC from checking abuse out of fear for 1AR meta-theory, which destroys me since it's also preclusive. Turns their infinite abuse args.

#### [5] Resolvability double bind—either you automatically accept 2AR responses to 2NR counter-standards which means they always win since I can't answer those responses, or you have to intervene to determine the credence you give those 2AR responses, which makes it irresolvable and unfair.