# 1NC

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#### I negate the resolution – Resolved: The appropriation of outer space by private entities is unjust.

### Observations

#### Now I offer one observation for the round. The affirmatives burden is to prove that generally situations of “appropriation of outer space” are unjust – While the negative only has to prove an instance of it being just for you to vote negative.

#### The thesis of the negative is that we need private-sector-led innovations, especially from mining, to overcome climate change – The important role of private companies means it simply cannot be unjust.

### Contention 1 – Privatization

#### The first contention is Privatization –

#### Privatization avoids wasteful government spending through cost effective practices---that boosts innovation and allows re-appropriation of funds for R&D.

Shi ’16, [Lina; writer for the Public Policy Initiative at Wharton; December 12th; “THE IMPLICATIONS OF THE PRIVATIZATION OF SPACE EXPLORATION”; <https://publicpolicy.wharton.upenn.edu/live/news/1619-the-implications-of-the-privatization-of-space>; accessed 4/5/19] Sachin

The biggest cited benefit of the privatization of space travel is its cost-effectiveness. For example, whereas the old Space Shuttle program cost around $4 billion each year, the new commercial resupply services contracts only cost around $50 million per launch. [9] Thus, NASA now has more money available to spend in other areas. Instead of being bogged down by the routine application of old research, NASA can prioritize their limited budget to work more on research of other unknowns and development of new long-term space travel technologies. Additionally, with many private companies all developing new space technologies, there is more competition for innovation, which may also lead to faster growth in the field of space technology. [10]

Proponents of privatized space travel also point out that the private sector often transforms government developed technologies into lucrative or affordable technologies and products for the general public. The space industry is especially full of opportunities, both for its natural resources and tourism. On the natural resources side, precious metals, minerals, and energy are available in infinite supply in space. For instance, one average half-kilometer S-type asteroid is worth more than $20 trillion dollars. [9] Multiple companies have started low-Earth orbit technology to allow people to be launched into space for a short trip. For example, Virgin Galactic famously offers short flights into space for $250,000 dollars. [11] Although the current price is cost prohibitive, limiting this service’s potential market, private companies have time to develop government technologies to be more cost-effective in the future. Altogether, these private space exploration companies will take advantage of the opportunities to push existing technology to create jobs and boost the economy.

#### Strong commercial space catalyzes tech innovation – progress at the margins and spinoff tech change global information networks

Joshua Hampson 17, Security Studies Fellow at the Niskanen Center, 1-25-2017, “The Future of Space Commercialization”, Niskanen Center, https://republicans-science.house.gov/sites/republicans.science.house.gov/files/documents/TheFutureofSpaceCommercializationFinal.pdf

Innovation is generally hard to predict; some new technologies seem to come out of nowhere and others only take off when paired with a new application. It is difficult to predict the future, but it is reasonable to expect that a growing space economy would open opportunities for technological and organizational innovation. In terms of technology, the difficult environment of outer space helps incentivize progress along the margins. Because each object launched into orbit costs a significant amount of money—at the moment between $27,000 and $43,000 per pound, though that will likely drop in the future —each 19 reduction in payload size saves money or means more can be launched. At the same time, the ability to fit more capability into a smaller satellite opens outer space to actors that previously were priced out of the market. This is one of the reasons why small, affordable satellites are increasingly pursued by companies or organizations that cannot afford to launch larger traditional satellites. These small 20 satellites also provide non-traditional launchers, such as engineering students or prototypers, the opportunity to learn about satellite production and test new technologies before working on a full-sized satellite. That expansion of developers, experimenters, and testers cannot but help increase innovation opportunities. Technological developments from outer space have been applied to terrestrial life since the earliest days of space exploration. The National Aeronautics and Space Administration (NASA) maintains a website that lists technologies that have spun off from such research projects. Lightweight 21 nanotubes, useful in protecting astronauts during space exploration, are now being tested for applications in emergency response gear and electrical insulation. The need for certainty about the resiliency of materials used in space led to the development of an analytics tool useful across a range of industries. Temper foam, the material used in memory-foam pillows, was developed for NASA for seat covers. As more companies pursue their own space goals, more innovations will likely come from the commercial sector. Outer space is not just a catalyst for technological development. Satellite constellations and their unique line-of-sight vantage point can provide new perspectives to old industries. Deploying satellites into low-Earth orbit, as Facebook wants to do, can connect large, previously-unreached swathes of 22 humanity to the Internet. Remote sensing technology could change how whole industries operate, such as crop monitoring, herd management, crisis response, and land evaluation, among others. 23 While satellites cannot provide all essential information for some of these industries, they can fill in some useful gaps and work as part of a wider system of tools. Space infrastructure, in helping to change how people connect and perceive Earth, could help spark innovations on the ground as well. These innovations, changes to global networks, and new opportunities could lead to wider economic growth.

#### Tech innovation solves extinction from nuclear war, food insecurity, and natural disasters.

Baum 18, [Seth Baum, Global Catastrophic Risk Institute, 2018. “Resilience to Global Catastrophe.” <https://beta.irgc.org/wp-content/uploads/2018/12/Baum-for-IRGC-Resilience-Guide-Vol-2-2018.pdf>] Recut Sachin

There are several GCRs that are believed to threaten the global food supply. For example, nuclear war burns cities and other areas, sending large amounts of particulate matter into the stratosphere, which then blocks incoming sunlight worldwide, disrupting agriculture. An India-Pakistan nuclear war scenario has been found to cause reductions to major crop yields in the range of 10 to 50% (see Xia, Robock, Mills, Stenke, & Helfand, 2015). Large asteroid and comet collisions and volcano eruptions can have similar effects. Other global food supply threats could include crop pathogens and abrupt global warming. These various catastrophes could create relatively abrupt shocks to the global food supply, on time scales of years to decades. Slower events, such as gradual global warming and the depletion of agriculturally significant natural resources (such as phosphate rock), can also have large effects on the food supply, though they offer more opportunity for civilization to adapt. Several measures can be taken to increase resilience to global food supply catastrophes (Baum, Denkenberger, Pearce, Robock, & Winkler, 2015). The simplest is to make the most of the remaining food supply. In particular, crops can be shifted from livestock feed to direct human consumption. Under present (non-catastrophe) conditions, bypassing livestock could yield enough calories for four billion people (Cassidy, West, Gerber, & Foley, 2013). Post-catastrophe, this figure could be substantially reduced, but it may nonetheless help keep many people alive. Another measure is to stockpile food prior to the catastrophe. In principle, the amount of food that can be stockpiled is virtually unlimited. In practice, however, food stockpiling is expensive, laborintensive, and cuts into the pre-catastrophe food supply. Food stockpiles are best suited to a more limited role for more moderate catastrophes, especially those of short duration. Existing food stockpiles could support the global human population for an estimated 4-7 months (Denkenberger & Pearce, 2014), which is insufficient for many global catastrophe scenarios. Another potential role for food stockpiles is to ensure the survival of a select population, such as in continuity of government facilities, survivalist communities, or dedicated refuges designed to ensure an MVP. A third measure is to develop capacity to produce food in unconventional ways. For example, if sunlight becomes unavailable, it may be possible to produce food via other means (Denkenberger & Pearce, 2014). Ultimately, food does not need sunlight—it needs energy. Non-sunlight energy sources could include fossil fuels, nuclear power, and energy stored in trees and other biomass. This option is attractive because it can succeed for catastrophes of all sizes with no expensive reductions in pre-catastrophe food supply. However, it may require technological development and institutional support that thus far has not been made. Thus, this is the sort of policy measure that could result from greater emphasis on resilience to global catastrophe.

#### Food insecurity causes nuclear extinction.

FDI 12, [(Research institute providing strategic analysis of Australia’s global interests; citing Lindsay Falvery, PhD in Agricultural Science and former Professor at the University of Melbourne’s Institute of Land and Environment], Future Directions International, “Food and Water Insecurity: International Conflict Triggers & Potential Conflict Points,” <http://www.futuredirections.org.au/workshop-papers/537-international-conflict-triggers-and-potential-conflict-points-resulting-from-food-and-water-insecurity.html>] Recut Sachin

There is a **growing appreciation** that the conflicts in the next century will **most likely** be fought over a lack of resources. Yet, in a sense, this is not new. Researchers point to the French and Russian revolutions as conflicts induced by a lack of food. More recently, **Germany’s World War Two** efforts are said to have been inspired, at least in part, by its perceived need to gain access to more food. Yet the general sense among those that attended FDI’s recent workshops, was that the scale of the problem in the future could be **significantly greater** as a result of population pressures, changing weather, urbanisation, migration, loss of arable land and other farm inputs, and increased affluence in the developing world. In his book, Small Farmers Secure Food, Lindsay Falvey, a participant in FDI’s March 2012 workshop on the issue of food and conflict, clearly expresses the problem and why countries across the globe are starting to take note. . He writes (p.36), “…if people are hungry, especially in cities, **the state is not stable** – riots, violence, breakdown of law and order and migration result.” “Hunger feeds anarchy.” This view is also shared by Julian Cribb, who in his book, The Coming Famine, writes that if “large regions of the world run short of food, land or water in the decades that lie ahead, then **wholesale, bloody wars are liable to follow**.” He continues: “An increasingly credible scenario for **World War 3** is not so much a confrontation of super powers and their allies, as a **festering, self-perpetuating chain of resource conflicts**.” He also says: “The wars of the 21st Century are less likely to be global conflicts with sharply defined sides and huge armies, than a scrappy mass of failed states, rebellions, civil strife, insurgencies, terrorism and genocides, sparked by bloody competition over dwindling resources.” As another workshop participant put it, people do not go to war to kill; they go to war over resources, either to protect or to gain the resources for themselves. Another observed that hunger results in passivity not conflict. Conflict is over resources, not because people are going hungry. A **study** by **the I**nternational **P**eace **R**esearch **I**nstitute indicates that where food security is an issue, it is more likely to result in some form of conflict. **Darfur, Rwanda, Eritrea and the Balkans** experienced such wars. Governments, especially in developed countries, are increasingly aware of this phenomenon. The UK Ministry of Defence, the CIA, the US **C**enter for **S**trategic and **I**nternational **S**tudies and the Oslo Peace Research Institute, **all identify** famine as a potential trigger for conflicts and possibly even **nuclear war**.

#### For these reason, I urge a negative ballot. Now onto my opponents case.