# 1NC v Millard North

## 1NC

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

### Framework – Hobbes

#### Because the resolution is question of determining justice, the value for the round is ensuring justice. This happens through actions.

#### The constitutive obligation of a just state, or power is to protect security. This is a prior concern to their framework since violence hinders ethical decision making. For example, in the state of nature, what is “moral” is not determined through ethical deliberation, but rather through power and subjugation. Thus, framework should be a question of how we prevent the state of nature, i.e. ensure security.

#### Therefore, the criterion is ensuring security. If a state doesn’t ensure security, we lose reason to follow it. This means the government is no longer legitimate, or just. Philosopher Thomas Hobbes further explains:

Thomas Hobbes, “Leviathan,” 1651 \*\*\*Bracketted for clarity

**The only way to erect** such a **Common Power**, as may be able to defend them from the invasion of Forraigners, and the injuries of one another, and thereby to secure them in such sort, as that by their owne industrie, and by the fruites of the Earth, they may nourish themselves and live contentedly; is, to conferre alltheir **power and strength upon one [government.]**Man, or upon one Assembly of men, that may reduce all their Wills, by plurality of voices, unto one Will: which is as much as to say, to appoint one man, or Assembly of men, to beare their Person; and every one to owne, and acknowledge himselfe to be Author of whatsoever he that so beareth their Person, shall Act, or cause to be Acted, in those things which concerne the Common Peace and Safetie; and therein to submit their Wills, every one to his Will, and their Judgements, to his Judgment. This is more than Consent, or Concord; it is a reall Unitie of them all, in one and the same Person, made by Covenant of every man with every man, in such manner, as if **every[one]** man **should say to [each other]** every man, **"I Authorise and give up my Right of Governing my selfe**, to this Man, or to this Assembly of men, **on this condition, that thou** give up thy Right to him, and **Authorise all his Actions in like manner.”** This done, the Multitude so **United in one** Person, is called a **Commonwealth**, in latine CIVITAS. This is the Generation of that great LEVIATHAN, or rather (to speake more reverently) of that Mortall God, to which **we [gain]** owe under the Immortall God, our **peace and defence**. For by this Authoritie, given him by every particular man in the Common-Wealth, he hath the use of so much Power and Strength conferred on him, that by terror thereof, he is inabled to forme the wills of them all, to Peace at home, and mutuall ayd against their enemies abroad. ... And **because the [Goal]** End **of [Government]** this Institution, **is the Peace and Defence of** them **all**; and whosoever has right to the End, has right to the Means; it belongeth of Right, to whatsoever Man, or Assembly that hath the Soveraignty, to be Judge both of the meanes of Peace and Defence; and also of the hindrances, and disturbances of the same; and to do whatsoever he shall think necessary to be done, both beforehand, for the preserving of Peace and Security, by prevention of discord at home and Hostility from abroad; and, when Peace and Security are lost, for the recovery of the same.

#### Additionally, prefer this framework because upholding security is a prerequisite to pursuing other values like happiness or democracy.

### 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 –

#### Private companies are necessary – They have to be the ones in space to ensure continuous innovations.

Hamspson 17, [Joshua Hampson, 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/>] DurhamSA

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.

#### Stronger innovation decreases risks of extinction, and creates tangible improvements in the quality of life for the people.

Matthews 18 [Dylan Matthews 10-26-2018 “How to help people millions of years from now” <https://www.vox.com/future-perfect/2018/10/26/18023366/far-future-effective-altruism-existential-risk-doing-good> (Co-founder of Vox, citing Nick Beckstead @ Rutgers University)] Sachin

If you care about improving human lives, you should overwhelmingly care about those quadrillions of lives rather than the comparatively small number of people alive today. The 7.6 billion people now living, after all, amount to less than 0.003 percent of the population that will live in the future. It’s reasonable to suggest that those quadrillions of future people have, accordingly, hundreds of thousands of times more moral weight than those of us living here today do. That’s the basic argument behind Nick Beckstead’s 2013 Rutgers philosophy dissertation, “On the overwhelming importance of shaping the far future.” It’s a glorious mindfuck of a thesis, not least because Beckstead shows very convincingly that this is a conclusion any plausible moral view would reach. It’s not just something that weird utilitarians have to deal with. And Beckstead, to his considerable credit, walks the walk on this. He works at the Open Philanthropy Project on grants relating to the far future and runs a charitable fund for donors who want to prioritize the far future. And arguments from him and others have turned “long-termism” into a very vibrant, important strand of the effective altruism community. But what does prioritizing the far future even mean? The most literal thing it could mean is preventing human extinction, to ensure that the species persists as long as possible. For the long-term-focused effective altruists I know, that typically means identifying concrete threats to humanity’s continued existence — like unfriendly artificial intelligence, or a pandemic, or global warming/out of control geoengineering — and engaging in activities to prevent that specific eventuality. But in a set of slides he made in 2013, Beckstead makes a compelling case that while that’s certainly part of what caring about the far future entails, approaches that address specific threats to humanity (which he calls “targeted” approaches to the far future) have to complement “broad” approaches, where instead of trying to predict what’s going to kill us all, you just generally try to keep civilization running as best it can, so that it is, as a whole, well-equipped to deal with potential extinction events in the future, not just in 2030 or 2040 but in 3500 or 95000 or even 37 million. In other words, caring about the far future doesn’t mean just paying attention to low-probability risks of total annihilation; it also means acting on pressing needs now. For example: We’re going to be better prepared to prevent extinction from AI or a supervirus or global warming if society as a whole makes a lot of scientific progress. And a significant bottleneck there is that the vast majority of humanity doesn’t get high-enough-quality education to engage in scientific research, if they want to, which reduces the **odds that we have enough trained scientists to come up with the breakthroughs** we need as a civilization to survive and thrive. So maybe one of the best things we can do for the far future is to improve school systems — here and now — to harness the group economist Raj Chetty calls “lost Einsteins” (potential innovators who are thwarted by poverty and inequality in rich countries) and, more importantly, the hundreds of millions of kids in developing countries dealing with even worse education systems than those in depressed communities in the rich world. What if living ethically for the far future means living ethically now? Beckstead mentions some other broad, or very broad, ideas (these are all his descriptions): Help make computers faster so that people everywhere can work more efficiently Change intellectual property law so that technological innovation can happen more quickly Advocate for open borders so that people from poorly governed countries can move to better-governed countries and be more productive Meta-research: improve incentives and norms in academic work to better advance human knowledge Improve education Advocate for political party X to make future people have values more like political party X ”If you look at these areas (economic growth and technological progress, access to information, individual capability, social coordination, motives) a lot of everyday good works contribute,” Beckstead writes. “An implication of this is that a lot of everyday good works are good from a broad perspective, even though hardly anyone thinks explicitly in terms of far future standards.” Look at those examples again: It’s just a list of what normal altruistically motivated people, not effective altruism folks, generally do. Charities in the US love talking about the lost opportunities for innovation that poverty creates. Lots of smart people who want to make a difference become scientists, or try to work as teachers or on improving education policy, and lord knows there are plenty of people who become political party operatives out of a conviction that the moral consequences of the party’s platform are good. All of which is to say: Maybe effective altruists aren’t that special, or at least maybe we don’t have access to that many specific and weird conclusions about how best to help the world. If the far future is what matters, and generally trying to make the world work better is among the best ways to help the far future, then effective altruism just becomes plain ol’ do-goodery.

### Contention 2 – Mining

#### The second contention is Mining –

#### Asteroid mining preserves the Earth’s environment by curbing pollution, improving water quality, and minimizing the current effects of climate change.

Hlimi 14, [(International Secretariat Member and Health & Hazards Coordinator for the Centre for International Sustainable Development Law in Montreal, Quebec)

Tina Hlimi, “The Next Frontier: An Overview of the Legal and Environmental Implications of Near-Earth Asteroid Mining,” 2014, Annals of Air and Space Law, Accessed July 14, 2021,<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2546924>] Recut DurhamSA

Let us recapitulate what we have already found. Shortage of resources is not a fact; it is an illusion born of ignorance. Scientifically and technically feasible improvements in launch vehicles will make **departure from Earth easy and inexpensive**. Once we have a foothold in space, the mass of the asteroid belt will be at our disposal, permitting us to provide for the material needs of a million times as many people as Earth can hold. Solar power can provide all the energy needs of this vast civilisation (10,000,000 billion people) from now until the Sun expires. Using less than one percent of the helium-3 energy resources of Uranus and Neptune for fusion propulsion, we could send a billion interstellar arks, each containing a billion people, to the stars. There are about a billion Sun-like stars in our galaxy. We have the resources to colonise the entire Milky Way. In addition to demystifying the legal doctrine governing outer space natural resource appropriation it is also necessary to weigh the benefits and detriments of space-faring activities. Foremost, States around the world are developing at unprecedented rates and the human population is mounting in conjunction with demand for natural resources to sustain the current and newly established western standard of living. One of the fastest growing nations, China, is experiencing unhindered growth facilitated by fossil fuel use from coal and extensive mining. This has caused substantial water, soil and air degradation. In the face of these troubles, [Near Earth Asteroid mining, or] NEA mining[,] could be the key to preserving the Earth's bounty and replenishing contaminated water supplies. The influx of natural resources. [Mining] could **thwart the burning of** dirty **coal and fossil fuels**, thereby **mitigating the effects of climate change,** such as, rising sea level, atmospheric pollution, melting of sea ice and rising temperatures. NEA harvesting could also protect the ocean and the fragile and largely unexplored deep seabeds from oil and gas drilling. It could furthermore protect ecosystems from rare-earth mineral mining predominantly used to fuel the electronics sector. NEA mining is especially pertinent as China restricted its global exports of rare-earth minerals in 2009, incongruously citing the need to protect the environment. Unfortunately, the supply cuts have forced dependent States like Japan, the United States and South Korea to heighten rare-Earth mineral exploration. This accordingly led to Japan's 2011 discovery of rare-earth minerals in the ocean-bed deposits of the Pacific Exclusive Economic Zone (PEEZ) thereby necessitating risky, deep-sea mining techniques, which may result in marine pollution if not carefully designed and developed. Other States, which have joined the environmentally destructive rare-earth mineral exploration movement include India, Canada, Tanzania, Australia, Brazil and Vietnam. There is accordingly much competition and exploration for rare-earth minerals which could result in significant exploitation of untouched areas like the PEEZ seabed and Mongolia. Other regions which may soon be targeted for mineral and hydrological resources include Antarctica and the Arctic. With the advent of technological advances, environmentally destructive practices such as refining may soon occur in outer space, sparing the Earth of pollution. Accordingly, NEA mining is a viable technology for preserving the Earth's environment by curbing atmospheric and marine pollution, enhancing water supply and quality and mitigating the effects of climate change; all while allowing humankind to maintain and even **improve their standard of living** through increased technologies, consumption and population growth.

#### Asteroid mining in space is much better for the environment mining on earth.

MIT 18, [10-19-2018, "Asteroid mining might actually be better for the environment," MIT Technology Review, <https://www.technologyreview.com/2018/10/19/139664/asteroid-mining-might-actually-be-better-for-the-environment/>] Sachin

But profit margins are only part of the picture. A potentially more significant aspect of these missions is the impact they will have on Earth’s environment. But nobody has assessed this environmental impact in detail. Today, that changes thanks to the work of Andreas Hein and colleagues at the University of Paris-Saclay in France. These guys have calculated the greenhouse-gas emissions from asteroid-mining operations and compared them with the emissions from similar Earth-based activities. Their results provide some eyebrow-raising insights into the benefits that asteroid mining might provide. The calculations are relatively straightforward. Rocket launches release significant amounts of greenhouse gases into the atmosphere. The fuel on board the first stage of a rocket burns in Earth’s atmosphere to form carbon dioxide. For kerosene-burning rockets, one kilogram of fuel creates three kilograms of CO2. (The second and third stages operate outside the Earth’s atmosphere and so can be ignored.) Reentries are just as damaging. That’s because a significant mass of a re-entering vehicle ablates in the upper atmosphere, producing NOx such as nitrous oxide (N2O), a greenhouse gas that is about 300 times more potent than CO2. By one estimate, the space shuttle released about 20% of its mass in the form of N2O every time it returned to Earth. Hein and co use these numbers to calculate that a kilogram of platinum mined from an asteroid would release some 150 kilograms of [Carbon] CO2 into Earth’s atmosphere. However, economies of scale from large asteroid-mining operations could lower this to about 60 kilograms of CO2 per kilogram of platinum. That needs to be compared with the emission from Earth-based mining. Here, platinum mining generates significant greenhouse gases, mostly from the energy it takes to remove this stuff from the ground. Indeed, the numbers are huge. The mining industry estimates that producing one kilogram of platinum on Earth releases around 40,000 kilograms of carbon dioxide. “The global warming effect of Earth-based mining is several orders of magnitude larger,” say Hein and co. The figures for water are also encouraging. In this case, the authors calculate the greenhouse-gas emissions from an asteroid-mining operation that returns water to anywhere within the moon’s orbit, a so-called cis-lunar orbit. They compare this to the emissions from sending the same volume of water from Earth into orbit. The big difference is that a water-carrying vehicle from Earth can haul only a small percentage of its mass as water. But an asteroid-mining spacecraft can transport a significant multiple of its mass as water to cis-lunar orbit. “Substantial savings in greenhouse gas emissions can be achieved,” say Hein and co. This interesting work should help to focus minds on the environmental impacts of mining, which are rapidly increasing in profile. But it is only a first step. There is significant uncertainty in the numbers here, so these will need to be better understood.

#### Climate change clearly leads to extinction and must be prevented. Since, life is one of the most valuable things when trying to protect security. We must instead minimize the chances of climate change especially by using asteroid mining. For these reason, I urge a negative ballot. Now onto my opponents case.

# Case

## Framing

#### 1] No government in the rez

#### 2] Util fails with justice

#### 3] Security first

#### 4] We win under their framing anyways

## At: Africa

#### Overview – Their impacts are SUPER far-fetched and don’t really make sense. How does less resources in Africa mean

#### 1] No extinction – We have used nukes before but I am alive right now.

#### 2] Turn – Increased mining for minerals causes instability and support for terrorist groups in Africa. It means you increase the amount of conflict.

Sharland et al (Lisa Sharland, Tim Grice and Sara Zeiger), Austrailian Strategic Policy Institute, November 2017 [“SPECIAL REPORT: Preventing and countering violent extremism in Africa The role of the mining sector” [https://s3-ap-southeast-2.amazonaws.com/ad-aspi/2017-11/SR111%20CVE%,20in%20Africa\_0.pdf?aP4X0UlUwt1Towh6fxphPAv2LrEm6V5S](https://s3-ap-southeast-2.amazonaws.com/ad-aspi/2017-11/SR111%20CVE%25,20in%20Africa_0.pdf?aP4X0UlUwt1Towh6fxphPAv2LrEm6V5S)] Durham SA

Collective grievances (real or perceived) can be used by political and community leaders to create powerful narratives about the impact of mining projects, sometimes in a way that exacerbates tensions in the local community by focusing on themes of oppression or foreign intervention.137 Such narratives may be drawn upon or exploited by violent extremists ‘to fuel the thirst for revenge against oppressors’.138 Grievances and conflict have been a constant feature of mining projects in Africa. They have often escalated to violent and fatal conflicts, such as the Marikana massacre in South Africa in 2012. In Ghana, a manager working for AngloGold Ashanti was killed in 2016 during a riot among illegal miners at the company’s Obuasi mine. In Kenya, an internationally renowned geologist and gemstone miner was attacked and killed in what is believed to have been a dispute over mining rights. Although not directly associated with extremist groups, such attacks illustrate the ways in which grievances can escalate into violence and fatal confrontations between police, mine employees and local communities. This escalation process was illustrated in an influential study of company–community conflict that reviewed a sample of 50 conflict cases in the extractive sector, 18% of which were in sub-Saharan Africa.139 Although environmental issues were the most common ‘proximate’ cause of conflict, the most common ‘underlying’ causes were socioeconomic issues (particularly the distribution of project benefits), changes to local culture and customs, and the quality of ongoing processes for consultation and communication related to the project. In addition to the negative social consequences of company–community conflict outlined by the study, conflict also creates a vulnerability to violent extremism in mining communities. By taking a proactive approach to grievance and conflict management, including through measures such as ongoing monitoring and assessment of social impacts, grievance mechanism processes and training for community relations and security staff in conflict management and humanrights-based approaches, mining companies can actively manage the risk that project-related grievances will exacerbate the risk factors for violent extremism in local communities. In some cases, mining companies, as foreign entities, may be catalysts for national resentment. Mining in Africa has often been closely associated with colonial and neo-colonial power, so local communities in post-colonial African countries may still associate mining companies with outside interests. Local politicians can also use a mining company as an easy target and use its presence as a tool to gather support in local elections. This has been evident in the coastal region in southern Kenya, where the presence of a mining company has been referred to as a contributor to some of the local grievances in the region, despite the company’s extensive engagement in a range of community projects and initiatives.140 In the context of local and national politics, mining companies may also be perceived to have disproportionate access to and influence on the political ‘elites’ in society due to the companies’ size and economic influence.141 Most people in local communities have only limited access to their local politicians, let alone those at the national level. Furthermore, politicians may be seen to benefit directly from the presence of the mining company. In the case of one of the companies in our research, it was well known in the local community that a senior political figure’s spouse was employed at the mine in a senior role.142 Even though the employee may have been the person best qualified for the job, this resulted in the perception that the political elites were benefiting when many locals didn’t have jobs at the mine, exacerbating grievances within the community. There’s a risk that the development of national CVE programs may come into conflict with the presence of foreign companies if narratives are not managed carefully. For example, the second priority listed in Kenya’s National CVE Plan is to ‘promote patriotism for Kenya’s nationhood’. If exploited politically, the presence of a foreign mining company could be pointed to as an example of how Kenya’s nationhood isn’t being promoted but instead is being manipulated by foreign or ‘Western’ interests. Such narratives have been used by other African countries to completely and suddenly change their mining governance regimes, often to the detriment of the national economy.143 While we don’t suggest that national identity should not be identified as a way to foster inclusiveness, this highlights the importance of national governments working closely with their local counterparts to incorporate the benefits of foreign and local investment in mining operations. Governments and officials should be aware of the potential to exacerbate grievances and conflict in the community in relation to mining companies, particularly in contexts in which there are significant enabling factors and individual incentives for violent extremism.

## At: Russia

#### 1] They don’t read any evidence that says private companies are key.

#### 2] Their evidence Negates! It tells us that both parties are benefitting right now. They have no reason to Attack each other.

1AC CSIS 18 – [Durham Reads Blue] [(Center for Strategic and International Studies), “Why Human Space Exploration Matters,” August 21, 2018 https://www.csis.org/blogs/post-soviet-post/space-cooperation] TDI

U.S.-Russian space cooperation continues to be a stated mutual goal. In April 2018, President Putin said of space, “Thank God, this field of activity is not being influenced by problems in politics. Therefore, I hope that everything will develop, since it is in the interests of everyone…This is a sphere that unites people. I hope it will continue to be this way.” During his statement at a recent event at CSIS, NASA Administrator Jim Bridenstine said, “[space] is our best opportunity to dialogue when everything else falls apart. We’ve got American astronauts and Russian cosmonauts dependent on each other on the International Space Station, which enables us to ultimately maintain that dialogue.” The U.S. and Russia both benefit from the ISS partnership. Russia provides transportation to the ISS for U.S. astronauts, from which Russia receives an average of $81 million per seat on the Soyuz (and recognition of its status as a space power). The U.S. also benefits from Russia’s technical contributions to the ISS while Russia benefits The U.S. and Russia signed a joint statement in 2017 in support of the idea of collaborating on deep space exploration, including the construction of the Lunar Orbital Platform-Gateway, a research-focused space station orbiting the moon. Through agreements on civilian space exploration, such as the Lunar Orbital Platform-Gateway or future Mars projects, that have clear benefits to both sides, some degree of cooperation will remain in both countries’ interest. The high price tag for pursuing space exploration alone and opportunities for sharing and receiving technical expertise encourages international partnerships like the ISS. However, at least three factors, apart from the overall deterioration of U.S.-Russia relations, threaten this cooperation. First, growth of the private sector space industry may alter the economic arrangement between the U.S. and Russia, and ultimately lower the benefits of cooperation to both countries. The development of advanced technologies by private companies will give NASA new options to choose from and reduce the need to depend on (and negotiate with) Russia. If NASA and its Russian counterpart, Roskosmos, have no need to talk with one another, they probably won’t in the face of tense political relations. The U.S. intends to use Boeing and SpaceX capsules for human spaceflight beginning in 2020, and a Congressional plan in 2016 set a phase out date of Russian RD-180 rocket engines by 2022.

#### 2] On their Weir evidence.

#### A] The card has zero warrants for anything about space being key, nor do they do the work for the US.

#### B] The Aff has nothing to do with space weapons. Doesn’t solve.

#### 3] US Russian relations are already done for.

Gvosdev 17, [Nikolas K. GVOSDEV, contributing editor at the National Interest, senior fellow at the Foreign Policy Research Institute (“Damage Done: How Russia Hysteria Has Hurt U.S.-Russia Relations,” The National Interest, 3-6-17, http://nationalinterest.org/feature/damage-done-how-russia-hysteria-has-hurt-us-russia-relations-19687)]

But we should also recognize that the damage is done. The current political climate now guarantees that any sort of pragmatic approach to settling the disputes between the United States and Russia is off the table. There seems no way that U.S.-Russia relations can be easily extracted from the hole in which they currently reside. In turn, those in Russia who were cautiously advocating for exploring areas where Moscow and Washington might cooperate are seeing that position being discredited.

Over the past few years, a number of analysts have warned about the creeping strategic partnership between Moscow and Beijing and how closer Russia-China relations create real problems for the United States. The window of opportunity to nudge the Kremlin to adopt a much more equidistant posture between the two—despite all of the slings and arrows Moscow has cast our way—is closing. Getting the U.S.-Russia relationship back to some semblance of a normal bilateral encounter was already going to be difficult, but it now may prove to be nearly impossible.

#### 4] Climate o/w