Whitepaper

Polar potential: The Arctic could exemplify sustainable development
“Connectivity is critical in our modern economy. As the Arctic opens, ensuring the people of the Arctic have access to affordable and reliable broadband will make development safer, more sustainable and create new opportunities for the next generation leading in this dynamic region of the globe.”

Lisa Murkowski
U.S. Senator for Alaska
The Arctic is one of the last frontiers on Earth, and while its imminent commercial development brings new opportunities, it also poses grave threats to the environment of the region and the wider world.

A recent roundtable, ‘Completing the Arctic Circle’ brought together leading scientists, technologists, industrialists and Arctic nation representatives to discuss these issues, and consider how to strike the delicate balance between sustainability and development in the Arctic.

Recent technological advances and a rapidly warming local climate are set to unfreeze the Arctic’s latent economic potential and fertilise growth across the region and the wider world. The receding ice and snow is making its abundant natural resources and sea passages more accessible than ever before. It is widely-known that the region holds enormous energy resources, including up to a quarter of the world’s remaining fossil-fuels. What is less well-known is that the Arctic could also drive sustainable development worldwide by helping de-carbonise vast tracts of the global economy.

The region sits on rich deposits of rare-earth metals which will form the backbone of future renewable energy technologies from batteries to wind turbines. These include the strong permanent magnets needed for wind power, hybrid and electric vehicles. Rare-earth elements are also central to other renewable technologies such as rechargeable batteries, flat-screen displays and a range of ‘Internet of Things’ devices. The Arctic could additionally de-carbonise the world’s digital economy by providing clean data, with the region’s abundant hydropower fueling a new wave of low-cost, low-carbon datacentres. The Northwest and Northeast Passage’s strategic positions at the intersection of the Atlantic and Pacific could even help curb world trade emissions by significantly shortening trade shipping routes.

These developments could also boost local social and economic development by transforming the Arctic into a ‘green technology hub’, driving skills, employment and investment in public services across the region. The opportunity is triggering an international polar gold rush with Russia and China underwriting development across the region, and an estimated $1 trillion worth of polar infrastructure projects. $300 billion in projects are either completed, in motion or proposed in Russia alone.

While the region holds the key to sustainable development worldwide, it is also vital that its own development is managed in a sustainable way because what happens in the Arctic matters everywhere else.
The Arctic’s pivotal role in regulating global sea levels, climate and fish stocks means that, to paraphrase Saki’s famous description of Crete, the region “produces more history than it can consume locally.” Irresponsible industrialisation could both permanently harm local communities and the global environment.

There are a number of risks inherent in plans for development. The Arctic is the world’s only maritime area with no overarching legal treaty and there is no single infrastructure standard for landward development. Some local standards are overly restrictive and could deter inward investment. There is a similarly uneven patchwork of infrastructure quality across the region, arising from a lack of multi-stakeholder co-operation and isolated and short-term infrastructure investments governed by local laws and design standards. Connectivity is weak and geographically inconsistent, with 48% of the region left with little or no access to internet services. Regulatory enforcement is also rendered difficult due to remoteness, harsh conditions, lack of cross-border co-operation and a lack of digital infrastructure needed for remote compliance.

Exploitative, environmentally destructive and unsustainable development practices could flourish in the legal vacuum left by uncoordinated and unenforced environmental standards. There is also the potential for conflict and competitive deregulation as global powers compete for access to the region’s resources.

Natural hazards, an inhospitable climate and sparse infrastructure poses additional safety risks to development and could lead to environmentally harmful accidents such as oil spills.

The key to equalizing development opportunities across the Arctic for the benefit of all is to create greater co-operation and a more equal standard of infrastructure, regulations and enforcement mechanisms across the region. A universal Arctic-wide standard of digital connectivity would help to facilitate greater collaboration as well as evening the spread of development and regulatory enforcement.

As a geopolitically powerful part of the world that holds the key to the environmental and economic fortunes of the globe, the Arctic is uniquely placed to become a global exemplar of sustainable development.
Chapter 1: Open for business

US Secretary of State Mike Pompeo recently told the Arctic Council: “The Arctic is at the forefront of opportunity and abundance.”

A perfect storm of technological advances, economic globalization, a drive for renewable energy and a warmer local climate are transforming the region into a hub of future trade and development.

Development of the Arctic could become critical to maintain the world’s energy supply. The area holds some 13% of the world’s undiscovered oil and 30% of all undiscovered natural gas and the receding ice will aid exploration and extraction. The warmer climate is also making Arctic rare-earth mineral deposits more accessible to mining than ever before. This comes at a time when demand for these minerals is growing because they form the DNA of renewable energy technology. The magnets made from rare-earth metals form critical components of wind turbines, electric vehicles and hydroelectric power. For example, Greenland has 38.5m tonnes of rare-earth oxides, and a recent US-Greenland technical agreement saw both countries join forces to explore and exploit the region’s potential.

These natural resources could place the Arctic at the epicentre of future clean energy production and create employment across the region while the proceeds could allow local communities to become economically self-sufficient.

The Arctic’s abundant wind and hydropower could similarly fuel a clean data revolution. The Arctic boasts reliable local renewable energy sources and seemingly limitless access to clean and cold water, a secondary cooling source for data centers. With data centres set to consume three times as much electricity in the next decade, a wave of hydro-powered polar centres would significantly reduce the environmental impact of cloud computing. There are already plans to build the world’s largest green data center in the Arctic and Facebook has a hydro-powered data center in Sweden. This offers a further opportunity to create technology hubs across the Arctic, creating a wave of local startups, attracting skilled labor and investment and raising living standards across neighbouring communities.

Climate change is also opening up new opportunities for trade, tourism and fishing. The Arctic is already home to some of the world’s largest commercially-viable fish stocks. Warmer temperatures are attracting species such as cod and halibut further North while reducing ice hazards to commercial shipping which will increase commercial fishing opportunities. However, if the region’s commercial potential is exploited without fully understanding the potential environmental impact, it could further accelerate global warming and harm local ecosystems.
Chapter 1: Open for business (Continued)

In response, an international treaty between the EU and nine other countries including the US and Russia, recently banned commercial fishing for at least five years across 2.8 million km² of the Arctic until more is known about the region’s ecosystem. Sustainably managing and regulating commercial fishing in line with the particular needs of the local environment is, however, likely to provide more economic opportunities for local communities.

Opening the region to commercial shipping could also create cleaner, quicker global trade flows. Melting ice is opening up new connections between continents that could cut thousands of miles off journeys that currently go via the Suez or Panama Canal, helping smooth trade flows and curb container shipping emissions. The Arctic could reduce journey times between Europe and East Asia by 40%, which has encouraged major East Asian shipping nations like China, Japan, Singapore and South Korea to seek and acquire observer status on the Arctic Council.

By the middle of this century, estimated summer sailing times via the North Pole could be reduced to as little as 13 days. The benefits of bringing continents closer together will also be felt at the Arctic end. An ‘Arctic canal’ will fuel a burgeoning local bulk and destination shipping market, spurring investment in local ports, transport facilities and services that will benefit the local population.

The clearing waterways are also opening the region up to tourism, particularly luxury cruises. The first cruise voyage through the Arctic Ocean’s Northwest Passage took place in 2017 and over 28 cruise expedition ships capable of sailing Arctic waters are on the verge of coming to market.

Yet these developments also have the capacity to do significant harm to the Arctic and to the global environment. The Arctic has been described in a recent government report as “both the site and source of some of the world’s greatest environmental challenges.” Extracting local resources and increasing commercial sea traffic without proper environmental oversight and regulation could harm local communities and ecosystems as well as exacerbating global climate change. The question of how to develop the Arctic sustainably is of particular significance because of the Arctic’s unique role in both measuring and influencing the state of the world’s climate.

Melting polar ice will lower sea salt and temperature levels and produce a ripple effect across the global climate, while releasing some 1 billion frozen plastic particles into the oceans. Similarly, melting polar permafrost will not only harm the villages and cities built on it and erode coastlines but also increase worldwide CO₂ emissions, releasing an additional 60 to 80 parts per million by the end of the century.
Any harm to Arctic fish stocks could also impact global fish populations. Over-fishing the Arctic could deprive indigenous communities of a valuable source of income as well as impacting global food resources. Research into marine Arctic ecosystems is now underway to discover whether the Arctic may hold commercially valuable fish stocks and how over-fishing could affect global as well as local fish stocks. Tourism can also damage the local environment as well as over-stretching local infrastructure and resources.

“Sudden influxes of tourists can place a heavy burden on small communities with limited resources. In some remote parts where communities rely on a base station for essential broadband services, a bus full of tourists can eat the entire village’s data capacity so they cannot, for example, even do school classes.”

Harri Saarnisaari, Adjunct Professor at the University of Oulu

Shipping emissions already impose a heavy burden on the world’s environment and intensified commercial shipping activity in the Arctic could further increase local and global pollution. The IMO is discussing an international Arctic ban on heavy fuel oil which has already been implemented by the 30-member-strong Association of Arctic Expedition Cruise Operators.

Unsustainable mining practices could also affect terrestrial and marine ecosystems for decades due to the effects of heavy metals on reproduction among species. This is particularly critical at a time when the world is facing an extinction crisis that could dramatically reduce biodiversity with one million species driven to the verge of extinction by human activity.

Around 4 million people live in the Arctic and greater commercial activity could have a severely detrimental impact on these communities. This is particularly critical at a time when the world is facing an extinction crisis that could dramatically reduce biodiversity with one million species driven to the verge of extinction by human activity.
Chapter 2: Collaborative development

One of the biggest barriers to sustainable development in the Arctic is the fragmented array of standards and regulations across the region.

The Arctic Council is the main forum for collaboration across polar nations. Yet there is no Arctic-wide rule on ship speeds or emissions and the region is not governed by a central authority. Alaska has proposed a formal advisory committee to consolidate the current disjointed federal approach to regulating Arctic ports and shipping. It is the only marine area in the world not governed by a single overarching legal treaty.

This situation is paralleled by an equally uneven and uncoordinated patchwork of standards and laws on land. There is no Arctic-wide sustainable development framework or standard for the built environment and a lack of international standards for terrestrial infrastructure. The WEF’s Arctic Investment Protocol outlining sustainable development principles is a step in the right direction but is not legally-binding. There is also a lack of international safety standards to protect against accidents and environmental harm in the region. Countries such as Greenland, Russia and Canada have widely varying nation-based design guidance and environmental regulations covering their parts of the Arctic. This regional regulatory variance acts as an inhibitor on pan-Arctic cooperation and adherence to consistently sustainable practices across the region.

The lack of polar development standards is matched by the incoherent and inconsistent quality of infrastructure development which produces vastly unequal environmental, economic and social outcomes across the Arctic. Countries such as Norway, Russia, Canada and the US have superior infrastructure but infrastructure quality is unequally distributed among different communities and countries. The U.S. Arctic still has no deepwater ports and 48% of the entire region has little or no broadband connectivity.

cargo transit reached a volume of 17 million tonnes a year in 2018 and could hit 75 million within four to five years. Yet construction of port facilities and other infrastructure needed to serve them has been piecemeal and based on short-term, isolated needs. Some commercial ports and transport links such as

“In Alaska, there is a postcode lottery in educational quality. Children in different schools have unequal access to education. Imagine being a keen maths student born in a village of 20 people where the teacher has to be a generalist. If we get sustainable development right, there can be a substantial overlap between industrial and social progress. For example, commercial fishing vessels can often fulfill a secondary role as search and rescue assets.”

Lesil McGuire, Senator, Alaska State Legislature

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the Nadodoka port in the Russian East have been built to enhance international trade without due concern for the effect on local communities or the natural environment. Conversely, some new roads were built to improve local opportunities by connecting coastal communities to inland cities without also factoring in the need for new port facilities or extra road weight capacity to boost international trade.

Even assessment of the environmental impact of commercial development is impeded by the lack of co-ordination and cooperation among the international Arctic research community. This has meant that monitoring of local biodiversity and therefore the impact of development on ecosystems has hitherto been disjointed.

There is a clear and urgent need for multinational frameworks, standards and regulations for sustainable development and greater transnational cooperation. Region-wide communications infrastructure would enable greater regional unification and integration of environmental, health and economic data to inform region-wide sustainable development standards.

This would facilitate greater cross-border and cross-sector cooperation between governments, academia and industry. Integration of real-time social, economic and environmental data can facilitate holistic, ‘whole system’ planning of new infrastructure to take account of its impact on the region and the wider world. It could achieve true interoperability between scientific sensors and continuous communication between field researchers, allowing live scientific data to feed into development projects.

“There is an urgent need for multi-stakeholder partnerships between government, academia and business to understand challenges such as the interplay between the local environment and new communications infrastructure.”

Professor Yang Hao, Professor of Antennas and Electromagnetics
Chapter 2: Collaborative development (Continued)

“When doing Arctic scientific fieldwork, we were often relying on slow, expensive connections. This made it difficult to get live on-demand data as and when we needed it. There are now sensors across the Arctic but the quality of connectivity varies from place to place which makes it impossible for these sensors to ‘talk’ to each other. This means we cannot get the holistic, real-time picture of the environment needed to inform sustainable development.”

Professor Martin Siegert, Co-Director, Grantham Institute for Climate Change, Imperial College London

Digital twins combining datasets from ships and scientists could be used to model the impact of new ports on everything from global shipping emissions to local ecosystems. Integrated data would allow planners to pinpoint the optimal location for a new transport link to improve local emergency service response times as well as reducing the environmental impact of logistics chains. The cumulative effect would be to encourage and enforce joined-up cross-sector planning of new Arctic developments for their social and environmental as well as economic impact at a local and global level.

An equal standard of digital connectivity would enable real-time exchange of safety and environmental hazard data across sea and shore to reduce the risk of accidents or environmental catastrophes. It would also allow real-time tracking of commercial traffic and activity to identify unsustainable practices and inform new regional standards. Crucially, collective connectivity across the Arctic would give polar communities the chance to contribute to decision-making.

“A group of young people - from various Canadian Inuit communities - wrote to us asking whether we could create a second publishing platform, primarily for people from across the Arctic to raise awareness of issues and to work collaboratively on solutions. We initiated the process of setting up what effectively would be a think tank run by and for the Arctic youth, and we even prepared a preliminary website. Yet, it was hampered by the poor quality of digital infrastructure in remote areas. We were communicating with some of the brightest young people across the Arctic through this forum; yet, they often struggled to load a web page.”

Dr Dwayne Menezes, Founder and Managing Director, Polar Research and Policy Initiative (PRPI)

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Chapter 3: The polar regulatory challenge

The EU recently met nine countries to discuss ways to implement the new ban on unregulated fishing, including regional fisheries management agencies. As this recognised, international regulations to prevent unsustainable development will have little effect without corresponding enforcement mechanisms. Incentives for compliance and deterrent punishments for regulatory breaches can only work if all parties are convinced that compliance will be monitored at all times and any breaches instantly reported.

Enforcement and monitoring of development in the Arctic is uniquely challenging because of its remoteness, limited transport links, hostile climate and lack of digital infrastructure. These conditions present a barrier to conventional monitoring, inspection and enforcement mechanisms.

The challenge was starkly highlighted by recent developments in the region. Lack of governance and regulatory oversight has seen Arctic mines contaminating local drinking water, soil and groundwater. Pollution from one mine alone contaminated an estimated 64,000 hectares of soil and groundwater. Mining also consumes large quantities of local water. This is particularly dangerous for local communities because Arctic areas have substantially poorer water supply and sanitation than other parts of their countries.

Globally, a similar lack of enforcement has seen shipping emissions set to soar by up to 250% with just 15 large container vessels estimated to produce more pollution than all the world’s cars combined. As a result, IMO 2020 will require a 0.5% cap in sulphur emissions while recent updates to the EU’s Emissions Trading Scheme will require emissions monitoring, verification and reporting from any large ships using EU ports.

The impact of unsustainable mining is felt more acutely in polar regions because several Arctic countries lack water management frameworks or even standard protocols for water security assessments. In some Arctic countries, coal loading and export is being conducted without due concern for the health of neighbouring communities.

“Lack of connectivity makes it difficult to enforce remote compliance with shipping speed and emissions limits, which may accelerate unsustainable growth. Due to the remoteness of the Arctic, continuous connectivity makes it easier to enforce mining or shipping regulations. This would allow real-time regulation of everything from air quality to pollution across distant sites as well as digital environmental impact assessments of planned developments.”

Joseph Lambert, consultant at University Maritime Advisory Services

Enforcement and monitoring of development in the Arctic is uniquely challenging because of its remoteness, limited transport links, hostile climate and lack of digital infrastructure.
This will require a level of ubiquitous ship-to-shore connectivity that is currently unavailable in much of the Arctic.

The absence of consistent regulatory oversight has also led to a fisheries ‘black market’ across polar waters. In the recent past, illegal fishing accounted for as much as 60% of the reported catch in the Russian Far East alone. The lack of universal maritime connectivity combined with frequent GPS ‘outages’ at sea can enable fishing vessels to ‘go dark’ and evade scrutiny. The phenomenon of ships disappearing from public tracking systems has been documented in the past and could conceal other illegal activities such as illegal dumping of hazardous waste in Arctic waters.

The failures of the past contain many key lessons for ensuring more effective international monitoring and enforcement of environmental standards in the future. The WWF’s report on illegal fishing in the Arctic highlighted the need for far greater “coordination, information sharing and transparency” to ensure compliance. This is a key challenge in the Arctic because of the lack of universal digital connectivity needed to allow remote real-time reporting, regulation and communication across great distances.

Enforcement is rendered even more difficult by the lack of a reliable backup which allows trawlers to stray into banned areas without detection. These challenges also apply to the regulation of other commercial activities.

“The lack of ubiquitous coverage makes it easier to get away with non-compliance. This is causing a great deal of problems for the fishing industry, which is already under a lot of pressure. For example, fishing boats can be fined for deliberately turning off their Automatic Identification System but it is very difficult to enforce this. The current connectivity is so inconsistent that when fishing boats ‘go dark’, it is hard to tell whether this was a deliberate act or another outage. If there was a universal Arctic-wide connectivity backup, there would be no excuse for disappearing off the regulatory radar, which would protect the compliant majority from the rule-breaking minority.”

Noémie de Rozieres, Head of Global Maritime Sales, OneWeb

Crucially, many unsustainable practices from over-fishing to harmful mining, are global problems. Chains of evidence can be hidden in complex multinational supply chains which can also merge legal and illicit goods. This presents a need to track individual quantities of everything from fish to oil from extraction to destination and ensure compliance at every stage of the journey. Recent technological advances have made it possible to open up commercial operations in remote locations to real-time regulation, if given the right supporting infrastructure.
The need for round-the-clock remote monitoring of compliance across vast polar regions presents a ‘Massive Access Challenge.’ This is the need for homogenous connectivity among ‘IoT’ devices across land and sea to allow end-to-end environmental impact monitoring of commercial activity in the Arctic. This would allow us to track, for example, the environmental footprint of every ton of rare-earth metals from mine to port.

Toktam Mahmoodi, Director of the Centre for Telecom Research, King’s College London

Internet of Things devices, machine learning and data analytics allow remote, real-time analysis of shipping emissions, speed, and fuel across all locations. These technologies also allow predictive control of emissions or pollution and autonomous compliance with regulations in addition to remote surveillance of commercial shipping.

Similar technologies now allow regulators to remotely monitor operations on offshore gas and oil installations or mine sites and even predict and prevent regulatory breaches or environmental damage. Drones and remote sensors can extend the scope of regulatory scrutiny deep inside active mines by collecting real-time data on crucial indicators from air quality and temperature loads to pollution and pit wall stability.

This forms a digital ‘panoptic gaze’ inside commercial operations which acts to incentivise voluntary compliance without the physical presence of regulators.

Yet these technologies depend on universal, reliable, consistent and continuous connectivity. Currently, 48% of the Arctic has little or no broadband connectivity and this digital blackspot could produce a corresponding regulatory blackspot. There is an even greater risk of illegal and unsustainable commercial activity flourishing in the Arctic due to the combination of its remote location and the absence of infrastructure for remote regulation of development.

There is a clear and urgent need for both globally and regionally consistent connectivity to allow end-to-end environmental monitoring of logistics chains for all Arctic commercial operations. Natural resources need to be monitored and tracked from extraction to production and from source to sale. Consistent Arctic-wide connectivity is urgently needed to bring greater transparency to activities from fisheries to mining through remote monitoring and enforcement.

Greater cooperation among enforcement agencies could be achieved through reliable international connectivity, and removing coverage blackspots would also remove regulatory ‘blind spots’ which continue to allow activities to go unreported.
Chapter 4: **Connectivity and future development**

The Arctic is a relatively untouched part of the world that now stands at a critical juncture.

The region could become a beacon of sustainable development and provide the natural resources for a global clean energy revolution. It has the benefit of standing on the cusp of commercial development at a time when advances in environmental understanding and technology are making it more possible than ever before to balance growth with environmental and social sustainability.

Having remained a relatively pristine and undeveloped outlier amidst global industrialization, the Arctic has a unique chance to learn from the mistakes of the rest of the world. Its disproportionately significant influence over the world’s ocean currents and climate means its continued environmental wellbeing is intimately intertwined with that of the planet. Scientific knowledge of the region is rapidly being amassed by research to add to indigenous peoples’ extensive knowledge of the environment accumulated over thousands of years of complementary coexistence with local ecosystems.

The Arctic is therefore in the potentially unique position of being the first undeveloped region in the world where large-scale development will begin with full foresight of the local and global environmental implications. This offers an unprecedented opportunity for the region’s natural resources to be harvested within sustainable limits. Seizing the opportunity and integrating local and indigenous knowledge into the future development and regulatory processes ultimately depends upon providing access across the Arctic to affordable and reliable broadband. Historically however, the scale of the geography, dispersed populations and harsh operating environments throughout the region has challenged delivering affordable and reliable connectivity.

Connecting the entire polar region will provide the critical missing link in the Arctic between growth and responsible regulation. It will facilitate the implementation of Arctic-wide standards and bring equal transparency to all commercial operations through remote, real-time, end-to-end enforcement of sustainable standards across all locations. Combined with recent advances in Internet of Things networks, cloud-based data analytics and autonomous systems it will enable the monitoring of everything from pollution to productivity across end-to-end Arctic logistics chains. This will facilitate real-time reporting and remote monitoring and regulation of commercial activities from fishing to mining across any location.

Universal connectivity will make new regulations practically enforceable while also allowing socially and environmentally responsible behaviour to be remotely recognised and rewarded. Live data will for the first time be accessible from local people, sensors and scientists in any place at any time, giving indigenous communities and scientists an influential voice over decisions and democratising development.
By making connectivity equally available and scalable to demand in all locations through small receivers, the network will give local people democratic control of their connectivity usage.

Polar-wide connectivity will allow the integration and harmonization of all regional information, giving authorities a holistic overview of the true cost/benefit ratio of planned development. This will highlight the impact of the hidden interdependence between ecosystems, people and assets across all locations in order to facilitate collaborative, cross-sector ‘joined-up’ development. Data-driven digital impact assessments could predict how development would affect everything from local employment to global ocean currents in the virtual world before real-world commercial activities even begin. This will foster collaborative, multi-stakeholder planning and decision-making by highlighting how new infrastructure grids could intersect to achieve local and national goals. The capacity of port facilities and interconnecting roads could be designed to boost local access to pregnancy support services as well as international trade. In this way, the enabling infrastructure for commercial development could be optimized to have secondary social and environmental benefits.

Eliminating digital blackspots will also equalise social opportunities across all communities and bring advances such as telemedicine, e-learning and remote justice to the 48% of the Arctic that is currently under-served. Regional connectivity will additionally complement a new wave of hydro-powered polar data centers to transform the region into a green tech hub, creating skilled local employment and attracting inward investment. The cumulative effect will be to make many regions of the Arctic more economically self-sufficient and bring neglected polar communities into the mainstream within their respective countries.

“...In Greenland, we have renewable energy sources that could power energy hungry data centers. And we need digital infrastructure and education to equip our younger generation for the new opportunities in order to work in a more digital society, economy and future, so that these remote communities don’t become bystanders to the inevitable development. The problem is that we don’t have the economies of scale to make it economically viable to lay broadband cables for small remote communities, so many areas are unable to access effective distance learning services.”

Mininnguaq Kleist, Head of the Greenland Representation to the EU

Sustainable development of the Arctic’s vast untapped resources could provide the material basis for the world’s looming renewable energy revolution and for a social and economic revolution among the 4 million people living there. Universal connectivity can bridge the gap between over-regulation and overexploitation, between local and global needs and between commercial and environmental goals.
Chapter 5:
OneWeb: Internet access everywhere, for everyone

It is little-known that the Arctic is also about to acquire the universal digital connectivity needed to create uniformly sustainable and transparent growth across the region.

This was not previously thought possible because conventional geostationary satellites provide weak, inflexible and inconsistent coverage while underground fiber-optic cables are not commercially viable for tiny, remote communities. Yet OneWeb, a global network of low Earth orbiting satellites with plans to deliver the first truly global internet coverage, recently announced that it will provide the first, fullest and fastest connectivity to the entire Arctic by 2020.

Its network of polar-orbiting satellites will deliver 375 Gbps of capacity above the 60th parallel North, bringing fiber-like connectivity to ships, aircraft, communities and commercial and research assets across the remotest regions of the world. The new constellation will see satellites orbiting lower and in greater numbers than ever before with initially 650 providing 200 times more capacity than planned systems across the Arctic. They will orbit from pole to pole in seamless synchronicity so that satellite receivers in any location will always be within sight of a satellite.

About ‘Completing the Arctic Circle’

As part of OneWeb’s mission to bridge the digital divide and demonstrate its commitment to a different, more inclusive development model, on 6 November 2019 in London, OneWeb convened a roundtable of Arctic experts.

Named ‘Completing the Arctic Circle’, the event brought together international leaders in industry sectors – from aviation and maritime, to energy and tourism – with NGOs, researchers and policymakers, to discuss the key issue of Arctic connectivity and communications. The findings and expert opinions in this whitepaper are the result of this event, which was chaired by Dr Dwayne Menezes, the Founder and Managing Director of the Polar Research and Policy Initiative.

The goal of the event and this whitepaper is to raise awareness and share knowledge of, and solutions to, the unique opportunities and challenges in this region, and how connectivity can contribute to its development.

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