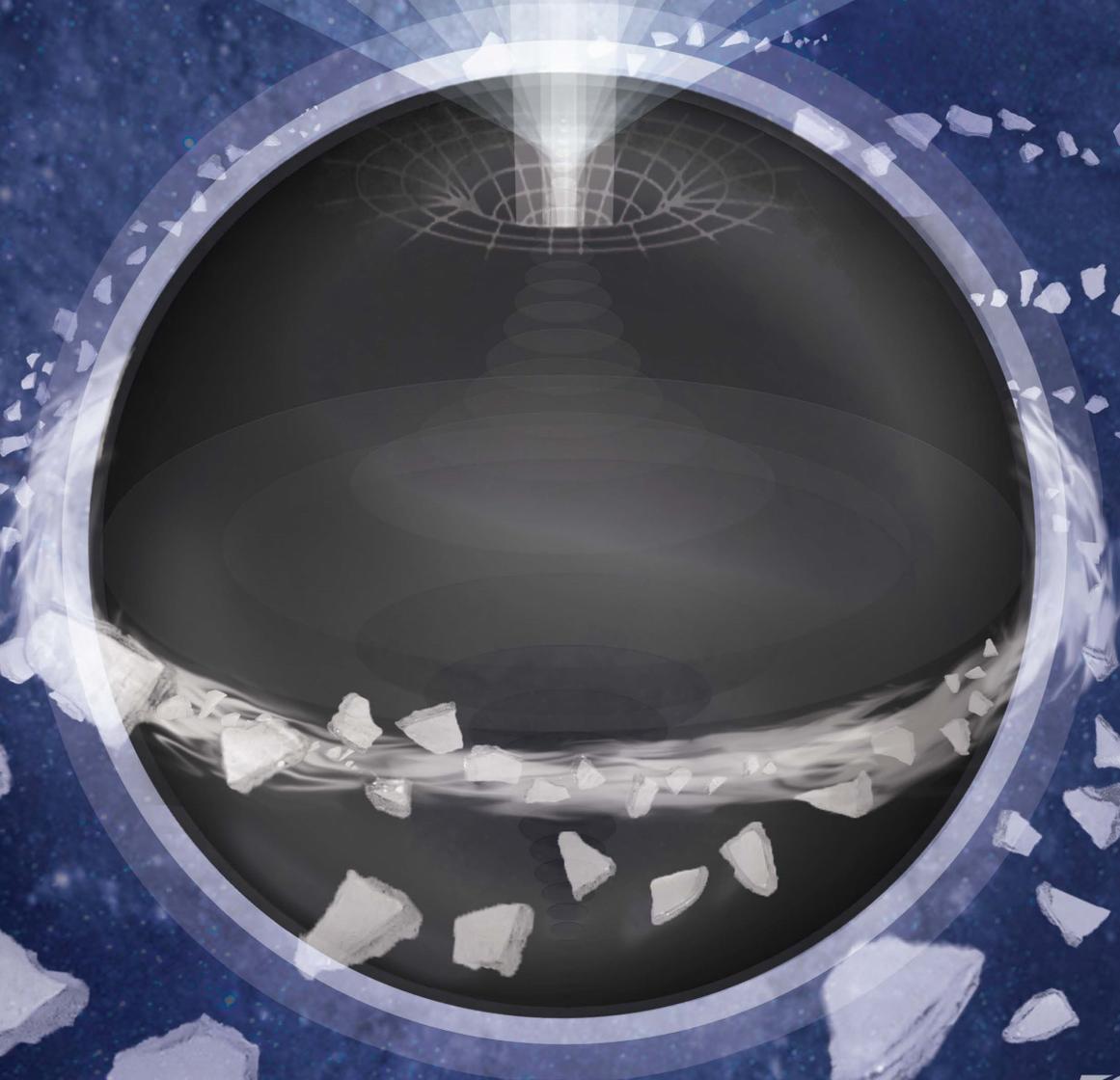


GLOBAL CONVERSATIONS



DEFINING THE DECADE

WINTER 2020 ISSUE



Letter from the Editors in Chief

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Anthony Moniuszko, Andrea Morales,
Heejae Yang

PODCAST CONTRIBUTORS

Gabriella Baert, Mohit Bagri, Claude
Galette, Regina Robbins-Codera

COVER DESIGN BY

Hannah Nadler
Sarah Nadler

Winter 2020 Cover Description

The outer space theme conveyed by the cover design is inspired by a theory in astrophysics that the universe was born by a black hole, through the process of expelling extreme heat and molecules to render new life. In the 2020s, the world will be faced with a number of competing and intersecting challenges, the solutions to which will require creativity and cross-disciplinary collaboration. The swirling, fragmented pieces of glass represent the different fields and disciplines that are cooccurring and converging towards a central mass. As these particles converge and produce white light, new life is created – a process which reflects the importance of synergy in the next decade. Ultimately, the 2020s will be defined by the degree to which we can work together to tackle global challenges such as climate change, migration crises, and inequalities by harnessing the insights offered by diverse perspectives from across the globe.

Hannah & Sarah Nadler



At the Munk School of Global Affairs and Public Policy, we spend a great amount of time thinking about solutions to some of the world's most complex challenges. As we embark on the new decade, it seemed only fitting that we take this opportunity to discuss some of the most pressing issues facing the global community in the 2020s. From emerging technologies to new sources of conflict and the impacts of climate change, the world is facing a myriad of threats and opportunities that may greatly alter the course of history.

Despite the scale of these challenges, this new decade also grants us the chance to demonstrate our resilience as a global community, if we can leverage our collective knowledge and more meaningfully pursue international cooperation. In this spirit, our writers not only highlighted some of the world's most demanding problems, but also reflected on the ways they can be overcome in the pursuit of a more peaceful and prosperous future.

As always, we would like to thank each and every member of the dedicated Global Conversations team for their contribution to yet another insightful and creative Issue. We would also like to thank the administrative team at the Munk School for continuing to support the growth of this student-led initiative.

We hope that the topics presented in this Issue will offer our readers a new perspective on this decade's defining challenges.

*Editors in Chief,
Mackenzie Rice & Sorena Zahiri*

Introduction

The 2010s was a decade of significant political, economic, and technological change. In 2010, U.S. President Barack Obama was overseeing the beginning of an economic recovery from the Great Recession. The Occupy Wall Street movement began in September 2011 in response to wealth inequality and corporate greed, inducing protests across the United States. Cutting edge technology included a hybrid of a smartphone and a laptop, called a tablet, with Apple putting it into the mainstream with the release of the iPad to complement its newly released iPhone 4. Streaming began to crowd out Blockbuster movie rentals and would soon launch a cord-cutting revolution. Mark Zuckerberg was named Time Magazine's Person of the Year, which said of Zuckerberg: "... he's just getting started. What looks like a meteoric rise to the rest of us, he sees as an opening act."

As we enter the 2020s, Donald Trump is nearing the end of his first term as President of the United States. Bernie Sanders, a Democratic presidential candidate, is leading the primaries on the promise of "Medicare for All." Amazon and other direct-to-consumer platforms are redefining the way consumers shop. Artificial intelligence is increasingly becoming integrated into everyday life, including voice-activated personal assistants like Alexa and Siri, or Tesla vehicles' autonomous predictive capabilities. These novel technologies have also created new concerns. Perhaps Time Magazine's 2010 profile of Mark Zuckerberg was correct in one way: the rise of Facebook really was just Zuckerberg's opening act, with act two bringing enhanced scrutiny and skepticism towards how big tech companies like Facebook and Google handle personal data.

A lot has changed in the last decade, but a lot has remained the same. In 2010, natural- and human-caused disasters like a 7.0 magnitude earthquake in Haiti, a volcanic eruption in Iceland, and the explosion of the Deepwater Horizon oil rig in the Gulf of Mexico raised concerns over environmental catastrophes with severe consequences for human and animal life. As we enter the 2020s, fires in Australia raise similar existential concerns, but with a new urgency for action. At the beginning of the 2010s, a Tunisian street vendor named Tarek el-Tayeb Mohamed Bouazizi set himself on fire, serving as the catalyst for the revolts across the Middle East-North Africa region. As we enter 2020, protests in Iraq, Iran, and Lebanon are once again calling for political and economic change in the region.

As the 2010s came to a close, a plethora of think pieces tried to identify the trends, moments, and events that defined the decade past. In the Winter 2020 Issue of Global Conversations, we asked our writers to break with the trend and instead look to the future: what can we expect from the 2020s? What will be the defining elements of the new decade? From the upcoming U.S. presidential election, to the increasing popularity of precision medicine, to China's growing presence in Africa, MGA students sought to identify the most pressing global events and trends that will shape the next ten years.

*Directors of Written Content,
Alexandra Harvey & Isaac Crawford-Ritchie*

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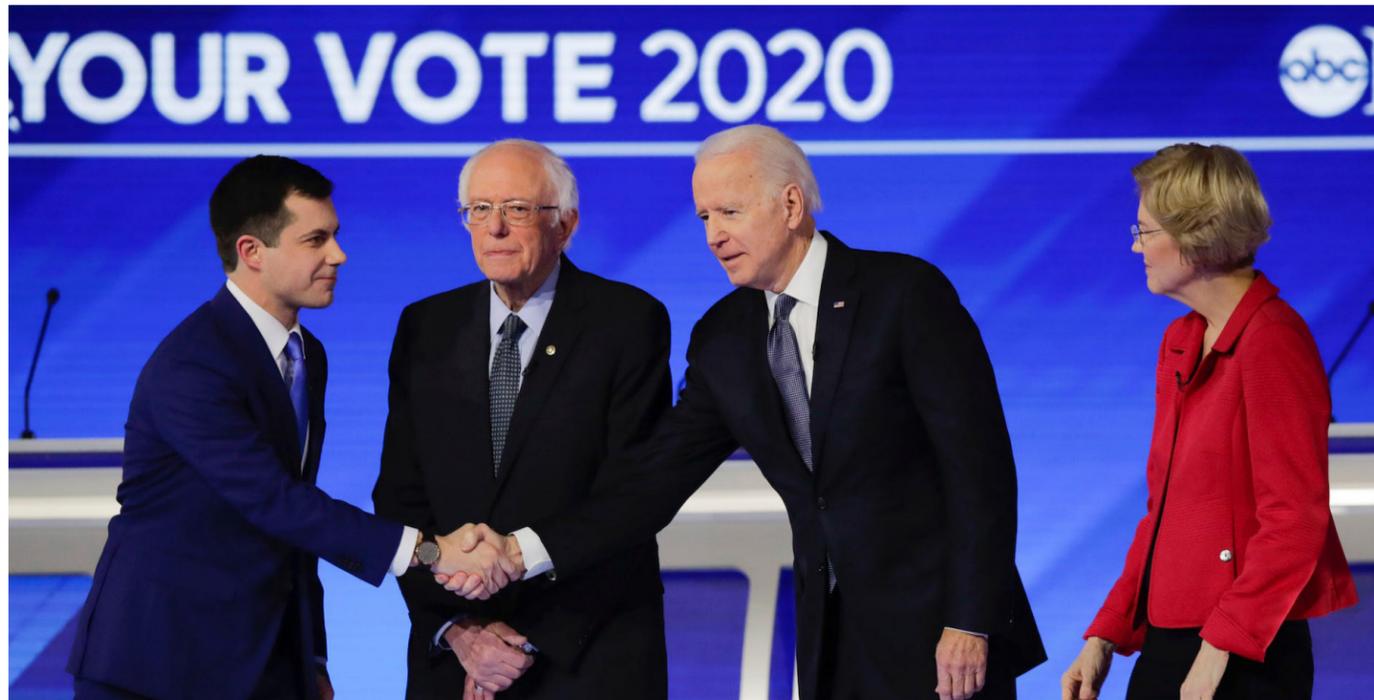
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A Defining Decision: The 2020 U.S. Presidential Election

BY MADELEINE FOLEY | NORTH AMERICAN AFFAIRS



WHILE the 2020s will undoubtedly bring many changes to North America, one of the most consequential events of the decade will take place before the end of this year. On November 3, 2020, U.S. citizens will vote for the next President of the United States, choosing between the incumbent, Donald Trump, and the elected Democratic Party nominee. The result of this election will not only shape the future of the U.S., but will also significantly impact Canada, Mexico, and the broader international community. Should Donald Trump win re-election, it is likely he will be emboldened to pursue his policy preferences, since second-term presidents are not constrained by the prospect of re-election. A Democratic president, on the other hand, will likely attempt to actively reverse the Trump administration's policies and work to re-establish a liberal agenda.

THE LAST FOUR YEARS

The election of Donald Trump in 2016 shocked the political establishment, the media and many citizens. Few predicted that the outspoken real estate developer and former reality T.V. star could defeat former U.S. Sena-

tor and Secretary of State Hillary Clinton. Despite this upset, many Republicans and Democrats were united in their hope that President Trump would serve a successful term as the 45th president under the guidance of experienced advisors and more moderate allies within the government. Unfortunately, the last four years have proven that President Trump does not respect the norms, laws, and institutions that define both American democracy and the liberal international order. Meanwhile, the President's advisors and allies have been ineffective in restraining his most brazen impulses.

In his first term, President Trump, among numerous other things: implemented a travel ban against predominantly Muslim countries, which was challenged on its constitutionality before the U.S. Supreme Court; approved a federal immigration policy at the U.S.-Mexico border that involved separating children from their parents; committed an illegal and impeachable offense in an attempt to undermine political rival Joe Biden; challenged long-standing international institutions like the North Atlantic Treaty Organization (NATO) and the World Trade Organization (WTO); withdrew from the Iran

Nuclear Deal; and, aggressively reversed environmental protection regulations.

While it is difficult to predict the long-term effects of President Trump's first term, it is more feasible to envision what the next four years, and the following decade, will look like should one of the several Democratic candidates defeat President Trump in 2020. While the Democratic candidates can be divided into more progressive and moderate camps, there are certain core values and beliefs that many of the candidates share and will be part of any Democratic administration.

THE LEGAL AND JUDICIAL SYSTEM

One of President Trump's most enduring legacies will surely be his influence on the U.S. legal and judicial system. Not only has Donald Trump continually challenged the democratic and legal processes set in place to constrain the influence of the executive branch, but he has also been active in appointing new, conservative judges to federal courts.

As of December of 2019, the Trump administration appointed a total of 50 judges to federal appeals courts across the U.S. For comparison, over the course of his entire eight years as president, Barack Obama appointed just 55 judges. President Trump also appointed two out of the nine current Supreme Court justices. The impact of these appointments is significant; judicial courts, particularly at the appellate level, have the ability to meaningfully shape and constrain policy.

“The outcome of the 2020 elections will set the U.S. on one of two divergent paths: either continuing to withdraw from the global stage or re-engaging diplomatically to regain its leadership position in the liberal order.”

The next president will likely have the power to nominate several appellate judges, as well as one or two Supreme Court justices. As critical issues such as reproductive rights, healthcare, and immigration are scheduled to appear in federal court cases this year, the quality and neutrality of federal judges is essential. Their appointments, and the future direction of the U.S. justice system, will be determined in the November election.



INTERNATIONALISM vs. NATIONALISM

Since his election, President Trump has expressed disdain for international institutions, in particular NATO. Trump has frequently questioned the usefulness and efficiency of NATO, claiming that the military alliance placed an unfair financial burden on the U.S. Late last year, the U.S. announced plans to decrease its contributions to joint NATO projects. Furthermore, it was reported that Trump's former national security advisor, John Bolton, privately stated that if Trump is re-elected he may become even more isolationist, potentially withdrawing from NATO and other international alliances completely.

As part of his nationalist, “America First” agenda, Trump has also rejected multilateral trade agreements, withdrawn the U.S. from the Paris Climate Accord, and criticized America's closest allies including Canada and numerous Europe countries, such as France and Germany. Kori Schake, a national security advisor to President George W. Bush, stated, “This is the first time that a President of the United States did not appear to believe in the liberal order.”

PHOTO SOURCE: BUSINESS INSIDER; WIKIMEDIA COMMONS

Meanwhile, all the front-runner Democratic candidates are broadly supportive of these international alliances and organizations. In the first democratic debate of 2019, former Vice President Joe Biden affirmed, “We know NATO will fall apart if [Trump] is elected four more years, it is the single most consequential alliance in the history of the U.S.,” while Senator Elizabeth Warren tweeted, “America is strongest when we work together with our allies – including the 28 NATO members who share our democratic values.”

“While addressing climate change remains an international obligation, strong leadership by the U.S. is essential to achieve the coordinated effort required to stall and reverse climate change in the coming decades.”

The outcome of the 2020 elections will set the U.S. on one of two divergent paths: either continuing to withdraw from the global stage or re-engaging diplomatically to regain its leadership position in the liberal order. Those who support this order can only hope that a Democrat is elected.

CLIMATE ACTION VS. CLIMATE INACTION

The 2020 presidential elections will also determine how the U.S. approaches the intensifying climate crisis in the immediate future. Under the leadership of President Trump, the U.S. left the Paris Climate Agreement, rolled back regulations on carbon-emitting industries, and removed protections for endangered species and national parks.

One need only look at California’s recurring wildfire crises to understand that climate change requires immediate and coordinated federal action. Every Democratic presidential candidate has agreed that climate change poses an existential threat to society and has laid out a variety of plans to address these issues. Senator Bernie Sanders has proposed a “Green New Deal” which would impose stricter regulations on the fossil fuel industry and seek to achieve zero emissions in transportation and power gen-

eration by 2030. Meanwhile Senator Amy Klobuchar articulated her desire to rejoin the Paris Climate Agreement and implement a carbon tax.

While addressing climate change remains an international obligation, strong leadership by the U.S. is essential to achieve the coordinated effort required to stall and reverse climate change in the coming decades.



WHAT’S NEXT ?

The 2020 election has the potential to bring significant change in the U.S., and the rest of the world. This is particularly true for Canada, a country that shares deep political and economic ties with the U.S. and will be greatly impacted by the decisions of its southern neighbour in November 2020. An American president that is committed to democracy, human rights, and internationalism, will play an important role in ensuring a peaceful and prosperous future. Nevertheless, the values of the liberal order extend beyond one leader. In the coming decade, it is imperative that North American leaders work diligently and collectively to uphold democratic values, regardless of what the election brings.



Madeleine is a second year Master of Global Affairs student at the Munk School of Global Affairs and Public Policy. She previously received her Bachelor of Arts in Economics from Cornell University.

#MeToo Phase Two: Systemic change

BY EMILY GREISS | GENDER & IDENTITY POLITICS



THE #MeToo movement emerged in late 2017, launching a global conversation surrounding the prevalence of sexual misconduct in the workplace and beyond. The movement initiated a shift in the decades-long culture of silence surrounding sexual harassment and abuse, as survivors were encouraged to speak out against alleged misconduct with support from a community of those with shared experiences. At the onset of the new decade, the #MeToo movement shows promising signs of transformation from a social conversation to broader systemic change. Amongst society at large, this change is believed to be necessary to address a broken social system that allows toxic behaviour to exist. Based on a study from the Pew Research Centre, two-thirds of Americans agree that the allegations that have come to light “mainly reflect widespread problems in society” as opposed to 28 per cent who attribute them to individual misconduct alone.

Globally, public opinion on the culture of silence and impunity has begun to shift the discourse on policies regarding non-disclosure agreements (NDAs) and settlements,

workplace training, and accountability for those found culpable of misconduct. Notably, the decade began with the milestone criminal trial of Harvey Weinstein, the media mogul accused by dozens of women of sexual misconduct and rape over the course of several decades. The allegations against Weinstein – and the *New York Times* investigation into him – put the #MeToo conversation on the map, and the verdict of his trial will likely have a profound impact on its future.

THE #METOO MOVEMENT THUS FAR

While the #MeToo movement, as society knows it today, did not rise to prominence until October 2017, the phrase “Me Too” was actually coined over ten years earlier in 2006 by activist Tarana Burke. Following the dismissal of Harvey Weinstein in response to dozens of accusations against him, actress Alyssa Milano initially revived Burke’s movement using the caption #MeToo on Twitter to expose the prevalence of sexual misconduct. The response to the movement was immediate and sizeable in

the online community, garnering a reaction of over 12 million posts, comments, and reactions in less than 24 hours. Since its revival, the term has become a beacon of hope that increased awareness of sexual harassment and abuse and hopes to result in fewer infractions and lower tolerance for inappropriate behaviour.

“In the new decade, expanding the prevalence of regulatory limitations on NDAs and confidentiality agreements is a possible avenue towards achieving systemic change in the culture of silence and inaction surrounding sexual misconduct.”

Thus far, the movement has catalyzed both an important conversation and meaningful changes across several industries. According to data collected by a New York-based crisis consulting firm, at least 417 high-profile executives and employees were implicated by the movement in its first 18 months. Among these cases, 190 were dismissed or left their jobs, while 122 were put on leave, suspended, or are currently facing investigations. Notably, among the 17 non-voluntary CEO departures from S&P 500 firms last year, five were related to personal misconduct and #MeToo allegations. This figure is especially significant given that only one CEO was comparably dismissed for personal misconduct between 2013 and 2017.

SYSTEMIC CHANGE

NDAs in settlement processes have been the subject of increased scrutiny in the aftermath of the Harvey Weinstein scandal and the series of public allegations of workplace sexual assault. In the new decade, expanding the prevalence of regulatory limitations on NDAs and confidentiality agreements is a possible avenue towards achieving systemic change in the culture of silence and inaction surrounding sexual misconduct. Critics claim that NDAs enforce silence about sexual misconduct allegations, amounting to investigatory obstructions and ethical violations, thereby enabling the behaviour and leaving potential victims at risk.

The State of California is among the first jurisdictions to limit the use of NDAs in sexual assault cases with several states following suit by adopting similar legislation, including New Jersey, New York, Tennessee, and Washington. The California bill bans the use of a confidentiality clause to hide factual information in sexual assault, harassment, or sex discrimination proceedings. Following suit, the British government has also proposed new legislation to restrict confidentiality clauses in settlement agreements and employment contracts that prevent disclosure to police, lawyers, or health care practitioners that effectively silence allegations of sexual and racial harassment. However, some advocates suggest that enforcing these restrictions will make it harder for victims to come by restitution and question whether it will do enough to empower victims in the long run.



In another channel for systemic change, governments and organizations have mandated workplace policies in efforts to tackle inappropriate behaviour, discrimination, and exclusivity. For example, several municipal and state governments in the United States have enacted new legislation, such as mandatory anti-harassment training and encouraging greater female representation on boards of directors and in senior leadership positions. California, Maine, and New York are among the states that have enacted legislation on required anti-sexual harassment training.

PHOTO SOURCE: FLICKR, ERIK MCGREGOR, NPR

UNINTENDED CONSEQUENCES

A 2019 study of the responses to the #MeToo movement has identified several positive and negative consequences that have occurred alongside the conversation around inappropriate behaviour in the workplace. Positively, 74 per cent of women considered themselves more willing to speak out against harassment while 77 per cent of men expressed the need to be more careful about potentially inappropriate behaviour. However, as an unintended consequence of the movement, both men and women anticipated that men would be more likely to exclude women from workplace opportunities. Specifically, over one in three men stated that they felt more reluctant to have a one-on-one meeting with a woman and nearly 60 per cent of men indicated greater fears of being wrongfully accused. Both men and women appear to believe that the conversation thus far has not achieved its intended purpose – nearly 70 per cent of women and 60 per cent of men believe that powerful men will continue to engage in sexual harassment. These responses illustrate that while the movement has made strides toward positive change, it has also manifested discriminatory and negative ramifications against gender equality and inclusivity in the workplace.



MEANINGFUL CONSEQUENCES

At the beginning of the new decade, the Weinstein trial is a valuable case that demonstrates the means through which legal and social systems often continue to fail victims and accusers from seeking criminal or social responsibility. The trial has taken Weinstein's accusers from 105 women to only two women represented in the New York

court case. This diminishment is an important representation of the factors that prevent victims from breaking their silence, including fear of defamation, the misuse of confidentiality agreements, and the failure to define a scope for criminally prosecutable cases of sexual misconduct.

“...as an unintended consequence of the movement, both men and women anticipated that men would be more likely to exclude women from workplace opportunities.”

Thus far, measures toward accountability in the #MeToo movement have included the dismissal of several prominent figures for sexual misconduct, particularly in the public eye, including Roger Ailes, Harvey Weinstein, Jian Ghomeshi, Matt Lauer, and Al Franken. While these terminations have signified a movement away from the culture of inaction, there is an ever-present need for further measures toward accountability. These measures will likely include an expansion of policies placing regulatory limitations on NDAs to ensure that they do not preclude an accuser from bringing their allegations to the appropriate authorities, an expansion of workplace training on sexual harassment and misconduct, and stronger inclusion of women in the senior leadership of firms. Nevertheless, the next steps in the #MeToo movement will require a shift from narratives of individual misconduct to the widespread societal problems and attitudes that have enabled such behaviour and provoked a systemic resistance toward accountability and gender equality thus far.



Emily is a second year Master of Global Affairs student at the Munk School of Global Affairs and Public Policy. She currently holds an Honours Bachelor's degree in Criminology with a concentration in Law.

MENA Vision 2030: The decline of rentier economies in the Arabian Peninsula

BY FARLEY SWEATMAN | MIDDLE EAST AND NORTH AFRICAN AFFAIRS



As we enter the 2020s, the Middle East and North African (MENA) region faces considerable uncertainty. The previous decade saw waves of democratisation that swept across the region. This promise of democracy eventually devolved into chaos and bloodshed as four Arab countries descended into civil war. The aftermath of the Arab Spring saw the rise and fall of a jihadist “Caliphate” in the Levant, the deposing of a democratically elected leader in Egypt, and total collapse of state authority in Libya. With much of the region marred by proxy conflicts and protracted regional rivalries, the political future of MENA is difficult to predict in the long-term.

A trend that is perhaps more foreseeable in this new decade is the gradual decline of the rentier state within MENA, especially in petroleum-rich countries of the Gulf Cooperation Council (GCC). Faced with fluctuating oil prices and a growing global awareness of climate change, GCC countries are recognizing the imperative of economic diversification more than ever. The 2020s will likely see the proliferation and deeper implementation of existing ten-year plans, like Saudi Vision 2030 or Qatar National Vision 2030, that aim to reduce these countries’ dependence on oil, while simultaneously developing their public and private sectors. Successful diversification in both GCC states and in the wider MENA region, however, requires a favourable external environment – a condition that is currently obstructed by near-constant regional conflict and geopolitical instability.

INCENTIVES FOR CHANGE

Economic diversification in GCC countries, while not a novel concept, is being pushed with renewed vigour by three main factors. The first is a collective fear that oil production will fail to generate the revenues it once did. Since 2014, the price of oil has steadily declined following the “shale revolution” in the U.S. Moreover, wars and political unrest in major oil producing countries like Iraq, Libya, and Venezuela have further contributed to oil price volatility, prompting the European market to look to more stable exporters in Russia.

Another incentive is job creation. The rising number of unemployed young people in MENA is creating a number of social and political issues. Member states of the GCC – Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the U.A.E. – are constantly pressured to create jobs for thousands of unemployed nationals, especially in the public sector, given that it typically pays much more than the private sector.

Finally, there is the growing issue of climate change. Global concern over rising temperatures and environmental degradation has reduced the demand for fossil fuels. Advances in renewable energy have also contributed to the existential risk that GCC countries now face.

MENA VISION 2030

For many years, GCC countries have followed an oil-export based model of development. This rentier economic strategy has brought prosperity to many nations in the Arabian Peninsula, transforming small states like Kuwait and the U.A.E. into oil-exporting powerhouses with highly developed – albeit non-diverse – economies. These states are essentially shackled to oil production. In Kuwait for instance, oil comprises nearly half of its GDP, around 90 per cent of government revenue, and almost 95 per cent of exports.

Gone are the days of \$100 USD per barrel of oil that had existed prior to 2014. Recognizing their dependency on oil, many GCC states have formulated plans for economic diversification that are centered around investment, entrepreneurship, and technological innovation. Saudi Vision 2030, the best known and most ambitious of these plans, is built around three themes: a vibrant society, a thriving economy, and an ambitious nation. The societal element will see efforts to open Saudi Arabia to tourism, while the economic theme will promote women in the workforce, foreign direct investment in the private sector, and non-oil exports. Key targets include: increasing the share of the private sector in GDP from 40 to 65 per cent; reducing unemployment from 11.6 to 7.0 per cent, increasing foreign direct investment from 3.8 to 5.7 per cent of GDP; raising the share of non-oil exports in non-oil GDP from 16 to 50 per cent; and finally, increasing non-oil government revenue from 163 billion SR to one trillion SR.

Similar plans of economic reform have been initiated in countries such as Kuwait, the U.A.E., and Qatar. Kuwait’s Vision 2035 aims to commit over \$100 billion USD to housing and infrastructure projects. The role of technology is also crucial to this vision. The Kuwaiti government is constructing a smart city, known as South Saas Al Abdullah City, which will eventually house 400,000 people and will have a marketplace managed by an artificial intelligence system. Qatar’s National Vision 2030 and the U.A.E.’s Abu Dhabi Economic Vision 2030 offer comparable economic reforms directed at diversification through private sector development, education, and a greater focus on knowledge-based industries. These economic plans have the potential to spread to other countries within MENA as the need to diversify becomes more apparent.

CHALLENGES TO DIVERSIFICATION

Diversification efforts are not new to the GCC. Recognition of the exhaustibility of oil during the 1970s energy crisis drove diversification policies, though these have largely fallen short. There are common threads across MENA that set it apart from other regions where diversification efforts have succeeded. Arab economies are especially challenged in the realm of domestic politics; most countries in the region do not possess strong and diverse

economic sectors that carry political influence capable of counterbalancing the dominance of the oil industry. Geopolitical instability in MENA also serves as a major obstacle to any prospect of sustained economic change and diversification.

The new decade will see the continuation of a protracted “Cold War” between Iran and Saudi Arabia, which renders foreign investment in the Gulf a risky venture. Further, the urgency of economic reform is not necessarily uniform across the GCC. Kuwait, Qatar, and the U.A.E. all have large oil resources and small populations. Meanwhile, Saudi Arabia, Bahrain, and Oman face deeper existential threats; Saudi Arabia is charged with finding meaningful employment for its larger population, while the latter two states have significantly smaller reserves and face declining oil production.

MOVING FORWARD

In order for sustained economic reform to succeed in the GCC, there must be a degree of political settlement that allows for elites to make concessions to stimulate the private sector. There must also be a coordinated effort at the regional level to foster trade and establish public infrastructure. By continuing to develop a regional vision and shared economic space, Arab economies will be able to project a sense of stability and solidarity to better attract foreign investment.

Economic diversification in MENA carries deep power implications that extend into the geopolitical realm. Prior to the escalation of regional violence in 2011, countries in the GCC and Levant actually began to experience falling trade costs and expanded regional trade. States within MENA, in partnership with foreign powers, must work to contain regional conflicts and mitigate the flow of refugees. Diversification can only be sustainable in the long-run through the establishment of a peaceful and stable social order in MENA – which is now of prime interest to the global community, and Europe in particular.



Farley graduated in 2017 from Queen’s University with a Bachelor of Arts, majoring in History with a minor in Political Studies.

PHOTO SOURCE: GABITUL, FLICKR

The 2020s: An era of sustainable international trade

BY WILSON WEN | INTERNATIONAL TRADE & BUSINESS



As the world enters a new decade, there is little doubt that the notion of sustainable trade – which emphasizes the compatibility of trade and environmental protection – will become a primary focus of international trade agreements. The increased frequency of extreme weather events like floods and droughts, along with massive environmental disasters like the Australian wildfires, are indications of the increased challenge posed by climate change. For countries engaging in international trade, it is now more urgent than ever to ensure that their trade agreements are conducive to environmental protection and sustainable development.

WHY DOES SUSTAINABLE TRADE MATTER?

It is well recognized that trade has a significant impact on global environmental sustainability. However, it appears that much of its impact so far has been negative. According to a report from the International Centre for Trade and Sustainable Development, a Geneva-based think tank that focuses on trade and development issues, international trade has been conducted in a way that often causes serious environmental problems, including resource overexploitation and loss of biodiversity.

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Such environmental problems have been particularly acute in the global trade of fish products. The United Nations Conference on Trade and Development (UNCTAD) reports that from 2004 to 2014, the total value of global trade in fish and seafood products experienced more than a tenfold growth; by 2014, this value had already reached \$146 billion USD. As a result of such rapid expansion of trade activities, UNCTAD warns that “close to 90% of the world’s marine fish stocks are fully exploited, overexploited or depleted.” Among exporters of fish and seafood products, West African countries are especially suffering as half of fish stocks that exist off of their coasts have already been over-harvested.

Despite the alarming depletion of global fish stocks, national governments have been generally reluctant to undertake measures to restrict fishing activities. On the contrary, as scholar Peter Allgeier highlights, national governments – especially those in developed countries – have been subsidizing fishing activities for years. It is estimated that until the mid-2010s, the total value of subsidies for fisheries worldwide was \$35 billion USD per year, at least \$20 billion of which was used to encourage “exploitation of fisheries resources beyond sustainable limits.”

“...international trade has been conducted in a way that often causes serious environmental problems...”

The environmental damage caused by trade goes far beyond the depletion of fish and seafood stocks. In fact, the global trade of agricultural products, including soybeans and palm oil, has encouraged over-farming, deforestation, and pollution of soil and local water supplies in countries like Brazil and Indonesia. The relocation of polluting industries from developed to developing countries has also caused serious air, water, and soil pollution in the latter. Given the serious and often irreversible environmental damage caused by international trade, it has become more urgent than ever for policymakers to rethink how trade and environmental sustainability can be made compatible.

PHOTO SOURCE: UNITED NATIONS, FLICKR

AUSTRALIAN WILDFIRES: AN OPPORTUNITY FOR ADVANCING A SUSTAINABLE TRADE AGENDA

While international trade remains far from being environmentally sustainable, the ongoing wildfires in Australia have sent an alarming message that the world is entering an increasingly difficult fight against climate change. The wildfires have already hit every Australian state, causing at least 28 deaths, and burning more than 7.3 million hectares of land to the ground. According to some conservative estimates, half a billion animals have been affected, with millions likely dead. Scientists estimate that some animal species may already have been completely wiped out by the fires.

Australia normally has a dry season during its summer, and it is not uncommon for wildfires to start and spread. However, no wildfire in the past has reached the same scale and severity as what we witness today. The ongoing fires, as the Australian Bureau of Meteorology confirms, could only be explained by the drought and the unusually hot weather that Australia is currently experiencing. In December 2019, the nationwide average temperature reached a record high of 40.9 degrees Celsius. Because of their alarming severity, these wildfires could create significant public pressure for world leaders to pursue more environmentally sustainable policies as they are likely to increase global public awareness about the immediate danger of climate change, chief among these could be a commitment to sustainable international trade policies in the decade to come.

ACHIEVING SUSTAINABLE TRADE

There is little doubt that the ultimate realization of sustainable trade would require a serious restructuring of the current international trade regime. As we enter the 2020s, it appears that such dramatic change may have already begun. A growing number of countries are seeking to amend pre-existing trade agreements and forge new ones. Since 2016, countries in the Pacific region such as Canada, Japan, and the Philippines have been actively negotiating a massive regional trade agreement called the Trans-Pacific Partnership. This proposed agreement could provide an ideal opportunity for these countries to incorporate sustainability concerns into international trade.

Similarly, in 2018, the American government under President Donald J. Trump pushed Mexico and Canada to sign a new regional free trade agreement called the United States-Mexico-Canada Agreement (USMCA), which would replace the existing NAFTA structure. To be sure, what concerned President Trump about NAFTA was not its lack of sustainable trade practices. Nevertheless, his desire to change NAFTA opened the door for a more environmentally sustainable trade agreement in North America. In fact, compared to NAFTA, USMCA achieved a breakthrough in restricting, if not fully prohibiting, subsidies for overfishing.

In addition to the U.S. and countries in the Asia-Pacific region, the E.U. has also made efforts to push for a restructuring of international trade to promote global environmental sustainability. Since the consummation of the Paris Agreement in 2015, the E.U. has been active in introducing environmental protection clauses into newly forged regional free trade agreements.

The E.U.-Japan Economic Partnership Agreement, which entered into force on February 1, was the first to include a clause about the Paris Agreement. Even at the global level, the E.U. has been active in pushing for reform at the World Trade Organization to encourage higher environmental protection standards in international trade.

Moving forward, as environmental disasters like the Australian wildfires continue to raise international concerns about climate change, we will likely see a growing movement within the international community towards more environmentally sustainable trade practices in the 2020s. Certainly, this pursuit of sustainable trade will not be an easy task as it will require collaboration and support from governments and companies that have historically relied on intensive exploitation of environmental resources. Countries and actors that advocate for sustainable trade will therefore need to be well prepared for the challenges and difficulties ahead.



Wilson is a second year Master of Global Affairs Candidate at the Munk School of Global Affairs and Public Policy, specializing in international trade and business. His interest in these areas stems from his undergraduate studies at Simon Fraser University.

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PHOTO SOURCE: FLICKR, LOGAN ABASSI

Power Shift: The future of European Greens

BY RACHAEL WEBB | EUROPEAN AFFAIRS



IN May 2019, European voters went to the polls to determine the composition of the next European Parliament. Experts were worried, and tensions were high. Predictions were made that a jump in the number of far-right representatives was likely to occur after five years of increasing populist and Eurosceptic sentiment. While predictions of a change to the status quo were correct, they were not entirely accurate. Instead of a surge of populist parties, the real winner of the 2019 elections were the Greens, winning 74 out of the total 751 seats in the European Parliament. But can the Greens maintain their surge in the coming decade?

TRIUMPH OF THE GREENS

Predictions made before the 2019 elections forecasted that the Greens would likely lose half of their seats. But instead, the Party grew by almost 50 per cent, with the Baltic, Benelux, and the Nordic states along with the U.K., Ireland, Spain, and Portugal each voting in at least one Green Member of European Parliament (MEP). More interesting still, was the Green wave that engulfed Germany and France, who together elected 37 Green candidates to the European Parliament. The Greens are

now the second most popular political party nationally in Germany, only behind Angela Merkel's crumbling Christian Democratic Union. The Greens are expected to gain significant ground in national elections next year, with one of the co-chairmen of the Party as a lead contender to replace Merkel in the next government. In France, the Greens have become the third most popular party in the country despite their complete lack of support only a few years ago. Though there was no Green contender for the French presidency in 2017, they have become increasingly popular, especially as support for President Macron remains shaky.

While national parties are distinct from their European counterparts, the successes of the German and French domestic parties have given Greens a much-needed boost among the European electorate. No longer are the Greens a single-issue party led by radicals. The experience Green representatives are gaining at local and federal levels have made the Greens a credible option to counter centrist and far-right alternatives at all levels of government.

Paired with this growing national support is a shift in public opinion towards what the European Green Party has to offer. European concerns are growing over climate

change and the environment, reflected by the Extinction Rebellion protests in late 2019, and popular support for a move by the European Investment Bank to cease funding fossil fuel projects. A survey before the election found that addressing climate change is a primary concern for voters in several European countries. It seems that the European Greens, whose platform states that they "believe in a future without fossil fuels and nuclear energy" reflect the concerns of many European citizens. Other European parties have seen this too; in response to the Greens' strong performance in the May elections, both the centre-left and centre-right parties have made promises to listen more closely to climate concerns.

EASTERN BLOC

While the European Greens have enjoyed clear success both at the national and European levels, their popularity has limits. The Green wave has yet to hit Eastern Europe and has only a loose hold on Southern European states. Only six of the 75 Green MEPs are from Eastern Europe, the result of negligible votes for the Greens across Eastern European states.

The Green ideology that attracts Western European voters may also be pushing success out of the hands of Eastern and Southern European Green party representatives. Many voters in those regions prioritize other issues like corruption, migration, and the economy above the Greens' mandate when casting their ballots.

"...the next five years will give the European Greens the chance to gain important experience and prominence within the E.U., and to show Europeans that they are again worthy of their support in 2024 and beyond."

Despite the poor performance of the European Green Party in Eastern and Southern Europe, national parties and environmentalist groups in these regions are working hard to spread their message. The MZP in Hungary, the only Green party in Eastern Europe with a consis-

tent presence within the national parliament, has raised support by linking environmental concerns with more immediately pressing issues like good governance and corruption. With their broadening platform that now includes social, security, and economic policies, the European Greens may be working towards a stronger Eastern presence in the next election. As it stands, the sole Eastern European representative for the European Greens has stated that their focus will be on regional issues and capacity building to grow their popularity while promoting the pan-European Green platform.

A GREEN FUTURE ?

Was the success of the European Green Party a fluke, or is this the beginning of a long-term trend in European politics? Some believe that the Green Party's sudden popularity has less to do with its own desirability, and more to do with crumbling support for the centre-left, and a reaction to the rise of the far-right. Others are concerned that, as for the Eastern European electorate, economic concerns will outweigh environmental concerns for the majority of European voters by the next European elections in 2024. Although the Greens are not a one-issue party, there is still the risk that voters will redirect their support towards centrist parties in reaction to economic and social shocks.

Yet, the examples set by national Green parties are promising. In Austria and Germany, national Green affiliates have been happy to ally with centre-right parties, and national environmentalist parties have shown a high degree of flexibility in finding political partners. The European Greens have also indicated that they would be willing to work with centrist parties in the European Parliament. Nevertheless, the next five years will give the European Greens the chance to gain important experience and prominence within the E.U., and to show Europeans that they are again worthy of their support in 2024 and beyond.



Rachael is in her second year of the Master of Global Affairs program at the Munk School. She completed her Bachelor's degree in International Studies and Modern Languages at the University of Ottawa in 2017.

PHOTO SOURCE: JON KENT, FLICKR

Where Migration is Moving Next: 2020 and Beyond

BY RACHEL BRYCE | MIGRATION



The topic of international migration rose to political and social prominence in the past decade, mainly due to conflict-induced mass displacement from Syria, Somalia, Iraq, Myanmar, Venezuela, Honduras, and El Salvador. We currently know more about global migration than ever before, and this knowledge allows peace and justice actors to provide assistance to forcibly displaced persons or advocate for host countries to facilitate proactive resettlement and integration. However, migration has also become an increasingly polarized topic around the world. History has already seen stark opposition to movements of peoples in need of refuge. The dark episode in Canadian and American history in which the two countries turned away Jewish refugees during World War II is just one example. However, the current scale of opposition to migration and its connections to populist movements around the world feels unprecedented.

As migration and forced displacement increases in the next decade, so will the polarized public debates about migrants and refugees. To understand what these debates might look like in the new decade, and how public forces – whether governments, civil society, or international actors – might counter rhetoric which dehumanizes migrants and refugees, one must first look at the numbers.

STATISTICS FROM THE PAST DECADE

Although the number of international migrants has increased globally to 272 million (not including internally displaced persons), this represents only 3.5 per cent of the world population. Migrant workers are the largest group of international migrants. From 2013 to 2017, the number of migrant workers declined in high income countries (from 112.3 million to 111.2 million) and rose dramatically in upper middle-income countries (from 17.5 million to 30.5 million). Remittances from all international migrants rose to the highest amount on record with \$689 billion USD in 2018, marking a significant economic contribution to middle- and low-income countries.

To put the statistics in context, the total refugee population in 2018 was 25.9 million, with 20.4 million refugees under the mandate of the United Nations High Commissioner for Refugees (UNHCR) and 5.5 million under the mandate of the United Nations Relief and Works Agency for Palestine Refugees (UNRWA). Over half of the refugee population was under 18 years old. Distinct from refugees and international migrants, the number of internally displaced persons (IDPs) was 41.3 million, the highest number on record since IDP monitoring began in 1998. Finally, the recorded number of stateless persons around the world was 3.9 million in 2018 and it could have been much higher if not for progressive immigration policies like those in Columbia which allowed for birth registration of children of Venezuelan migrants and refugees who were born in Columbia.

THE PROBLEMS AHEAD

Voluntary migration is a natural and regular phenomenon that predominantly occurs between middle- and low-income countries in the Global South. This brings unique social, legal, and political needs, such as access to visas, inter-cultural relations, and the necessary resources to travel and communicate effectively. Although voluntary and forced migrants vary with respect to their autonomy,

both groups will face similar difficulties, such as securing a stable status in host countries, facing discrimination and bigotry from the host population, coping with climate shocks that can make migration more challenging, and dealing with the limited resources in host countries.

The more salient problems facing global migration in the coming decade centre around the polarization between high income “receiving” countries and mid- to low-income “sending” countries. With old conflicts continuing to persist and new ones being initiated in the Middle East, Central America, and East and Southeast Asia, and with the inevitable rise of climate-induced migration, forced migration will surely increase. In turn, migration will become an even more politicized and polarizing issue, with the potential to lead to fear-based and xenophobic immigration policies.

“As migration and forced displacement increases in the next decade, so will the polarized public debates about migrants and refugees.”

The political problems of nationalism and anti-migrant sentiment that began at the end of the last decade will most likely keep pace with the growing number of forcibly displaced people and voluntary migrants. Countries with politicians who continue to legitimize their policies through fear of migrants will not end their xenophobic tactics, and will continue to create more obstacles on the path of migrants. Furthermore, countries that share a border with sending countries will continue to experience the undue burden caused by displaced migrants from their neighbours. Additionally, higher income, more geographically isolated countries like Canada have yet to demonstrate a sufficient commitment to third-country resettlement. Without increased international commitment and cooperation, it is unlikely that this will change.

CAUSE FOR HOPE

Despite finding evidence of polarization on immigration issues, MIT researchers have found trends of increasing pro-migrant sentiments in Europe over the last generation. They associate this in part to a response to xenopho-

bic political parties, but also a general trend towards socially progressive attitudes across the continent, especially in Northern and Western Europe.

Moreover, although imperfect, efforts being made in global migration governance are cause for hope. The formation of the United Nations Network on Migration, the Global Compact on Refugees (GCR), and the Global Compact for Safe, Orderly, and Regular Migration (GCM) represent landmark agreements with near-universal consensus on the key issues requiring international cooperation and commitment. These international efforts will also continue over the next decade, bolstered by leadership from high-income countries like Canada and regional blocs like Small Island Developing States (SIDS).

Regionally, flexible immigration and visa policies will encourage the beneficial effects of migration. Western African states (ECOWAS) and Latin American states (MERCOSUR) have concrete examples of open visa regimes as the free movement of peoples is seen to benefit regional economies. On the other hand, the Association of Southeast Asian Nations (ASEAN) – similar to the Canada-United States-Mexico Agreement (CUSMA) – does not allow for such a free movement of people, nor does it lay out policies for enhancing labour mobility between nations. However, both ASEAN and CUSMA – along with other regional bodies including ECOWAS and MERCOSUR – might consider expanding such agreements to boost their regional economies.

Proponents of safer, more humane migration policies will continue to promote fact-based information sharing, revealing the benefits of migration and properly characterizing it as a natural human phenomenon. As the need rises, and the salience of migration persists, informed citizens will speak up and push their governments to find appropriate immigration policies in the 2020s and beyond. These solutions may initially fail to address the current refugee crises across the globe, but with continued public pressure, progress is possible.



Rachel is in the third year of the combined Juris Doctor/Master of Global Affairs program at the University of Toronto. Before coming home to Ontario, she earned her Bachelor of International Economics at the University of British Columbia.

PHOTO SOURCE: FLICKR

The Climate Crisis: Pulling non-traditional security out from the periphery

BY KIRA BOLLEN | GLOBAL SECURITY



THE new decade kicked off with a bang. Fireworks rang in the New Year around the world, welcoming in a new era. However, this year's celebration was marked with growing anxiety about the consequences of climate change. With Australia in the midst of apocalyptic bushfires, the resulting devastation of which is unmatched by previous years, many questioned the appropriateness of a fireworks display in Sydney, a city devoured in smoke. While many celebrated, many more were left wondering what additional devastation the new year – and the new decade – will bring.

The Australian bushfire emergency took over the news cycle in the final months of 2019, ushering Australians and news-watchers everywhere into 2020 with a renewed sense of climate anxiety. If 2019 is “the year the world woke up to the climate crisis,” then the 2020s will be the decade of grappling with the implications of climate change. From a security perspective, this will likely mean an increased emphasis on climate security, and other typically “non-traditional” security threats, as opposed to mainstream security policy considerations at all levels of governance.

Non-traditional security considerations, which encompass more political and socioeconomic repercussions, rather than traditional military threats, have been on the

rise in recent years. Due in large part to globalization, states have been forced to focus on a new array of national and regional non-traditional security threats, such as natural disasters and migration crises. Compounding this is the climate crisis – a security consideration in its own right, that also serves as a threat multiplier, exacerbating the frequency and magnitude of other non-traditional security risks. The new prominence of climate security and its impact on other security risks is forcing states to acknowledge the relevance of environmental threats. As a result, appropriate climate policy responses will become crucial to states' national security strategies in the coming years.

This repositioning of climate security from the periphery of security considerations to the frontline is marked by increasing public anxiety over the climate crisis. Published in November 2019, a study by the European Investment Bank illustrated the importance that environmental anxieties will play in the coming decade. Among Europeans alone, 47 per cent of the sample stated that they considered climate change as the number one threat to their livelihood, outranking economic instability, war, migrant inflows, and terrorist activity. In China, this statistic jumps to 73 per cent of the population who consider climate change as the greatest threat. The increasing frequency of climate emergencies across the tropics and

drought-prone countries, coupled with greater global media coverage, has brought climate anxiety to an all-time high. As we enter the 2020s, climate security considerations have never been more necessary.

CLIMATE TERRORISM

Although climate change is a threat in its own right, climate considerations will not simply eclipse previous security concerns like terrorism, but they will actively exacerbate and increase populations' vulnerability to other security threats. Climate terrorism, not to be confused with eco-terrorism, saw a rise in the previous decade and will no doubt become an increasingly favoured strategy for terrorist organizations in the coming years. As climate anxieties peak, climate terrorists are able to prey on a new realm of fear and unrest.

Climate terrorism can be broken down into two general strategies. The first is for armed groups to exploit resource scarcity to generate existential fear among vulnerable populations by interfering with their natural resources. Contaminating or blocking water sources and setting fires to forests and croplands are both economically and psychologically effective attacks on target populations who already fear for their diminishing resources. Additionally, such attacks can deal significant economic blows to target governments, as financial resources must be allocated to counter the attacks and manage the economic fallout resulting from a loss of real-value assets. For example, the 2018 California wildfires caused damages of roughly \$400 billion USD. Second, terrorist groups have been able to exploit the increasing civil unrest and weakened governance that climate change has caused in vulnerable countries. Such groups are able to leverage increased state fragility caused by climate change to slip through the cracks of governance and act with fewer restrictions and more effectiveness.

Further, in many developing nations where livelihoods largely depend on agriculture, climate change is proving to be an effective recruitment tool for terrorist organizations. As lakes recede and croplands become less productive, farmers are increasingly turning to terrorist organizations for income and protection. The African Union has noted the correlation between climate change and terrorist recruitment, particularly in North Africa, where up to 30 million people rely on Lake Chad for their livelihood.

Temperatures in the Lake Chad basin region are expected to rise at 1.5 times higher than the average global rate, and approximately 250 million Africans are expected to suffer from food and water insecurity within the century as a result of climate change. The degradation of such a key resource leaves many vulnerable to the wealth and protections that regional terrorist groups like Boko Haram are offering, and leaves regional governments concerned about what they can offer to curb this incentive.

CLIMATE REFUGEES

As the African Union struggles to combat climate-related terrorist recruitment in northern Africa, individual states around the world are facing growing uncertainty. Island nations face existential crises as sea levels continue to rise, while drought has crippled the habitability of regions in other countries. These phenomena are likely to force evacuation and internal displacement, creating a new class of vulnerable migrants, or “climate refugees.” The result will be increased national and regional security issues, as migrants seek new homes and countries work to protect their borders. An astute national security strategy would consider investment into environmentally efficient practices and regional environmental cooperation with more vulnerable states – a wise trade-off for future security expenses, such as border control and migrant protection. While more fortunate states may currently consider the extremes of climate change as a non-issue, those most affected face immediate security consequences that cannot be ignored by the international community.

REFLECTING AND MOVING FORWARD

With climate security issues indicating a troubling future for the coming decade, world leaders would be wise to reflect on what the past decades have taught us. If outright concern for negative environmental impacts was not enough to turn heads and move pens in the 2010s, combatting significant and direct security threats should lead agendas throughout the 2020s.



Kira is a first year Master of Global Affairs candidate at the Munk School of Global Affairs and Public Policy. She holds a degree in Political Science from Queen's University.

PHOTOGRAPH SOURCE: STATE GOVERNMENT OF VICTORIA, FLICKR

PHOTO SOURCE: FLICKR, DAVID BROSSARD

Innovative Solutions: The answer to food insecurity

BY JOANNA SHORT | SUB-SAHARAN AFRICAN AFFAIRS



FOR decades, the number of people suffering from food insecurity in Sub-Saharan Africa was on the decline. However, this trend has recently reversed, as changing weather patterns and rising temperatures have increased food insecurity across the region. As a result, food insecurity will define the 2020s in Sub-Saharan Africa. Moreover, how countries respond to growing uncertainty regarding the impact of climate change on food production will significantly impact food security over the next decade.

THE SCALE OF THE PROBLEM

Of the roughly 690 million people across the globe impacted by food insecurity – that is, those lacking reliable access to a sufficient quantity of affordable and nutritious food – roughly 48 per cent are in Africa. Of those in Africa, approximately 92 per cent live in Sub-Saharan Africa; a number that is expected to rise over

the next decade. The 2018 annual report by the United Nations Food and Agriculture Organization indicates that compared to 2015, an additional 32.6 million people are experiencing food insecurity in Sub-Saharan Africa. The deterioration of food security in the region can be attributed to two primary causes: (1) economic decline caused by weakening commodity prices, and (2) worsening environmental conditions. As climate conditions continue to fluctuate and scarcity is further exacerbated, experts warn that already inflated staple food prices will continue to rise. When food insecurity rises, it not only leads to poorer health outcomes and less productive societies, but can also create externalities such as increased violence, exploitation, and poor governance in the impacted region.

In Sub-Saharan Africa, the biggest areas of concern are currently Zimbabwe, South Sudan, the Democratic Republic of Congo, and the Central Sahel region. Most countries in this area rank in the bottom ten of the Human Development Index, meaning that they are already experiencing some of the worst societal and economic conditions. The list of countries at risk of extreme food insecurity is expected to expand as environmental issues continue to negatively impact economic prosperity. Zimbabwe, for example, was once one of the top food producers in Africa. However, serious subsistence farming issues due to changing rain patterns have resulted in widespread food shortages across the nation.

THE CURRENT FOOD AID REGIME

Generally speaking, when a region is food insecure, the World Food Programme (WFP) intervenes to deliver food aid, either in the form of food donations (about 80 per cent of the time) or cash transfers (20 per cent of the time). In its most basic form, food aid refers to providing access to food in times of emergency, such as during armed conflicts or natural disasters. Food aid can also be more long-term and used to develop lasting solutions in areas where food shortages exist, creating artificial food security.

The WFP estimates that it will require more than ten billion dollars (USD) to fully fund its operations in the coming year. This reflects a two billion dollar increase in donations from last year's requirements. Moreover, of the required eight billion dollars in 2019, only five per cent was flexible or un-tied donations – that is, donations without conditions as to how, where, and when the money can be spent. Inflexible or tied aid puts a strain on aid organizations and agencies in reaching those most in need of assistance and can create difficult circumstances, from negative local economic impacts to the increased cost of running programs that meet donor requirements.

“When food insecurity rises, it not only leads to poorer health outcomes and less productive societies, but can also create externalities such as increased violence, exploitation, and poor governance in the impacted region.”

While the U.S. is by far the biggest food aid donor, accounting for more than half of global food aid, the majority of the aid it provides is inflexible. U.S. donations follow a particular system: the U.S. government buys excess staple crops from domestic farmers and ships them overseas on mostly American ships, where it then donates the food to various aid groups. The aid groups then sell the goods at a discounted rate to continue their programming at the expense of farmers in receiving countries as they often undercut local prices and exacerbate existing economic issues through this process. This system was originally intended to boost U.S. agriculture and shipping interests, resulting in only about 30 per cent of food aid budgets going toward actual food while the majority is eaten up by shipping and overhead costs. Thus, the current system of food aid is extremely inefficient and outdated.

Consequently, food aid often creates long term problems, even when used as a short term solution. It is misused as an oversimplified solution to the complexities of food insecurity, which require a much deeper commitment by the international community in order to be solved.

WHAT CAN WE DO ABOUT IT ?

Ultimately, the solution will come from lived experience in food insecure areas. Currently, innovative solutions are being implemented to address issues of food insecurity that are increasingly exacerbated by environmental volatility. Changing weather patterns have increased the need for better irrigation and storage techniques given that rain is becoming less reliable and less frequent across Sub-Saharan Africa. These types of smaller scale projects can be implemented more quickly and will require less upfront capital. Their impact can also be increased through knowledge transfer from regions already adapting to similar conditions.

An innovative solution was discovered by a company called Desert Control, a patented liquid nano clay process (LNC) which can turn a plot of land from sand to soil within a day. LNC is applied directly on top of dry, sandy land using traditional watering techniques. It then penetrates soil to about 60 centimetres, and holds water like a sponge, saturating the sand sufficiently to create optimal growing conditions. There are no harsh chemicals involved – the process is simply comprised of water and clay mixed through a patented process. Once an area is treated, LNC's effects last up to five years and reduce required water consumption by more than 50 per cent.

Such innovative technology has the potential to unlock opportunities and break cycles of aid previously thought to be intractable. Thus, it is imperative that innovation targeting food security continues to be adopted at an increasing rate in order to keep pace with our rapidly changing climate.



Joanna is a second year Master of Global Affairs candidate, and holds a Bachelor of Arts Combined Honours degree in Global Politics and Human Rights with a minor in Economics from Carleton University.

PHOTO SOURCE: KATE HOLT/AFRICA PRACTICE, FLICKR

Agricultural Innovation: Latin America's contributions and challenges

BY AMAL ATTAR-GUZMAN | SOUTH AND CENTRAL AMERICAN AFFAIRS



Innovation is not a term typically associated with Latin America. In other regions, such as North America, Europe, and Asia, the private sector drives investment in research and development (R&D) initiatives to enhance innovation efforts. However, that is not the case for Latin American countries. In fact, Latin America has the lowest private sector contribution to R&D globally. While R&D investment has increased steadily in recent years, it is still lagging behind other regions.

Despite the economic difficulties of recent years, Latin America's GDP has been growing steadily since 2017, rising from 1.5 per cent to 2.5 per cent in 2018. Moreover, given the region's increase in global trade, despite numerous restrictions, Latin America is fertile ground to foster R&D initiatives and effectively compete in the realm of innovation. This is especially true when considering the potential for innovation in agriculture, given that this sector accounts for about 20 per cent of GDP in most Latin American and Caribbean countries.

AGRICULTURAL INNOVATION

In Mexico, under the provisions of the United Nations Food and Agriculture Organization (FAO) and in partnership with the Mexican government and the International Maize and Wheat Improvement Center (CIMMYT), innovative farming practices are being developed to combat the effects of various problems, especially malnutrition. For example, researchers constructed a new wheat genome reference map that allows them to target "tagged" genes that contain valuable traits, such as disease resistance, heat tolerance, and grain quality.

As a result, 81 maize and 48 wheat varieties were produced that could help combat food insecurity in Mexico and other regions with similar climates. Along with these new varieties, farmers who have participated in this project have received incomes that were 54 to 61 per cent higher than those who did not participate in the program.

PHOTO SOURCE: STEFANIE TYE, WORLD RESOURCES INSTITUTE

There is a need for similar innovation further south, in Costa Rica. Although this small country generally exports 300 agricultural varieties to 115 countries, it lacks innovative practices that would allow it to expand. The need for innovation is especially pronounced in the country's coffee production industry. As of late 2019, there were approximately 43,000 Costa Rican coffee farmers, many of whom are located in the southern region of Coto Brus, where coffee farming is most prominent. However, coffee production in the region has fallen by 50 per cent in the last 15 years due to economic strife and climate change, according to the Ministry of Agriculture. Due to these harsh conditions, the livelihood of these farmers is in jeopardy.

Despite these unfortunate circumstances, meaningful progress in agricultural innovation has been made through a small organization based in Coto Brus: Exportaciones Aromas Coffee. By forming alliances with the Costa Rican government and private companies, Exportaciones Aromas Coffee has undertaken a public-private project to build a local coffee processing plant. Through innovative measures, this locally-based processing plant has permitted farmers to process their coffee, send samples to exporters, and negotiate directly with buyers. By eliminating a "processing middleman," farmers can increase profits based on the quality of their products and their respective sustainable practices. As a result, this extra income helps prepare farmers for any future economic hardship.

Moreover, the national certification program, Programa bandera Azul Ecológica, has encouraged farmers to grow coffee under the shade of a variety of trees which improves biodiversity, prevents erosion, and protects water sources. Moreover, this program also encourages farmers to use soil analyses to customize fertilizer inputs and protect the soil, as well as recycle the waste generated on their farms. Finally, corporate partnerships have been established that are mutually-beneficial to both farmers and investors, in order to steadily generate economic incentives and profits.

Between January and September of 2019, Peru's agricultural exports were valued at just over five billion dollars (USD), an increase of 5.3 per cent when compared to the same time period in 2018. Since agricultural businesses are known to be especially lucrative, any threats

or challenges that endanger Peru's agricultural sector are not to be taken lightly. Hence, Peru has decided to invest heavily in Agritech.

From 2015 to 2019, Peru promised over \$17 million USD to address various challenges, such as reducing water scarcity, improving biotechnology to combat the effects of climate change, and increasing data collection on agricultural products to improve their quality. Moreover, drone technology has been used to provide advanced and intricate analysis of soil quality, pest control, and fumigation. As a result, this has significantly boosted production and increased agricultural efficiency.

CHARTING A PATH FOR FUTURE INNOVATION

Despite these successes, there are still considerable challenges that threaten or obstruct the adoption of innovative measures in Latin America's agricultural industries. A number of prominent institutions in Latin America continue to stifle innovation in the agricultural sector. As a result, those who wish to pursue innovative projects may not have the means to do so because of institutional roadblocks. Since 2018, Latin American governments have increasingly considered policies that favour protectionism and risk aversion. Institutional and policy barriers, further compounded by political instability as well as economic and social risks, threaten innovation. Countries such as Mexico, Costa Rica, and Peru are currently facing these challenges in various ways.

In order for agricultural innovation to be effective in the next decade, it must begin at a local, grassroots level, engage both the public and private sectors, and address the concerns of local communities. If not, Latin America will fall further behind, and one of its main sources of revenue will suffer as a result.



Amal is a second year Master of Global Affairs student at the Munk School of Global Affairs and Public Policy. She holds an International Bachelor of Arts in Political Science, and a Trilingual Certification in English, French, and Spanish from Glendon College at York University.

The Rise of Internet of Things in the 2020s: A focus on Japan's agricultural sector

BY JASMINE WRIGHT | ASIA-PACIFIC AFFAIRS



INTERNET of Things (IoT) technology – referring to the interconnection of technical devices through the Internet that allows for data transfer – is on the rise throughout the Asia-Pacific (APAC) region. In fact, this region is forecasted to be the largest investor in IoT technology by 2023, accounting for 48 per cent of spending worldwide. As a result, IoT technology will be increasingly used and advanced in the region and will be a dominant technology in the new decade.

APAC is leading investments in IoT technology due to a number of complementary reasons, including government mandates, strong manufacturing sectors, and national support for dedicated IoT research and development centres. Government support plays a significant role in promoting IoT across all major industries in the economy, including agriculture, energy and resources, transportation, manufacturing, government institutions, healthcare, and retail. In particular, Japan, the Republic of Korea, and Australia are in the top five countries of the International Data Corporation's (IDC) G20 IoT Development Opportunity Index Ranking, detailing the countries that are primed to generate and benefit most from IoT.

Japan offers a unique case study for this emerging phenomenon, as IoT technology is a centrepiece in Prime

Minister Shinzo Abe's push to achieve "Society 5.0" – the next evolution in human society that integrates cyberspace and physical space. In Japan, IoT technology is being used by small- and medium-sized enterprises (SMEs) to help streamline their operations, resulting in greater cost-savings. Throughout the APAC region, a high proportion of businesses are SMEs, which are often disadvantaged by a lack of awareness about emerging technologies, and how to implement them in their operations. The fact that IoT technology is readily used by SMEs in Japan speaks to the potential impact that this technology could have for other SMEs in the APAC region.

IoT IN JAPAN'S AGRICULTURAL SECTOR

Japan's agricultural sector exemplifies how SMEs can benefit from IoT technology. The sector in Japan is marked by a notable decline in productivity due to a number of reasons, such as an ageing workforce and high input costs. From 1980 to 2016, the number of workers in the agricultural sector decreased from 6.97 million to 1.92 million, with the average age of farmers being 67 years old in 2016. Additionally, Japan's agricultural sector faces higher input costs than Western countries due to the need to import many production materials like fertilizers. However, the greatest challenge in this sector is its low productivity which stems from the prevalence

of small farms. Farms with up to two hectares of land account for 80 per cent of agricultural producers, while farms with ten hectares of land or more make up only three per cent of all producers. The dominance of small farms dates back to the postwar 1952 Agricultural Land Act which restricted agricultural land to three hectares per farmer until 1970. Though in most developed countries labour-saving technologies led to the transition from small-scale to large-scale farming, in Japan, such technologies led farmers to divide their time between agricultural production and non-agricultural employment. Most small farms are currently unable to achieve economies of scale, severely limiting the productivity of the sector. Farms that can leverage IoT technology will be better positioned to address the challenges of an ageing workforce and high input costs.

SUCCESS STORIES

Two examples of Japanese agricultural SMEs that already use IoT technology are SenSprout and Farmnote. SenSprout developed a low-cost and easy to assemble sensor that measures the soil moisture of crops as well as the temperature at varying soil depths. Farmers can access this data via a computer and receive alerts when soil moisture is low. These sensors can avoid over- and under-irrigation of crops, helping to conserve water. As SenSprout reduces the need to rely on professional judgment and historical knowledge when watering crops, it allows for a swifter transition from retiring farmers to young farmers. This technology can also improve the productivity and profitability of small farms by optimizing crop yield due to ideal water levels.

A second example is Farmnote, a Japanese technology start-up that develops smart collars for cattle to detect illnesses and mating times. The data collected from the cattle is informed by clinical data on the cloud, and artificial intelligence is used to evaluate their health. Farms that use Farmnote's IoT technology can quickly receive updates about their cattle's health through a computer or an easy-to-use smartphone app. They can subsequently improve their productivity by effectively monitoring the needs and conditions of their livestock at a low cost. By increasing productivity and profitability, IoT technology allows small farms to be an alternative to large-scale agricultural production.

ONGOING CHALLENGES

Despite the benefits of the adoption of IoT technologies by SMEs in Japan and in the APAC region, there are ongoing challenges to implementation. One major challenge is the cybersecurity risk associated with IoT, such as vulnerability to hacking. In February 2019, Japanese officials began investigating 200 million IP addresses in the country to find digital devices that have poor security measures in place. This effort is part of the government's security procedures in advance of the 2020 Summer Olympics in Tokyo. According to the Ministry of Internal Affairs and Communications, two-thirds of cyber attacks in Japan specifically targeted IoT technologies in 2016. However, one way of mitigating this risk is by having strict regulations regarding IoT security measures. Japan's National Centre of Incident Readiness and Strategy for Cybersecurity released a General Framework for Secured IoT Systems that outlines security mechanisms for IoT architecture – a good start for establishing a robust regulatory framework.

Another challenge is sporadic government support for research and development within the IoT space, and unstable government-led financial and technical support for SMEs. The initial costs and the necessary technical expertise can make implementing IoT technologies very difficult for many SMEs in the APAC region. In addition, governments' changing funding priorities often mean a lack of investment in research and development which is necessary for exploring the true potential of these technologies.

IoT technology offers significant benefits to SMEs in the APAC region, and despite the ongoing challenges posed, IoT will continue to provide an innovative way to streamline technological gains throughout the 2020s.



Jasmine graduated in 2018 from McMaster University with an Honours Bachelor of Arts and Science Combined, with a major in Political Science. She has a professional background in policy analysis and has worked at several global financial corporations.

PHOTO SOURCE: WORLD BANK

Why digital rights are the future of human rights

BY KRISTEN KEPHALAS | HUMAN RIGHTS



IN the 2020s, digital rights will become synonymous with human rights. Digital rights are broadly defined as any human right applicable in the digital world. As a consequence of the Internet's increasing universality, digital rights will be the defining human rights issue of the next decade. The more time we spend online, the more important the protection of our digital rights becomes.

The border between online and offline is becoming indistinguishable. As of October 2019, there were 4.5 billion active Internet users, a number that continues to grow. The prevalence of the Internet in our daily lives cannot be overstated, nor can its human rights implications be ignored.

HUMAN RIGHTS ON THE INTERNET

As we increasingly exist on a digital plane, the vulnerability of fundamental human rights is heightened. Central to these rights is freedom of expression. The Internet has become a primary means of communication across the globe. Journalists, academics, activists, and regular users alike rely on the Internet to share ideas, including those perceived as provocative or controversial. Online, mes-

sages are shared at unprecedented speeds to unlimited audiences, making Internet expression especially vulnerable to censorship.

Other crucial rights such as non-discrimination, equality, and the right to privacy are engaged on the Internet. Principles of non-discrimination and equality encompass who has access to the Internet and to what information they have access. Internet access is unevenly distributed across gender, income, and ethnic lines. Illustratively, women have significantly less access to the Internet than men, a disparity further exacerbated in low- and middle-income countries. This limits certain groups' access to information and reinforces systemic power imbalances as education and work are increasingly digitized.

“As a democratizing platform that allows anyone with a connection to share and receive information, the Internet has proven to be revolutionary for marginalized individuals.”

PHOTO SOURCE: WIKIMEDIA COMMONS; VOA

The Internet also impacts the right to privacy. Personal information is shared online and stored as data controlled by private corporate actors with often insufficient accountability mechanisms. As essential services such as banking, healthcare, and education transition to online platforms, more of our information is deposited online. The basic Internet user has little assurance of how securely that information is protected, or the personal risks incurred if it is compromised.

THE INTERNET AS A VEHICLE FOR EXERCISING RIGHTS

While the Internet presents new challenges for human rights protection, it has also created immense opportunities. The Internet has become the tool of choice for human rights protectors due to its immediate and broad reach. As a democratizing platform that allows anyone with a connection to share and receive information, the Internet has proven to be revolutionary for marginalized individuals. It facilitates the formation of communities that otherwise would not exist, creating systems of support and validation for those historically underrepresented in mainstream politics and media. The relative anonymity of the Internet and the availability of personal VPNs have allowed even those living under extreme digital repression to join the global conversation.



The growth of the Internet has been a watershed for human rights reporting, spurring the rise of citizen journalism. Regular Internet users can share unedited and first-hand recordings of events, undistorted by mainstream

media. In regions with heavy media censorship and government propaganda, citizen journalism is crucial to advance the dissemination of accurate information, which can later be analyzed by more objective parties.

The Internet has also facilitated the organization of large-scale grassroots protests, primarily driven by young people, which bring attention to injustices systematically ignored by those in power. The most notable example is the global climate strikes that swept the world in 2019 and saw millions of people coordinate protests over social media. Similarly, recent protests in Lebanon, Chile, and Hong Kong highlight the importance of the Internet in human rights activism.

DIGITAL RIGHTS & STATE ACTION

Digital rights and freedoms comprise a double-edged sword: the Internet can empower people who have been historically disenfranchised, but can also be harnessed to oppress them. Digital rights violations range from malicious actors jeopardizing individuals' data privacy through cyber attacks to more insidious threats, such as government-backed efforts to limit the rights of entire populations online.

“There is a strong correlation between a country's general level of freedom and its freedom online; more democratic countries tend to have higher levels of digital freedom.”

Repressive governments appreciate the threat that the Internet poses to their authority. Such regimes rely on tactics such as propaganda, coupled with violence and threats, to suppress their populations' ability to assert their rights. When citizens are able to dispel misinformation and mobilize, this strategy is undermined. To prevent this, some governments have restricted Internet access in an attempt to exercise control over their population. Increasing trends of digital repression show no signs of abetting: global Internet freedom has declined for the ninth year in a row according to Freedom House.

The guarantee of digital freedom is strongly influenced by sitting governments. There is a strong correlation between a country's general level of freedom and its freedom online; more democratic countries tend to have higher levels of digital freedom. For example, Canada, Iceland, and the European Union have enacted regulatory regimes to protect data privacy and engage in little to no censorship. Armenia experienced an increase in digital freedom after the Velvet Revolution of 2018 established a progressive government that ended the persecution of journalists.

Government actions aimed to limit citizens' enjoyment of digital rights range from censorship of certain platforms to the outright shutdown of Internet access. In Cambodia, the government blocked online access to independent news media such as the Phnom Penh Post, Radio Free Asia, and Voice of America on the eve of the 2018 elections, impeding citizens' ability to make informed voting decisions. China is a more extreme example: the government bans Western social media sites and search engines, including Facebook and Google, on the grounds that they contravene the country's social values. Instead, Chinese citizens must use state-approved platforms that are heavily censored and monitored for political dissent.

“Digital rights and freedoms comprise a double-edged sword: the Internet can empower people who have been historically disenfranchised, but can also be harnessed to oppress them.”

The most severe action a government can take is an Internet shutdown. Defined by Access Now, an Internet shutdown is “an intentional disruption of Internet or electronic communications, rendering them inaccessible or effectively unusable, for a specific population or within a location, often to exert control over the flow of information.” An estimated 128 shutdowns across 29 countries occurred between January and July of 2019, the most drastic being the Internet shutdown in Kashmir, India. The longest running Internet shutdown to ever occur in a democracy, the Kashmiri shutdown was implemented in response to widespread protests against new laws furthering the oppression of Kashmiri Muslims. The shutdown

damaged the region's economy, obscured the reporting of human rights violations such as extrajudicial violence, and severely restricted Kashmiris' freedom of expression and freedom of the press.



The detrimental implications of digital repression are further exemplified by government-imposed Internet shutdowns in response to the 2019 protests in Iran and Sudan, both of which were largely organized online. These shutdowns were enacted in concert with the violent suppression of protestors that resulted in the injury and death of hundreds of people at the hands of their governments.

As our digital presence becomes inextricably tied to our daily lives, the enjoyment of fundamental rights and freedoms faces a novel threat in the form of digital repression. Violations of digital rights have profound real-life implications. While the Internet holds great potential to promote fundamental rights, it can also be manipulated to undermine citizens' rights enjoyment. As the digital realm increasingly influences our physical reality, we must ensure that digital rights are safeguarded.



Kristen is a third year combined Juris Doctor/Master of Global Affairs candidate at the University of Toronto. Her main research interests include international justice, migration, and the role of power structures in the protection and enjoyment of human rights.

PHOTO SOURCE: PIXABAY CREATIVE COMMONS

Personalized Medicine, Public Problem: Ensuring access and affordability for the next generation of medical treatments

BY ZISSIS HADJIS | GLOBAL HEALTH



MEDICINE is experiencing a revolution, one that is increasingly reliant on genetic screening and analyzing vast amounts of genomic data. While this foray into precision medicine brings hope to treat and even cure many diseases, accessibility and affordability of this data continue to concern many in the field. In high-income countries, these treatments are in the early stages of development and thus quite expensive. There is no certainty that governmental health agencies of middle- or low-income countries will be able to provide personalized medical treatments to citizens, even if the upcoming decade yields a dramatic decrease in the costs associated with data collection and drug development.

BENEFITS OF PERSONALIZED MEDICINE

The medical field is evolving at an unprecedented pace. Many of the breakthroughs in recent years are due to ad-

vancements in the field of science with regards to better understanding human DNA. In 2003, scientists finished mapping out the entire human genome – a project that cost approximately \$2.7 billion USD. Today, for about \$1,000, one can access their entire genome on their smartphone.

Just over a decade after scientists finished mapping the human genome, advancements in gene editing led to the discovery of specific DNA sequences commonly known as CRISPR (clustered regularly interspaced short palindromic repeats). This scientific achievement can be simplified as a gene editing technology that can alter, cut, and paste pieces of DNA at a reasonable cost and with once inconceivable accuracy. These advancements in genetic knowledge, therapies, and the impactful amount of information they offer have been major factors in ushering in a new era of precision medicine.

Precision or personalized medicine, as defined by the U.S. National Research Council, is “the tailoring of medical treatment to the individual characteristics of each patient [...] to classify individuals into subpopulations that differ in their susceptibility to a particular disease or their response to a specific treatment.” Precision medicine allows physicians to more accurately gauge which therapies will work, while avoiding potential side effects and complications of prescribed treatments. Many of these treatments are tailored to the specific genetics of individual patients.

For example, a 16-year old in the U.S. is the youngest person to have received gene therapy treatment for sickle cell disease, which affects millions of people worldwide – disproportionately impacting those in Africa. If successful, this case will be the first known cure for sickle cell disease. In the U.S., the cost of treating a child with sickle cell disease can total up to \$10,000 yearly, causing many parents to discontinue treatment or accrue cumbersome amounts of debt.



Moreover, the World Health Organization (WHO) has stated that sickle cell disease is a public health priority. The WHO acknowledges that prevention and management strategies, such as early genetic screening, are crucial components of disease management. A cure would be a major breakthrough, helping millions of people around the globe and saving money for governments and families in the process.

Precision medicine goes beyond treating genetic blood disorders and can also play a role in treating non-communicable diseases (NCDs), the incidence of which continues to rise globally. NCDs, such as cancer, diabetes, and obesity, are increasingly affecting middle- and low-income countries and putting a massive strain on under-developed healthcare systems. Precision medicine techniques are already being used to treat certain can-

cers or cardiovascular diseases in the U.S. As developing countries expand their healthcare systems, they must decide what type of therapies will best meet the needs of their populations.

NEW HOPE OR OLD HOAX ?

Despite showing early promise, many scientists, public health professionals, and policymakers remain wary of using personalized medicine as a tool to improve global health outcomes. Not only is the clinical utility of certain genetic treatments uncertain, but prioritizing them may also divert attention from the social and environmental determinants of health.

Focusing on high-tech solutions in resource-limited countries could shift significant funds away from proven low-tech treatments. Should governments invest in expensive genetic screening initiatives when so many fundamental global health issues with simple treatments, such as tuberculosis, remain rampant? Despite these concerns, some countries have slowly begun to implement elements of precision medicine into their healthcare system with promising results.

For instance, Thailand currently uses genetic screening to identify epilepsy patients who may be at-risk for negative reactions to a commonly prescribed treatment. The cost-effectiveness of this intervention has led Thailand to include this test as part of their universal health coverage package. In Botswana, a comic-book series was released to educate citizens on heredity and the impact of genetics on health. These examples illustrate how national governments are slowly beginning to implement elements of precision medicine into their healthcare systems to both anticipatorily improve health outcomes and inform citizens.

“Should governments invest in expensive genetic screening initiatives when so many fundamental global health issues with simple treatments, such as tuberculosis, remain rampant?”

It is clear that countries around the globe are interested in harnessing the potential of precision medicine. The main concern is that even if personalized genetic therapies become affordable, these treatments will only be available to those in wealthier nations if poorer countries fail to establish the proper healthcare infrastructure. Donor countries should continue to address pressing global health issues but must also assist with the development of long-term healthcare infrastructure in poorer countries if they wish to see improved health outcomes in the long run.

BUILDING THE FUTURE OF HEALTHCARE, TODAY

While precision medicine continues to evolve and provide rich countries with more effective therapies, the next decade will be crucial for developing countries that are looking to incorporate genetic services within their domestic healthcare systems.



As the clinical utility of many of these genetic treatments becomes clearer, it is crucial that donor countries fund proven treatments and help with broadening capacity. Policy recommendations from the WHO and national governments alike should emphasize evidence generation, data sharing, transparency of results, cost-effective-

ness of treatments, and patient trust and engagement if they hope to enact change.

Precision medicine should be patient-focused, with governments prioritizing outcomes for citizens and ensuring access and affordability for all. To successfully implement personalized treatments and reap the benefits from this investment, countries need to ensure that their citizens are well-informed and scientifically literate. Further, assurances must be given so that the healthcare system can handle patients’ genetic data in a responsible and ethical manner.

“As the clinical utility of many of these genetic treatments becomes clearer, it is crucial that donor countries fund proven treatments and help with broadening capacity.”

Personalized medicine presents a massive opportunity to shift how we screen, diagnose, and treat many diseases. However, this treatment method disproportionately benefits high-income countries, leaving poorer ones behind. In the next decade, the global health community must continue to address fundamental issues, while also preparing for the advent of personalized medicine to ensure that all countries can realize the benefits of this imminent healthcare revolution.



Zisis is a second year Master of Global Affairs student at the Munk School of Global Affairs and Public Policy. Prior to arriving at the Munk School, he earned his Honours Bachelor of Science from the University of Ottawa in Biomedical Science, with a specialization in Neuroscience.

PHOTO SOURCE: MY FAMILY DNA; WHO; THE CANADIAN RED CROSS

Data Sovereignty and Decolonisation

BY FIONA CASHELL | INDIGENOUS AFFAIRS



THE concept of decolonization moved to the forefront of conversations in settler states in the previous decade. Although definitions vary, decolonization describes the process through which society – both Indigenous and non-Indigenous – transitions away from power dynamics established during the colonial era. A key aspect of decolonization is the achievement of self-determination, meaning the ability for Indigenous nations to self-govern as outlined in Article 4 of the United Nations Declaration of the Rights of Indigenous Peoples (UNDRIP). Another seemingly separate conversation which dominated the 2010s, data protection, could offer a tangible method of making self-determination a reality through Indigenous data sovereignty (IDS).

WHAT IS DATA SOVEREIGNTY?

In broad terms, data sovereignty refers to the practice of holding information subject to the laws of the country in which it was gathered. The term has been widely discussed in mainstream media with reference to governments hosting information on cloud services. For example, Statistics Canada's recent decision to begin hosting data on a cloud service has opened a discussion on data privacy. Data sovereignty is typically confined to geographic borders, while Indigenous data sovereignty calls for control at the level of Indigenous nations.

In an Indigenous context, data sovereignty could allow those communities to manage and collect data for their own purposes. The Māori Data Sovereignty Network defines data sovereignty as a right to “the creation, collection, access, analysis, interpretation, management, security, dissemination, use and reuse of [Indigenous] data.” The ability for Indigenous nations to assert self-governance requires timely and relevant data to support informed decision making. This data could then be mobilized to drive economic and social development within those communities. Despite not being articulated within the UNDRIP, it has been argued that IDS can be used as a tool to attain self-determination by taking an active role in generating and using data for social and economic purposes.

INDIGENOUS DATA COLLECTION

Typically, data collection for Indigenous communities follows the same standards as upheld by the rest of the country which they inhabit. In Canada, the two main sources of information regarding Indigenous statistics are the Long Form Census and the Indigenous Registration System. The challenge with these methods of data collection is that assimilation policies and practices, such as residential schools, have led to the gathering of flawed, incomplete, or irrelevant data. In these cases, data collection was a tool for both monitoring and attempting to eliminate Indigenous culture by the government.

An early example of Indigenous peoples extending control over their own data is the creation of the Regional Health Survey by Canadian First Nations in 1997. This initiative was created to address the exclusion of First Nations and Inuit peoples in previous Health Canada surveys, and its creation marked an opportunity to have Indigenous peoples take a leadership role in filling this information gap. The survey later inspired the creation of the First Nations Information Governance Centre which has continued to gather culturally relevant data for Indigenous peoples in Canada. Other bodies working towards data sovereignty include the aforementioned Māori Data Sovereignty

Network, the United States Indigenous Data Sovereignty Network, and the Global Indigenous Data Alliance.

It is one thing to generate data where it had previously not been recorded, but another entirely different challenge to transition control over the data away from federal governments. In an ideal scenario, data sovereignty would include Indigenous Data Governance, giving Indigenous nations the ability to design, access, and assert ownership over the framework through which their data is collected. The United States Indigenous Data Sovereignty Network outlines that data collection should address four standards: collective benefit, authority to control, responsibility, and ethics (CARE). Other best practices include the need for Indigenous data to benefit the wellbeing of Indigenous communities.

“Advancements in data gathering have presented many opportunities for Indigenous nations to advance their national priorities, and many Indigenous communities have already begun to leverage these technologies.”

GOVERNMENT MISTRUST

In addition to the historical use of census data to monitor Indigenous peoples, many historical experiences have led to skepticism over the true intent of federal governments when gathering Indigenous data. The challenges of data sovereignty are not solely contained to policy creation. The use of biological data for research without the prior consent of Indigenous peoples has also generated concern. For example, blood samples from the Havasupai Tribe in Arizona were initially used for diabetes research; however, the data was later used for migration research, which involved analyzing biological data to track the geographic origins of the Tribe. The consequences of this data misuse could have been great, and it may have serious ramifications for the Havasupai Tribe's land rights. The Tribe sued the researchers involved in 2004.

The case of the Havasupai Tribe has made Indigenous cooperation in other studies challenging. The All of Us

project from the National Institutes of Health hopes to bring together the genetic anonymized data of a million Americans of various backgrounds to build a health database. However, the precedent set by past misuses of Indigenous data, the initial lack of a Native American member on the research advisory panel, and the ability to identify individuals from small tribes has led to hesitancy on the part of Native Americans to participate in the project.

At present, the Canadian federal government has not demonstrated its trustworthiness when it comes to managing Indigenous data. The most recent example of this breach of trust lies within recently released RCMP documents that revealed the active monitoring of Indigenous protesters. The initiative known as Project Sitka ended in 2015 and listed 89 protesters whom the RCMP believed would participate in unlawful acts during protests. The list, containing both Indigenous and non-Indigenous members, was found to be reactivated in 2016 prior to the Trans Mountain pipeline announcement.

TOWARDS THE FUTURE

Advancements in data gathering have presented many opportunities for Indigenous nations to advance their national priorities, and many Indigenous communities have already begun to leverage these technologies. The Navajo Nation, for example, has lifted its ban on genetic research on tribal lands in 2017 with the understanding that such research could help detect health risks associated with diabetes and cancer.

Data sovereignty can create the opportunity to embrace technological and policy advancements without compromising the integrity and security of Indigenous data. Furthermore, a well-articulated IDS strategy could give Indigenous nations the necessary tools to identify and address community needs, without having to depend on the state.



Fiona is a second year Master of Global Affairs candidate at the Munk School of Global Affairs and Public Policy. She graduated with distinction from the University of Guelph, earning an Honours Bachelor of Arts in International Development, with an Area of Emphasis in Gender and Development and a minor in French Studies.

PHOTO SOURCE: DOMINIC SMITH, FLICKR

Stranger Tides: Navigating the uncharted waters of the Fourth Industrial Revolution

BY ABE RAVI | TECHNOLOGY & INNOVATION



THE second decade of the 21st century was remarkable for the development, commercialization, and proliferation of emerging technologies, driving unparalleled political and economic change across the globe. The third decade – beginning in 2020 – is poised to be even more disruptive and unpredictable due to the looming Fourth Industrial Revolution. The Fourth Industrial Revolution – also known as “Industry 4.0” – refers to the unprecedented economic changes that will likely be caused by advanced technologies. The term was first defined in 2016 by Professor Klaus Schwab, the founder and Executive Chairman of the World Economic Forum. These advanced technologies, such as artificial intelligence (AI), will enable machines to communicate with each other and make decisions autonomously. Therefore, these smart technologies will increasingly destroy the barriers between the physical, digital, and biological worlds.

DIGITAL PULLEYS & GEARS

The primary drivers of Industry 4.0 are a wide range of innovative technologies. They include AI, autonomous vehicles (AV), robotics, blockchain, 3D printing, quantum computing, the internet of things (IoT), genomics, and augmented reality. These technologies are unprecedentedly disruptive and are of a wholly different order of magnitude in sophistication as compared to previous innovations like the textile mill, the assembly line, and the steam engine. Moreover, the forces of globalization – such as the internationalization of capital flows and the widespread diffusion of knowledge over the Internet –

will ensure that these advanced technologies will be deployed over a larger number of economic sectors, and at a faster pace than ever before in human history. Hence, it is short-sighted to simply assume that sovereign states can withstand the economic shocks posed by Industry 4.0 simply because they managed to weather the industrial upheavals of the past.

SAILING FORWARD

Although Industry 4.0 is expected to cause widespread economic shocks, it also has the potential to improve the way we live and work. To be specific, the development of new technologies will increase labour productivity, reduce the cost of basic goods and services, boost leisure time, and increase life expectancy through the development of new treatments. In the political sphere, advanced technologies can expand civic participation, promote digital privacy, and bring about greater transparency and accountability within political institutions.

A report published by the Stanford Graduate School of Business’ (GSB) Centre for Social Innovation has indicated that blockchain technology, a key driver of Industry 4.0, will have a beneficial and transformative impact in seven key areas: democracy and governance, health, energy, climate and environment, financial inclusion, land rights, and philanthropy. GSB’s analysis was the result of a study of 193 organizations, initiatives, and projects which are leveraging blockchain to drive social impact. According to the study, 55 per cent of the blockchain initiatives had a beneficial impact on their stakeholders. In applications where it is successful, this technology has the potential to fundamentally transform systems and overcome traditional infrastructure limitations, thereby enabling solutions that were previously thought to be impossible.

CHARTING THE RIGHT COURSE

In the policy sphere, it is unclear how decision makers will respond to the drastic changes brought on by Industry 4.0. Many policymakers have shown a poor track

record of effectively responding to unforeseen challenges in the context of globalization and disruptive technologies, as there has been widespread backlash against automation and the offshoring of jobs. Therefore, policymakers and stakeholders must adopt new ways of thinking in order to effectively navigate the onslaught of changes produced by these innovative technologies.

According to a 2017 report by McKinsey & Company, a staggering 50 per cent of today’s jobs could be automated with existing technologies. Although automation and AI will increase productivity and economic growth according to traditional measures, millions of workers will need to change occupations and learn new skills. Dr. Kai Fu Lee, a renowned expert in AI, claims that both white- and blue-collar jobs will be affected by automation. Dr. Lee argues that any job associated with driving will be the first to be disrupted as companies like Uber, Google, and Tesla pour billions of dollars into AV technology. Morgan Stanley estimates that automated freight delivery will lead to \$168 billion USD in total savings from reduced labour costs, fewer accidents, and increased productivity.

However, this trend is concerning as truck driving is the most popular job in 29 U.S. states, with 3.5 million truck drivers in the country. There are an additional 7.2 million workers who provide goods and services to truck drivers, and this ecosystem adds \$17.5 billion in economic value to local communities across the U.S. – all of which could disappear as a result of automation. This pattern of rapid automation will spillover to eventually eliminate the jobs of call centre workers, retail clerks, and fast food workers. This economic displacement will affect middle class families, and further exacerbate existing economic inequalities.

UNIVERSAL BASIC INCOME AS A POLICY SOLUTION

There are no silver bullet solutions that could swiftly resolve the challenges engendered by disruptive technologies. But, a good first step would be to start having difficult debates about changing the structure and function of existing political and economic institutions to meet these challenges. For example, sovereign states will have to tackle high levels of unemployment through new job training programs, effective taxation regimes, and increased welfare transfers. This conversation has begun in the U.S.,

spurred by former Democratic Party presidential candidate Andrew Yang. Yang’s chief policy was the provision of a universal basic income (UBI) to Americans which he termed the “Freedom Dividend.” The dividend would have provided all citizens in the U.S. who are between the ages of 18 and 64 with \$1,000 per month for an annual total income of \$12,000. Since the current poverty line in the U.S. is set at \$11,770, Yang’s goal was to bring the gross poverty level to a minimum. This scheme would have been indexed to increase with inflation and would have required a constitutional supermajority to modify or amend.

Yang argues that this policy would be effective as it would replace the existing patchwork of welfare programs that are administered in the U.S. This is not the first time that instituting a UBI has been proposed, as it has been previously tried in Canada and some Nordic countries. However, Yang’s proposal was very ambitious considering the opposition to UBIs from mainstream political circles in the U.S. Yang argues that the Freedom Dividend is a non-discriminatory form of Social Security where all citizens would receive a set amount of money per month regardless of their status or income. Hence, Yang’s ambitious plan must be commended for it has initiated a serious policy discussion about upcoming technological disruptions in the U.S.

Policymakers must consider the wide-ranging social and political effects of disruptive technologies on society at large. Moreover, the ethics of advanced technologies must be deliberated at all stages of product development and implementation, a practice which so far has been abandoned in favour of purely profit-driven business models. Although it is difficult to know which policy decisions are best suited to deal with these challenges, it is certain that the need for the relevant policy discussions has never been as pressing as it will be in the new decade.



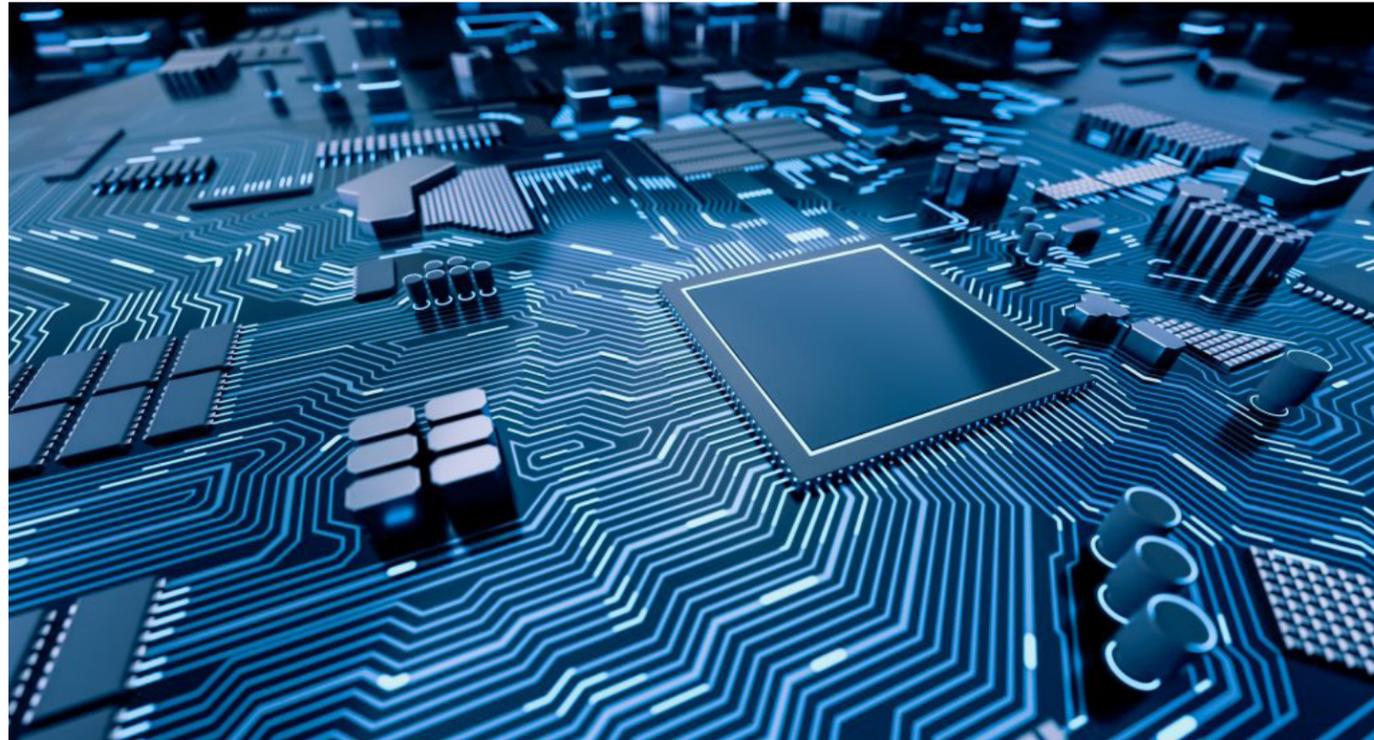
Abe is a second year Master of Global Affairs student at the Munk School of Global Affairs and Public Policy. He graduated from the University of Toronto with a Bachelor of Arts in Political Science and a double minor in Biology and Public Law.

PHOTO SOURCE: PIXABAY CREATIVE COMMONS

PHOTO SOURCE: FLICKR, JOHN WAMBUGU

Canada's Quantum Valley

BY JESSE MARTIN | CANADA IN THE WORLD



As the 2020s begin, technology is not only becoming increasingly important in our day to day lives, but it is also engulfing world politics. Yet, the 2010s left many wondering if Canada is innovative enough to be an active player in the burgeoning tech industry. While China dominates 5G infrastructure and California-based tech companies lead investment in complex artificial intelligence, Canada's claims to technological fame – epitomized by Research in Motion and the Canadarm – seem outdated.

However, this is likely going to change within the next decade. Canada has now become the largest per-capita spender and fifth-largest total spender on quantum technologies which have become increasingly important to governments and businesses. In quantum physics, matter has characteristics of both particles and waves, and can alternate between these two states if it is affected by an external force. This property is known as particle duality, and it allows for a computational input to exist as both a one and a zero simultaneously, unlike in classical computing. This means that quantum encrypted messages, software, or other data will be, in theory, “uncrackable.”

The sheer potential of this technology has popularized research on how it can be applied in a number of industries.

The distribution of quantum technology could be the most wide-reaching technology since the Internet, affecting communications, mining, agriculture, finance, security, health, energy, and big data. In medicine, quantum technology gives drug developers the ability to model new drug formulas in a fraction of the time, increasing both the precision and efficiency of finding new treatments and cures. Similar effects will be captured by the financial sector. Financial institutions, including Goldman Sachs and JPMorgan Chase, are accelerating their quantum research as it can lead to improved financial stability and profits. Yet, quantum technology's biggest global impact could be felt in its military applications. Hyper-accurate quantum sensor applications will enable militaries to better identify often-missed targets, such as nuclear submarines and low-observable aircraft. Quantum technology could also amplify existing security dilemmas for the first countries to achieve quantum supremacy. This will allow powerful and technologically advanced countries, like

China or the United States, to break down the current encryption protections of their adversaries who continue to rely on classical computing.

QUANTUM VALLEY, QUANTUM COUNTRY

Canada could be at the centre of this quantum revolution through its high public and private investment in places like Vancouver, Toronto, and especially Waterloo. Waterloo, colloquially known as Quantum Valley, has become the epicentre of quantum technologies and quantum firms in Canada. These firms are seeking to transform a plethora of industries. Based in Waterloo, High Q Technologies is using quantum technology to create life-saving treatments for illnesses including cystic fibrosis. ISARA, another Waterloo-based quantum firm, is developing quantum cryptography to provide better protection for personal and digital transactions.

Wide-reaching success will be experienced when Quantum Valley's knowledge is disseminated throughout Canada instead of being concentrated in high-tech cities. Currently, there are 400 manufacturers of quantum sensors in Canada, employing 25,000 people. A report from the Government of Canada expects this sector to grow to 229,000 jobs, dispersed throughout the country by 2040. More importantly, Canada currently has a four per cent global market share of the total tech industry and could reach eight per cent of the quantum tech industry if these technologies are successfully integrated throughout the Canadian economy. To achieve this, these start-up style quantum firms will need to work with large Canada-wide companies, such as Bell Canada, and operate in a wide range of sectors like the provincial healthcare systems.

CANADA'S PLACE IN THE QUANTUM WORLD ORDER

To be sure, China, the European Union, and the United States will continue to be the three largest players in the quantum technology industry due to their sheer size. However, this does not negate Canada's competitive advantage, and Canada could become a global leader alongside these quantum technology frontrunners. Canada has already created an investment-friendly environment

for quantum technologies, and the government will now need to develop a coherent quantum strategy.

“Entering this decade, Canada has an enormous opportunity to be a leader in quantum technology given its current investments and progress in the field.”

To be a world leader in quantum technology in the 2020s and maintain the prosperous quantum environment it has created over the past two decades, Canada will need to make quantum technology research commercially viable. Although much of quantum technology's potential lies in publicly funded industries, including healthcare and the military, private investment should also be encouraged and incentivized. To demonstrate such support, Canada could spearhead the development of international rules and norms on quantum technology. For example, Canada could take a leading role in mitigating the global security risks of quantum technologies by defining norms and limitations on reasonable cyberattacks and regulating dual-use quantum technologies to prevent its militarization. Otherwise, without any international regulatory framework, there could be serious global security and economic repercussions.

Entering this decade, Canada has an enormous opportunity to be a leader in quantum technology given its current investments and progress in the field. But challenges do lie ahead. To raise Quantum Valley's prominence to the level of Silicon Valley, Canada must maintain strong government support for quantum technology, create an innovative environment to foster its widespread use, and pursue international rules and norms which prevent the nefarious use of such technologies.

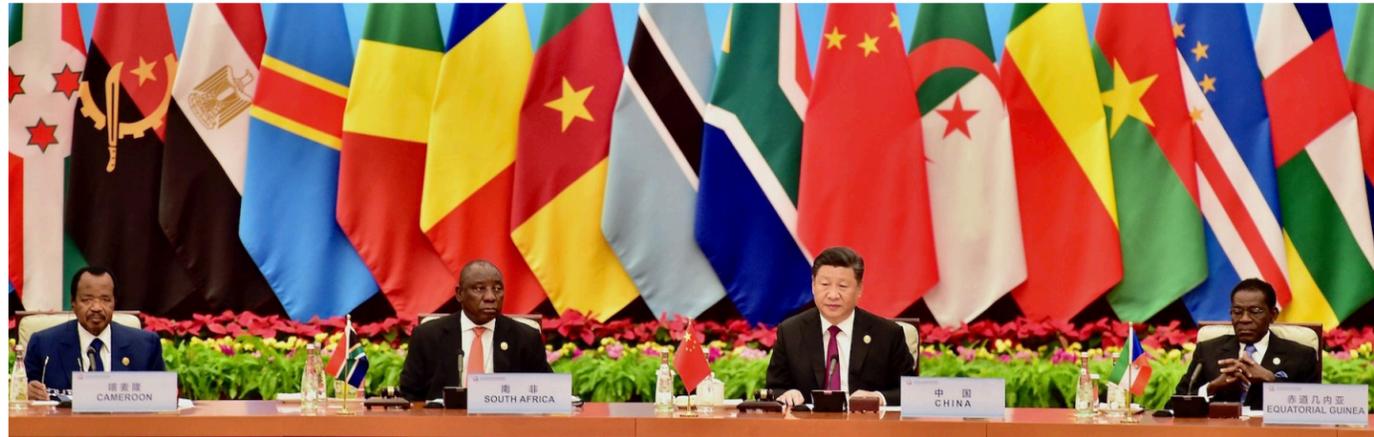


Jesse is a first year Master of Global Affairs student at the Munk School of Global Affairs and Public Policy, pursuing a Collaborative Specialization in East and Southeast Asian Studies. He holds an Honours Bachelor's degree in Political Studies from Queen's University.

PHOTO SOURCE: SECURITY ROUNDTABLE

The Rise of Non-ODA Donors in the Global South: China in Africa

BY KATIE SHUTER | GLOBAL DEVELOPMENT



OFFICIAL development assistance (ODA) flows have been steadily decreasing over the last two years, limiting prospects for achieving the 2030 Sustainable Development Goals (SDGs) within the next decade. According to the Organisation for Economic Cooperation and Development (OECD), net bilateral ODA for the least developed countries dropped by 2.7 per cent in 2018. While this decline has members of the international community concerned for the future of development, many low-income countries have turned to other official flows (OOF). These flows represent money that does not necessarily have to be used to promote the welfare of the recipient country, but nonetheless can benefit their economies through direct foreign investment.

CHINA AS A NON-ODA DONOR

China has made a name for itself as a big player in OOF assistance through infrastructure development and investments in approximately 152 countries and international organizations. Led by China, the Belt and Road Initiative (BRI) aims to bolster trade and diplomatic relations by way of infrastructure investments in both China and other developed and developing partner countries. This includes the building of new rail lines, highways, power plants, airports, and IT systems. Specifically, China's BRI pledged \$60 billion USD to Africa in 2018 and another one billion dollars in 2019. These funds would specifically focus on addressing ill-funded infrastructure initiatives in Africa, including construction financing.

China's relationship to Africa is particularly strong, with Chinese foreign investment in the continent growing by 40 per cent annually.

China's OOF assistance is important to watch over the next decade because of its implications for African development, and China's increasing growth as a superpower. China is not an OECD country, and as such, most of its monetary outflow would not be counted as official development assistance. Without regulatory enforcement by the OECD, flows from China to Africa have a "no strings attached" policy and muddle the distinction between assistance and self-interest. It begs the question: how will this form of development aid shape the decade for Africa, China, and the global economy?

CHINA'S PRESENCE IN AFRICA

There is an unspoken hidden catch to the OOF "no strings attached" policy. A large percentage of the infrastructure activities funded by China are driven by Chinese companies as subcontractors with egregious terms for indebtedness. In November 2018, it was reported that China is expected to take control over Kenya's Mombasa port in response to unpaid loans for the development of a railway, potentially forcing thousands of workers to operate under Chinese lenders. Given the amount of money China has pledged to Africa and the expected rate of growth in the continent, it seems more likely that repayment schemes such as this will continue to unfold.

PHOTO SOURCE: LICKR

This has left the global community concerned that China could gain increasing power in Africa by leveraging these types of clauses on unpaid debts. African countries have indeed increased their borrowing from China and have some of the highest levels of indebtedness to China. Angola, Ethiopia, and Kenya owe China \$25 billion, \$13.5 billion, and \$7.9 billion (USD) respectively.

This debt-trap diplomacy has been contested by some scholars, but the main concern is clear: the increasing existence of non-ODA donors such as China has taken formal procedures out of development aid, leaving a space for self-interested donors to gain political influence on the world stage. Compared with the West, China is tightening its grip on the second largest continent on Earth in terms of both population and size. China provides much-needed funding with more leniency than the alternative OECD aid. For example, countries such as Canada provide ODA to developing countries on specific conditions that are consistent with international human rights standards or initiatives that "do no harm." Those rules do not apply to China as a non-OECD member.

IMPLICATIONS FOR THE 2020s

Regardless of the moral ambiguity regarding OOFs, development assistance in the form of non-ODA donors could have interesting implications for the future of regional advancement in the upcoming decade. First, projections for the future success of the African economy are now tied to the pretence that China will continue to grow in the region. Forecasts on African developmental growth over the next ten years are inextricably linked to Chinese investment. This is especially daunting considering that many studies have predicted that China's economic growth will be considerably slower in the 2020s, perhaps as low as three or four per cent per year. A slowing Chinese economy means fewer resources for foreign investment, thus translating into an expected decline in the GDP of low- and middle-income countries in Africa. More starkly, this indicates less investment into African infrastructure and more pressure on African borrowers to repay billions of dollars in Chinese loans.

Additionally, as China has been leading in global economic growth, an economic slowdown in China could also mean a global recession – as Bloomberg columnist Noah Smith put it, "when China sneezes, the world may catch a cold." In that context, development aid could be

sensitive to shrinking economies. The OECD has stated that recessions can squeeze aid budgets, and thus Africa may face a severe shortage in aid should this be the case. Conversely, if economic growth continues to rise, Africa's reliance on China translates into the narrative of China as a growing superpower with strong economic ties to a continent with vast natural resources. In both scenarios, the impact of China's foreign investment on both African and Chinese development is stark.

It will also be interesting to see how countries decide to work together to progress development in Africa. In September 2019, the Chinese BRI claimed that the 2020s could be a "golden era" for emerging market infrastructure investment if countries were able to put aside their differences to fund projects cooperatively. In this way, multilateral investment could substantially reduce the African infrastructure deficit in the 2020s. While the current U.S.-China trade war makes that reality seem far away, it is nonetheless exciting to consider the prospect of global cooperation and the use of non-traditional development assistance to achieve SDG goals.

THE GROWTH OF NON-ODA DONATIONS IN 2020s

On one hand, non-ODA financial assistance provides developing countries with the freedom to build their economies without restrictions imposed by traditional donors. With many critics noting the bureaucracy that encapsulates the OECD, this could be seen as a win. On the other hand, we have explored the negative domino effect that non-ODA flows can have when developing countries become overly dependent on foreign investment and loans. Nevertheless, this important transformation within the international development community calls for closer inspection in the new decade.



Katie graduated in 2017 from Western University with a Bachelor of Arts in Anthropology. After graduation, Katie started a position with the J.W. McConnell Foundation to address environmental and food policy concerns in Canada's healthcare system.

The time has come to update international space law

BY MARIA BELENKOVA | INTERNATIONAL LAW



THE 2020s are expected to see great developments in space exploration, led by a broad range of state and commercial actors. For instance, some large projects include NASA's Artemis program, which promises to land the first woman and the next man on the lunar surface by 2024 and establish a permanent settlement on the Moon by 2028. Additionally, a number of companies are aiming to launch asteroid mining operations within the next decade. This expansion of human activity in space presents both risks and opportunities, and it will occur in the absence of a contemporary system of international space regulation. Therefore, there is a pressing need to revise international space law, as the 1967 Outer Space Treaty is increasingly lacking in scope.

CURRENT LEGAL FRAMEWORK

The current framework of international space law was established in the era of the Cold War when space exploration was only reserved for two spacefaring nations: the Soviet Union and the U.S. It began with the creation of the United Nations Office for Outer Space Affairs (UN-OOSA) in 1959, which led to the establishment of five

legally binding international agreements. The most notable is the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies (Outer Space Treaty) in 1967.

According to the treaty, outer space is not subject to territorial sovereignty and, together with other celestial bodies, is not subject to national appropriation; it is rather free for exploration and use by all countries although states still retain jurisdiction over objects they launch into space. This treaty, however, only addresses state sponsored space exploration.

Further regulations include the Convention on Registration of Objects Launched into Outer Space (CROLOS), which requires launching states to register with the United Nations particular information about objects launched into space. Being a launching state implies absolute liability for any damage done to property on Earth, to an aircraft within Earth's airspace, or to other states' space objects. Damage done to celestial bodies is not included in any regulation.

Beyond these preliminary guidelines, the United Nations has remained inactive, simply recommending states to "consider enacting and implementing national laws authorizing and providing for continuing supervision of the activities in outer space of non-governmental entities under their jurisdiction." As a result of this inaction, simple matters such as the delimitation of Earth's airspace and outer space, as well as the definition of a space object are not yet universally established.

CHALLENGES TO THE CURRENT SYSTEM

Technology and space exploration have significantly evolved since the passing of the five United Nations treaties. A number of shortcomings and ambiguities have begun to arise, indicating just how outdated these treaties are. The 2020s are expected to see a number of developments in space activity, and international space law must keep pace to ensure a safe pursuit of these developments. This decade should therefore see the creation of new regulations to properly address issues that may arise from the growing presence of humans in space.

Since the United Nations has allowed individual countries to establish their own space laws, there may be incompatibility between the different national systems. For instance, in the context of the exploitation of celestial resources, there are differing opinions as to whether mining on the Moon or asteroids amounts to appropriation, which is forbidden by the Outer Space Treaty. The industry of asteroid mining is expected to grow throughout the decade as the abundance of resources found in asteroids and their economic value are becoming more attractive. The American and the Japanese space agencies are both involved in the exploration of nearby asteroids by private companies like the Asteroid Mining Corporation. Therefore, the international legal system must come to a consensus on the legality of such mining endeavours and on how their benefits should be distributed. In this way, reasonable guidelines for the creation of a responsible celestial economy, working in the long-term interest of humanity, can be established.

As more countries and private actors engage in space exploration, the field will become increasingly crowded. Although currently stable, the growing presence of these different actors will likely lead to conflict and contestations. Some competition can already be observed be-

tween the U.S. and China, as they attempt to secure a military advantage in space.

In December 2019, the U.S. Space Force was founded, which is intended to train and equip the U.S. military "to promote space resilience and build deterrence capability to respond effectively against emerging counter space threats." Additionally, Russia is seeking to bolster its military and space capabilities to keep up with the U.S. and China. India is also becoming increasingly active in the space arena.

Direct confrontation has not yet occurred, but the prospect of space warfare is in the background of conversations on global security. This suggests that in the 2020s, space may become a new domain for strategic geopolitical competition. The possibility of uncontrolled state competition heightens the risk of conflict, signalling the need for reform in international space law in order to adequately manage such competition without stifling scientific progress.

MODERNIZING THE LAW

The importance of a contemporary system of international space law is already being recognized by some, as the International Institute of Air and Space Law in the Netherlands is currently working on a revised governance framework. In November 2019, they adopted the Building Blocks for the Development of an International Framework on Space Resource Activities, which "aim[s] to lay the groundwork for a future potential framework for the governance of space resources." Nevertheless, more must be done lest international law falls behind the technological advances taking place in space. Hence, international law must focus on reforming and modernizing space law in the coming decade.



Maria graduated in 2019 from Tilburg University in the Netherlands with an Honours Bachelor of Laws (LLB) in Global Law. Her research interests include the role played by the global legal system in constructing inequalities in international power and welfare.

PHOTO SOURCE: WILL, FLICKR



PHOTO SOURCE: CREATIVE COMMONS, UNIVERSITY OF TORONTO



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