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ADVANCING EFFECTIVE U.S. POLICY FOR STRATEGIC COMPETITION WITH CHINA IN THE TWENTY–FIRST CENTURY

HEARING

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WEDNESDAY, MARCH 17, 2021

U.S. SENATE,
COMMITTEE ON FOREIGN RELATIONS,
Washington, DC.

The committee met, pursuant to notice, at 10:02 a.m. via videoconference, Hon. Bob Menendez, chairman of the committee, presiding.

Present: Senators Menendez [presiding], Cardin, Shaheen, Murphy, Markey, Schatz, Van Hollen, Risch, Romney, Portman, Young, Rounds, and Hagerty.

OPENING STATEMENT OF HON. BOB MENENDEZ, U.S. SENATOR FROM NEW JERSEY

The CHAIRMAN. This meeting of the Senate Foreign Relations Committee shall come to order. Our topic today is advancing effective U.S. policy for strategic competition with China in the 21st century.

Dr. Economy, Mr. Shugart, and Mr. Khan, thank you for joining us here this morning to explore one of the most consequential questions this committee will consider this year: how to develop an effective strategy to counter and manage the rise of China.

The China of 2021 is not the China of 1971 or even the China of 2011. China today is challenging the United States and destabilizing the international community across every dimension of power—political, diplomatic, economic, innovation, military, and even cultural, and with an alternative and deeply disturbing model for global governance.

As I said before, I truly believe that China today, led by the Communist Party and propelled by Xi Jinping's hyper nationalism, is unlike any challenge we have faced before as a nation.

For decades, we have failed to comprehensively address China's growing reach, and while I have given the previous Administration credit for getting the scope, scale, and urgency of the China challenge right, they seem to operate under the mistaken belief that just being confrontational was being the same thing as being competitive.

Retrenchment from the global stage, withdrawing from international fora only to let China fill in the void, alienating our allies and partners, particularly in the region, only helped embolden China's efforts.

Coercing its neighbors in the maritime domain, crushing Hong Kong, threatening Taiwan, increasing its trade surplus with the United States, racing ahead in the development of new digital technologies, a campaign of genocide on its Uighur people, China today is more active and more assertive than ever before.

There should be little doubt in my mind that the right basic framework for thinking about our relationship with China today is strategic competition, not because that is necessarily what we want but because of the choices Beijing is making.

We need to be clear eyed and sober about Beijing's intentions and actions and calibrate our policy and strategy accordingly. The United States needs a new strategic framework for this competition and a new set of organizing principles to address the challenges of this new era.

One of these core organizing principles, I would suggest, is the importance of coordinating closely with our allies and partners to develop a shared and effective approach to China.

Indeed, I think Secretary Blinken's and Austin's have successfully started embracing this principle with their trip this week. And I believe that our China policy must be integral as we develop an Indo-Pacific strategy.

So I am pleased to see that President Biden understands that our alliances, our partnerships, and the shared values on which they stand, and our reliability and resilience in the face of adversity, are crucial for effective global leadership.

Second, as we consider strategic competition with China, we must recognize that in the 21st century the nature of our competition also revolves around geo-economic matters, not just the geopolitical and military competition that characterize the 20th century.

The most hotly contested domains are in the new and emerging suite of technologies: 5G, AI, quantum computing, nanotech, robotics, zero carbon energy technology, not just the traditional categories of blood and steel that have traditionally guided our national security thinking.

If we fail to invest in our geo-economic tools, if we fail to replenish the sources of our competitiveness here at home, we will find that while we still may dominate in the old domains and traditional measures of military power, the world has moved on and we will be left behind.

Successfully doing so requires significant bipartisan political efforts. To that end, I appreciate that the ranking member has stated his desire to join forces to draft and markup a strong bipartisan China bill.

To accommodate his request for more time to achieve this shared objective, I have agreed to move the markup to April 14th. We will have to work during the recess to have the text finished and available to other committee members by the end of this work period.

My expectation is that the text will be representative of the shared bipartisan space on China, and members will also have opportunities to shape the bill through the amendment process.

Both he and I and many members of this committee have introduced bills and issued reports over the past several years addressing various aspects of this challenge. Now we need to act and adopt

a comprehensive bipartisan bill that can provide a sustainable and durable framework for the years ahead.

So I look forward to the opportunity to engage with our witnesses today in a genuine and substantive conversation about how we can work together to develop a comprehensive approach and strategy towards China to reset our strategy and diplomacy, to reinvest and replenish the sources of national strength and competitiveness at home, to place our partnership and allies first, and that reflects our fundamental values as Americans.

Let me turn to the distinguished ranking member, Senator Risch, for his opening statement.

[No response.]

Senator Risch, I think you may be muted.

Senator RISCH. It is not now, Bob. Can you hear me?

The CHAIRMAN. Yes, I hear you very well.

Senator RISCH. Thank you very much. I appreciate that.

STATEMENT OF HON. JAMES E. RISCH, U.S. SENATOR FROM IDAHO

Senator RISCH. First of all, let me pick up where you left off on the bipartisan nature of this effort.

I think there is no issue before this Congress that demands and commands bipartisan effort than the issue that we have in front of us, and you point out, a lot of us who have introduced bills recently, in recent years, addressing various parts of the China issue and it is time to bring them all together, which is, of course, the effort that we are undertaking here.

As most of us in recent years have recognized, strategic competition with the People's Republic of China must be United States' number-one foreign policy priority.

The challenges posed by the Chinese Communist Party are urgent, and we must act accordingly. We must also maintain U.S. political will for the long haul because these challenges will shape U.S. foreign policy and the international system for decades to come.

Republicans and Democrats should work together to ensure that the U.S. and its Government treats China as the top foreign policy priority in the Indo-Pacific as the priority region in terms of policy, resourcing, and personnel.

To support these goals, congressional legislation must be truly bipartisan and driven by concrete and actionable steps that directly address the biggest threats we face from PRC.

Today's hearing will be important in shaping this committee's efforts, including by providing us with valuable ideas on several aspects of competition with China: political, economic, military, and technological.

One of the important aspects or one of the important pieces of this puzzle as we go forward is partnerships. We know that we have allies in the world who are anxious to join us in our quest in this regard.

Europe, of course, is a natural partner, and I got a report recently that itemized things we can do with Europe and with support with our European partners. I know the Administration will do the same thing as we go forward.

In addition to Europe, of course, we have other natural partners in the region that will join us in our efforts to do the things that we are setting out to do here.

Last week, I reintroduced the STRATEGIC Act with several colleagues, which includes proposals to put the United States on a stronger path to win this competition.

The Chairman and I have talked about this and about his bill. We are going to work together to try to meld those together so that we have a proposal that is truly bipartisan and meets all of our ideas as to how we meet the challenge.

First, the STRATEGIC bill challenges the unfair and illegal PRC economic practices that undermine U.S. businesses and an international economic system based on free market growth.

The STRATEGIC Act focuses in particular on increased oversight of Chinese company behavior in U.S. capital markets and Chinese state-sponsored intellectual property theft. We are all aware of the many cases that this has happened, and we have got to put an end to this.

This legislation also addresses the CCP malign influence in our media, universities, and even Government. We must ensure that our society remains open and free but also resilient and aware of the ways in which the CCP attempts to suppress, influence, or steal information within the United States.

The STRATEGIC Act increases transparency around Chinese Government funding of our universities and Government-sponsored trips for Government officials.

Next, this act confronts the threat of a modernized and growing Chinese military. Its rapid expansion and modernization is shifting the balance of power in the Indo-Pacific. The PLA is also becoming more active in other regions such as the Indian Ocean, Africa, and even the Western Hemisphere.

The CCP plans to use its military to dominate the waters inside the island chain and project great power beyond. It has strengthened its ability to coerce Taiwan to unify with Mainland and to bully its neighbors into accepting its excessive maritime claims.

Such actions would be devastating to the U.S. and allied interests in this entire region. We must ensure the United States and its allies are appropriately resourced to meet this military challenge.

I want to take this opportunity to express my concern about comments by unidentified Administration officials in the media yesterday about Taiwan. Beijing's increased coercion and attempts to isolate Taiwan are the reason for seeing increased tensions, not engagement with Taiwan by the United States.

I am especially disappointed to see comments like this right before the U.S.-China discussions in Alaska this week. The Administration should clarify these statements if, indeed, they are truly the Administration's position, since it is always hard to tell when the media cites unidentified officials.

Having said that, it is important that those statements are out there that the Administration speak to those statements that have been made.

Finally, the STRATEGIC Act holds the CCP accountable for its appalling human rights abuses, including its ongoing genocide of

the Uighurs and other Muslim minorities in Xinjiang, egregious human rights abuses in Tibet, and its obliteration of individual rights promised to the people of Hong Kong.

Oftentimes, the CCP uses new technologies to carry out these abuses. The international community cannot turn a blind eye to its human rights abuses. No truly great power undermines its own citizens, and the CCP must be held accountable for their conduct.

These are just some of the pressing and important threats we face from the PRC, and I look forward to hearing from the witnesses on these important issues. I also look forward to working with my Democratic colleagues to address these evolving challenges in an actionable and bipartisan manner, and I believe that the Chairman and I will continue to work in good faith in a bipartisan manner to bring these matters before our committee, eventually before the Senate, to reach a bipartisan solution and action to address these matters.

So thank you, Senator Menendez. With that, I yield back.

The CHAIRMAN. Thank you, Senator Risch.

Let me turn to our witnesses now.

Dr. Elizabeth Economy is a senior fellow for China studies at the Council on Foreign Relations and a senior fellow at Stanford University's Hoover Institution.

Dr. Economy is an acclaimed author and expert on Chinese domestic and foreign policy. Her most recent book, "The Third Revolution: Xi Jinping and the New Chinese State," was shortlisted for the Lionel Gelber prize.

Mr. Tom Shugart is an adjunct Senior Fellow with the defense program at the Center for New American Security. His research focuses on undersea warfare and maritime competition, military innovation, and acquisition and the broader military balance in the Indo-Pacific.

And Mr. Saif Kahn is a research fellow at Georgetown Center for Security and Emergent Technology. His research focuses on AI policy, semiconductor supply chains, China's semiconductor industry, and U.S. trade policy, and his work has been featured in the Financial Times, The Washington Post, Fortune, and other outlets.

With that, let me first turn to Dr. Economy. Your full statements will be included in the record. We ask you to summarize it in 5 minutes, more or less, so that we can have a conversation with you.

Dr. Economy.

STATEMENT OF DR. ELIZABETH ECONOMY, SENIOR FELLOW, HOOVER INSTITUTION, STANFORD UNIVERSITY, WASHINGTON, DC

Dr. ECONOMY. Thank you very much, Chairman Menendez, Ranking Member Risch, and other distinguished members of the committee.

I appreciate the opportunity to speak before you this morning on this critical issue of U.S. strategic competition with China.

When Xi Jinping was selected as General Secretary of the Chinese Communist Party in 2012, he spoke of his Chinese dream and the great rejuvenation of the Chinese nation, and while no one knew exactly what he meant at the time, I do not think anyone

would have envisioned that his ambition was nothing less than a reordered world order.

In over the past 8 years, it has become clear that he seeks to transform the geostrategic landscape across the four dimensions, first, by asserting sovereignty over Taiwan in the South China Sea as well as over other contested territory such as those with India and Japan; second, by replacing the United States as the preeminent power in the Asia Pacific through Chinese military dominance and a network of regional agreements that excludes the United States; third, by embedding Chinese political, economic, and technological preferences throughout the world, via the Belt and Road Initiative as well as through the leverage of its market; and fourth, by aligning international norms and values around human rights, internet governance, and technical standards with those of China.

Xi's approach is long term and strategic. He sets targets and timetables for achieving his objectives. He mobilizes actors from across the Chinese Government, military, and the private sector. He structures political and economic incentives to induce outside actors to support Chinese objectives, and he pursues those objectives in multiple domains within China, in other countries, through the Belt and Road and in global governance institutions.

China has achieved notable success in realizing many of its strategic objectives, and much of the rest of the world now believes that China's rise and the U.S.'s decline are inexorable.

Beijing's management of the COVID–19 pandemic, vaccine diplomacy, positive economic growth, technological leadership, and growing military prowess lend credibility to such a narrative.

However, China's strategy also has significant vulnerabilities. In many respects, the same state control that contributes to China's success has also begun to limit the credibility and attraction of many Chinese initiatives.

Chinese technology companies, such as Huawei and ByteDance, face growing constraints and access in global markets as a result of CCP interference. Nordic countries that once welcomed PRC investment now scrutinize it for potential military applications.

Many countries have closed their Confucius Institutes, which are perceived as vehicles for advancing a Chinese Government political narrative.

In addition, China's willful diplomacy, along with its egregious actions in Xinjiang and Hong Kong, have resulted in a backlash against China.

Popular opinion polls throughout the Asia Pacific, for example, indicate significant distrust of Xi Jinping and little interest in Chinese regional leadership, and the Belt and Road has become bumpy, as popular protests and host countries proliferate, deals are canceled and renegotiated.

COVID–19 placed particular stress on Belt and Road deals with the Chinese Government reporting that 60 percent had been adversely affected.

The Trump administration was instrumental in drawing international attention to many of the risks of growing Chinese power and influence, and it put in place a number of policies to protect

the United States from unfair and even malign Chinese economic and political activities.

If to compete effectively with China, the Biden administration must move beyond the previous Administration's more reactive and defensive strategy to a sort of more positive and proactive message of U.S. leadership that contributes to advance global prosperity and security.

And as the Interim National Security Strategy guidance suggests, and I outlined in my testimony, U.S. leadership should be firmly rooted in U.S. values, strong relations with allies and partners, and a robust presence in multilateral institutions.

A good example of such leadership is the major new vaccine diplomacy initiative with Australia, Japan, and India that answers the humanitarian need, demonstrates the ability of democratic allies and partners to cooperate effectively, and provides an alternative to Chinese global vaccine diplomacy.

Moving forward, the Administration and Congress has a long list of priorities that it needs to address with regard to China. China is a global challenge that is going to require a global response.

Let me just mention four.

First, we need to develop an economic pillar of engagement in the Asia Pacific. China's weaving a net of regional trade agreements and U.S. companies will lose ground in the most economically dynamic region of the world if the Administration and Congress do not fight their way into the CPTPP or pursue a range of significant sectoral trade agreements.

Second, the United States, as the chairman mentioned, needs to retool at home. In the same way that we set clear objectives and targets for ensuring military preparedness that include research and development, manufacturing, the development of human capital, and logistics, we need a technology policy that does the same.

Third, to compete effectively with China, the United States must look beyond its traditional allies and partners to forge a new relationship with the world's developing economies.

China's engagement in Africa and the Middle East, as well as Latin America and Southeast Asia, have provided fertile ground for Chinese values, technologies, and policy preferences to take hold.

Moreover, when the United States and its allies criticize China in Xinjiang, Hong Kong, and the South China Sea, Beijing is able to rally support from within these developing economies.

The United States needs to change this dynamic by working with other large market democracies to pursue a significant new development initiative with these economies, such as a sustainable Smart Cities program, include them in the clean network and resilient supply chain initiatives, welcome them to the table as part of small ad hoc groups on Administration priorities such as cyber, climate, and corruption, and ensure opportunities for studying in the United States and other advanced democracies for the next generation of leaders from these countries.

Finally, I would just note that China's released the 14th Five Year Plan just a week ago, and in it highlights priority areas for China including the Arctic and Antarctica, maritime governance, and space.

Xi Jinping has put the world on notice about his next big strategic place and we should pay attention.

Thank you very much.

[The prepared statement of Dr. Economy follows:]

Prepared Statement of Dr. Elizabeth Economy

INTRODUCTION

Chairman Menendez, Ranking Member Risch, and other distinguished members of the committee, thank you for the opportunity to testify today on this important topic of U.S. strategy in an era of great power competition. My remarks will focus primarily on the political elements of this competition.

China's leaders seek to reclaim Chinese centrality on the global stage by asserting sovereignty over contested territory, replacing the United States as the preeminent power in the Indo Pacific, embedding Chinese economic, security, technological, and political preferences throughout the rest of the world, and shaping norms, values, and standards in international institutions to reflect Chinese preferences. In such a world, political and economic choice globally will be constrained, and U.S. economic and security interests will be compromised.

For almost a decade, Chinese leaders have made substantial progress toward achieving their objectives. Their success is a function of the leverage of the Chinese market, growing military prowess, long-term strategic planning, strong state capacity, and a multi-actor, multi-domain strategy. At the same time, Beijing's pursuit of narrow self-interest and reliance on coercive tactics have engendered popular backlashes in many countries and rendered it incapable of exerting true global leadership. These vulnerabilities afford the United States a new opportunity to present and gain broad support for an alternative vision of the 21st century world order.

The United States should begin by reframing the U.S.-China competition away from the narrative of a bilateral rivalry to one rooted in values. It should also reassert its presence in global and regional institutions, coordinate with allies and partners, pursue its own multi-actor, multi-domain strategy, and develop a national consensus around American political and economic renewal. These are the building blocks of U.S. competitiveness. Beyond these steps, however, Washington needs a bold strategic initiative that engages the larger international community, is rooted in U.S. values, and gives life to its strategic vision.

CHINA'S STRATEGIC VISION

Chinese leaders offer a new vision of world order rooted in concepts such as "the rejuvenation of the great Chinese nation," a "community of shared destiny," a "new relationship among major powers" and a "China model." Once the rhetoric is stripped away, their vision translates into a significantly transformed international system. The United States is no longer the global hegemon with a powerful network of alliances that reinforces much of the current rules-based order. Instead, a reunified and resurgent China is on par with, or even more powerful than, the United States. And the international community and institutions reflect Chinese values and policy preferences.

At the heart of the Chinese leadership's vision is the reunification of China itself. Chinese leaders are particularly focused on maintaining control within their own border regions, including Xinjiang, Tibet, Inner Mongolia, and Hong Kong and asserting control over areas they consider core interests, such as Taiwan and a vast swath of the South China Sea. China also has outstanding territorial disputes with its neighbors, including India, Japan, Nepal, Bhutan, and South Korea, that it wants resolved in its favor, Several of these disputes flared up over the course of the COVID–19 pandemic, as China sought to gain advantage while the rest of the world was distracted.

Chinese President Xi Jinping also envisions China as the preeminent power in Asia. China is establishing a network of regional economic and security arrangements that exclude the United States (some by the choice of the United States, itself). It leads the Asian Infrastructure Investment Bank and the Shanghai Cooperation Organization. It concluded the Regional Comprehensive Economic Partnership (RCEP) in November 2020, has expressed strong interest in joining the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and is advancing a free trade agreement with Korea and Japan. It also calls for a future Asia-Pacific Free Trade Agreement. In addition, China is rapidly developing the military capabilities necessary to realize its sovereignty objectives with regard to the South China Sea and Taiwan.

Beyond its own backyard, China is embedding its technologies, goods, and values throughout the world via the Belt and Road, and its offshoot, the Digital Silk Road (DSR). The DSR is the infrastructure of the 21st century: the BeiDou satellite system, Huawei Marine fiber optic cables, e-commerce, and, on the horizon, China's digital currency and electronic payment system, which is currently being piloted domestically in preparation for a fuller rollout by the 2022 Olympics. China's Health Silk Road (HSR) includes the provision of Chinese-constructed hospitals, tracking systems, doctors, medical devices (one of China's Made in China 2025 sectors), and traditional Chinese medicine. China's vaccine diplomacy has also become a central element of its HSR. Finally, Beijing maintains an extensive, well-funded program of student, journalist, and military officer education and training opportunities in China for citizens from Asia, Latin America, Africa, and the Middle East—including 10,000 full-ride scholarships for students from BRI countries.

As U.S. and other international actors have experienced, China increasingly uses the leverage of its market to coerce international actors to align their views with those of China. While traditionally this coercion has been reserved for issues China deems "core" interests, such as Taiwan, Hong Kong, and the South China Sea, Chinese red lines have proliferated over the past year. Beijing expelled Wall Street Journal reporters in retaliation for an op-ed entitled "China Is the Real Sick Man of Asia," threatened countries' market access in China if they barred Huawei 5G technology, and launched a boycott against Australian goods after the country called for an inquiry into the origins of the COVID–19 pandemic. China's market leverage also provides it the wherewithal to pursue programs such as the Confucius Institutes and Thousand Talents Program—which it is rebooting in 2021 to accelerate the process of drawing foreign scientific talent to China—that take advantage of the openness of other countries to advance Beijing's economic interests and political narrative. And even as China pursues technological self-reliance, Xi Jinping seeks to use the country's market to deepen foreign companies' reliance on it, asserting: "We will enhance the global value chain's dependence on China and develop powerful retaliation and deterrence capabilities against supply cut-offs by foreign parties."[1]

Finally, China's strategy involves transforming global governance institutions by reforming norms and values around human rights and Internet governance, setting technology standards, and weaving the BRI into the mission of more than two dozen U.N. agencies and programs. In the 14th Five-Year Plan, Chinese officials signaled particular interest in shaping norms around the Arctic and Antarctica, maritime governance, and space.

PROCESS AND PROGRESS

China pursues its vision with a strategy that is long-term, multi-actor, and multi-domain. Chinese leaders advance bold long-term initiatives with targets and timetables, such as the Belt and Road Initiative, reunification with Taiwan, and China Standards 2035. They mobilize and coordinate significant human and financial resources from all sectors of the Chinese Government, military, business, and society to realize those objectives. And they reinforce a single initiative in multiple domains.

For example, in their pursuit of becoming the world's leading innovation and technology power, Chinese leaders set targets and timetables for controlling domestic and then global market share in a wide range of technologies, rally both private and state-owned firms to realize the objectives, protect Chinese firms with programs such as Made in China 2025, subsidize the deployment of Chinese technology through the Digital Silk Road, place Chinese citizens at the head of international standard setting bodies such as the International Telecommunications Union, and flood those bodies with large Chinese delegations and scores of proposals. The Chinese Government is also highly opportunistic: for example, when China headed Interpol, it proposed that China upgrade the organization's telecommunications infrastructure; it linked a free trade deal with the Faroe Islands with acceptance of Huawei 5G technology; and it implicitly threatened to ban German cars if Germany banned Huawei.

Over the past several years, Beijing has made progress on a number of its strategic objectives:

- It has realized its sovereignty claim over Hong Kong through the imposition of the National Security Law and expanded its military capabilities and presence in the South China Sea.
- It also has withstood international opprobrium and targeted economic sanctions for its violations of human rights in Xinjiang, and it has successfully mobilized developing economies, particularly from Africa and the Middle East, to support its stance on Hong Kong, Xinjiang, and the South China Sea.

- Its trade initiative, RCEP, elevates its economic position within the Indo-Pacific.
- The BRI has laid the foundation for Chinese technology to provide much of the world's next generation telecommunications, financial, and health infrastructure.
- Chinese dominance in U.N. technology standard-setting bodies and capacity-building on Internet governance are reinforcing acceptance of both Chinese technology and the more repressive norms and values it enables.

Yet China's actions have also created new challenges:

- China's assertiveness and coercive tactics have contributed to popular backlashes that threaten its larger strategic objectives. Polls in 2020 and 2021 suggest that citizens in many developed and developing economies do not trust Xi Jinping or China and favor Japanese, EU, or U.S. leadership over that of China.[2]
- Rather than undermine the U.S.'s role in the Asia Pacific, Chinese actions have strengthened U.S. relations with members of the Quad and other Asian partners, such as Vietnam. And the EU has stepped up to enhance its political and security engagement in the Asia Pacific.
- Significant solidarity among advanced democracies has emerged to protest Chinese policies in Xinjiang and Hong Kong, to call for an investigation into the origins of COVID–19, and to ban or limit Huawei 5G technology. And countries are increasingly scrutinizing and defending against Chinese behavior that attempts to subvert the principles of international institutions.
- The absolute number of Confucius Institutes has declined over the past few years to just over 500—far short of Beijing's target of 1000 worldwide by 2020.[3]
- The Belt and Road has become increasingly bumpy. Approximately 60 percent of BRI projects have been "somewhat" or "seriously" affected by the pandemic; and several European members of China's 17 + 1 BRI construct are considering exiting the arrangement.

REALIZING THE U.S. COMPETITIVE ADVANTAGE

The Biden administration's Interim National Security Strategic Guidance established a useful set of basic parameters for U.S. strategy in the 21st century: protecting the underlying political and economic strengths of the United States, promoting a favorable distribution of power, and leading and sustaining a stable and open international system underwritten by our allies, partners, and multilateral institutions that is capable of meeting the challenges of this century—cyber, climate, corruption and digital authoritarianism. To realize this future, however, will require the United States not only to lead with a strong vision but also to operate with a new degree of humility and partnership.

First, the United States must account for shifting structural realities. By 2030, or perhaps earlier, the size of China's economy will likely surpass that of the United States. China's population already exceeds that of the United States by more than four times, providing it a distinct advantage in human capital, whether for advancing innovation, growing a domestic market, or enhancing global political outreach. And within the Asia Pacific region, China claims a distinct military advantage simply by virtue of geography. These factors will require greater reliance on allies and partners.

Second, the United States needs to integrate American values and ambitions at home with its leadership abroad, while acknowledging that some of these values are still aspirational. These values include a commitment to inclusion and equality, free trade and economic opportunity, innovation and sustainability, openness, human dignity, and the rule of law. Many of these aims are already embedded but not fully realized in the current rules-based order. Operating from such a framework enables the United States to assert a positive and proactive message of leadership that resonates both domestically and internationally.

Third, and related, the United States should make clear that the central challenge China poses is a value and norm-based one and not, as is often asserted, one defined by a rising power versus an established power. When competition is framed in a bilateral U.S.-China context, China gains an important advantage. Every issue is elevated into a signal of relative power and influence; and as the rising power, any relative Chinese gain becomes a win. A framework that embraces values and norms also is more likely to engage U.S. allies and partners. Conflict in the South China Sea becomes a normative challenge by China to freedom of navigation and international law rather than a competition for military dominance between the United

States and China in the Asia Pacific. It is a challenge that speaks not only to the United States but also to the 168 nations who are already party to UNCLOS.

Fourth, as many in the U.S. policymaking community have acknowledged, the United States needs to retool at home. The polarized American polity and chaotic response of the U.S. Government to the pandemic tarnished the United States' image and contributed to the impression of U.S. decline.[4] Before taking office, Biden administration National Security Council officials Kurt Campbell and Rush Doshi argued that the United States would need to rebuild and rethink the relationship between the state and the market in ways that addressed inequality, sustained growth, and ensured competitiveness with China.[5] The United States needs the same clear objectives and targets for realizing these goals that it adopts for ensuring military preparedness.

Fifth, the United States must re-engage broadly and deeply in regional and global organizations. These organizations are a central battleground in ensuring a "stable and open" international system that reflects U.S. interests and priorities. The Biden administration has already rejoined a number of multilateral agreements and organizations and made clear its intention to seize back the initiative in areas such as human rights, climate change, and technology. However, it must also remain attuned to new Chinese priorities. China's recently released 14th Five-Year Plan (2021–2025), for example, highlighted several priority areas for deeper Chinese engagement in regional and global governance: the Arctic and Antarctica, maritime governance, regional free trade, and space. The United States should be prepared for significant new Chinese initiatives in these arenas and should ensure that it can operate from a position of relative strength, for example, by acceding to UNCLOS and the CPTPP, and developing a tightly coordinated strategy with allies around Arctic and space governance.

Sixth, the United States and its allies and partners should create informal working groups, perhaps within the context of the OECD, to coordinate and advance shared norms and values as well as to defend against Chinese coercion. In particular, many U.S. analysts have underscored the need for such cooperation in setting joint technology standards. Developing consensus candidates for leadership positions in international institutions, ensuring strong representation by democracies in bodies such as the UNHRC and ITU, and addressing larger issues of institutional reform, for example, in the WHO and WTO, should also be priority areas for policy coordination. And, aligning a policy approach to address ongoing Chinese human rights abuses particularly in Xinjiang, Tibet, and Hong Kong is essential.

A democratic alliance could also cooperate to combat China's coercive economic policies. While campaigns to buy Taiwanese pineapples and Australian wine in the face of Chinese boycotts are important signals of allied cohesion, stronger steps are necessary. In cases where China boycotts goods from countries on political grounds, an alliance network could simultaneously boycott or impose tariffs on Chinese goods. Similarly, when China threatens loss of market access for industries, such as hotels and airlines, other countries should respond by threatening to take away Chinese airlines' or hotel access to their markets. Reciprocity signals to China that other countries are prepared to respond with more than rhetorical condemnation and levels the playing field for future negotiation.

The United States should also encourage deeper European security engagement in Asia. NATO Secretary General Jens Stoltenberg has called for NATO to play a larger role in the Asia Pacific region, coordinating with Australia, Japan, New Zealand and South Korea to support global rules and set norms and standards in space and cyberspace in the face of destabilizing Chinese behavior.[6] Europe could take part in conversations the Quad is pursuing around supply chain resiliency, the pandemic, and disinformation campaigns as well.[7] Importantly, a stronger Europe-Asia security partnership could play an crucial role in bolstering Taiwan's security.

Seventh, for the United States to ensure a world order that reflects its values and normative preferences—and not those of China—and to meet the challenges of this century requires more than simply cooperation with its traditional allies and partners. It requires forging a new relationship with the world's developing economies that is rooted in new economic opportunities for those countries, is imbued with U.S. values, and is directed toward meeting the global challenges outlined in the Administration's guidance.

The breadth and depth of China's engagement with the world's developing economies, particularly in Africa and the Middle East, but also Latin America and Southeast Asia, has provided China with fertile ground for its values, technologies, and policy preferences to take hold. And it is forging closer military ties with many of these countries as well. Yet, there is an opportunity in many cases to change this dynamic.

To begin with, the United States should adopt a more inclusive diplomatic framework and engage a broader range of countries in thinking through how best to advance a common strategy on cybersecurity and governance, climate, corruption and digital authoritarianism. China shouldn't achieve an advantage simply because it shows up and listens and the United States does not.

In consultation with the developing economies, the United States and other large market democracies, such as Germany, France, the UK, Japan, and Australia, should also pursue a significant new development initiative—for example, a sustainable and smart cities program in 25 to 30 developing countries. Such an initiative would leverage U.S. strengths and those of its democratic allies and address the broader global imperatives identified by the Biden administration. It would involve political and economic capacity building around the rule of law, transparency, sustainability, and innovation and would engage not only governments but also the private sector, civil society, and international institutions.

While much of a new development effort would require new financial support, the United States and its partners could also leverage current initiatives, such as the U.S.-led Clean Network or Quad-based efforts to establish resilient supply chains. As multinationals diversify part of their supply chains away from China to develop regional manufacturing and distribution centers, for example, these new investment opportunities could become part of this new development initiative. Development agencies and NGOs, such as the Asia Foundation[8] and Bloomberg Philanthropy, that support grassroots programs on the rule of law, sustainability, and technological innovation could also play an important role. They are a force multiplier for democratic values and should be part of a considered U.S. and allied strategy. And at the same time, the United States and its allies could reinforce the political, environmental, and technological standards in U.N. agencies and standard setting bodies. Creating a new path forward to engage the developing world is essential to U.S. competitiveness with China, not to mention the future well-being of the international system.

Finally, even as the bilateral U.S.-China relationship remains overwhelmingly competitive, the United States should keep the door open to cooperation with China. There is legitimate space to elevate the world's capacity to respond to climate change, pandemics, and global disasters through U.S.-China cooperation. Reconstituting a bilateral dialogue that supports discussion and negotiation on singular, targeted issues of mutual concern, such as visas or maritime safety, would also be beneficial. And supporting civil society exchanges, such as the Fulbright program and Peace Corps, that offer the opportunity to share U.S. perspectives and values, have little downside for the United States and significant potential upside.

Notes

[1] Frank Tang, "China puts supply chain security at forefront to avoid being 'strangled' by sanctions, analysts say," South China Morning Post November 9, 2020.

[2] "The State of Southeast Asia: 2021 Survey Report," ISEAS Yusof Ishak Institute, February 10, 2021.

[3] "Confucius Institute/Classroom, Hanban, https://web.archive.org/web/20210101041525/http:/english.hanban.org/node_10971.htm.

[4] Richard Wike, "The Trump era has seen a decline in America's global reputation," Pew Research Center, November 19, 2020.

[5] Kurt Campbell and Rush Doshi, "The China Challenge Can Help America Avert Decline," Foreign Affairs, December 3, 2020.

[6] Sebastian Sprenger, "NATO chief seeks to forge deeper ties in China's neighborhood," Defense News, June 8, 2020.

[7] Garima Mohan, "Europe in the Indo-Pacific: A Case for More Coordination with Quad Countries," German Marshall Fund of the United States, January 14, 2020.

[8] The author is a current Trustee of the Asia Foundation.

The CHAIRMAN. Thank you, Doctor.

Let me call upon Mr. Shugart.

STATEMENT OF TOM SHUGART, ADJUNCT SENIOR FELLOW, CENTER FOR NEW AMERICAN SECURITY, WASHINGTON, DC

Mr. SHUGART. Chairman Menendez, Ranking Member Risch, members of the committee, thank you for the opportunity to share my thoughts on the military balance in the Indo-Pacific region.

It is a privilege to testify here today. I must note that the views I will express are my own and do not represent those of any organization with which I am affiliated.

What I consider the overall state of the military balance in the region, my assessment is that we are entering a period of deep uncertainty, in stark contrast to the more favorable situation of the past and also in contrast to the situation that, without changes to current trends, we seem headed towards in time. That is, Chinese military domination of the region.

In fact, just this week, the Air Force Chief of Staff and Marine Corps Commandant wrote that, "Based on assessments conducted by senior military and civilian leaders over the past several years, trend lines indicate the Joint Force is not ready to satisfy the demands of great power competition in the Indo-Pacific."

The ongoing trends in the regional military balance that concern me the most are those related to China's development of broad capabilities clearly intended to counter or deter U.S. intervention to defend our allies. These are most visible in the form of China's deployment of large numbers of long range and precise ballistic missiles, its growing bomber force, and its rapidly growing Blue Water Navy.

As detailed in my written testimony, China has been engaged in what could be described as the largest and most rapid expansion of maritime and aerospace power in generations.

While the United States and our allies have begun to recognize and take action to address the challenge, these efforts continue to face impediments to implementation, and have thus far been of somewhat limited impact.

But even with all that, invading or coercing our allies within the region will remain a high bar for China for some time. Our military has hard-won advantages over China's based on experience, multipurpose platforms, and difficult to replicate capabilities in key areas such as undersea warfare, stealth aircraft, and the worldwide reach of our naval forces.

These advantages will take time for China to erode, though we should remain watchful, given recent indications of focused Chinese efforts in these areas.

Considering it all, what I am left with is a humbling sense of uncertainty that I mentioned before. In this regard, the following unanswered questions come to the fore.

First, will China acquire the sealift capacity to invade Taiwan, and if so, when? While much recent commentary has documented the growing level of integration between civilian industry and the Chinese military, known as military-civil fusion, some may not appreciate the scale of such integration with China's world-class merchant fleet.

For perspective, China's shipbuilding industry routinely builds more tonnage of ships annually than the United States did at the peak of the emergency shipbuilding program of World War II, and China's merchant fleet today totals more than seven times the size of our merchant fleet at the end of that war, when it was supporting huge armies thousands of miles from home.

Next, in a conflict would the PLA strike our forces preemptively, degrading their ability to respond? Some analysts assess that China is unlikely to do so out of a concern of widening the conflict.

However, such an interpretation minimizes a number of factors in Chinese strategic thought, as well as real-world evidence which

indicates that they are building a force to be able to do so and practicing using it.

And finally, how would key weapons system interactions play out? To a far greater extent than in wars of the past the course of peer conflicts in the precision-strike era may be dramatically affected by individual weapon, sensor, and information system interactions whose resolution may not be truly known until the shooting actually starts.

Given all of this, and given China's desire to gain what they call war control prior to escalation, our deterrent efforts must focus on amplifying uncertainty in their minds as it is uncertainty of success and a desire to ensure continued internal stability that is most likely to deter the Chinese Communist Party from engaging in armed conflict—not efforts to merely impose costs and provide off ramps.

With this in consideration, my specific recommendations for how to ensure continued deterrence of Chinese military aggression are as follows.

First, we should undermine China's potential plans to strike a key U.S. and allied capabilities at the start of a conflict by denying China easy targets within the region, and by building resilience against command and control disruption.

Next, we and our allies should visibly prepare for protracted war. This could include measures such as stockpiling critical supplies, conducting joint exercises focused on interdiction of Chinese maritime commerce, and designing easy-to-produce weapons and platforms whose production could be rapidly increased.

Last, we must ensure that our allies and partners and their publics fully appreciate the threat posed by the growing capabilities of the Chinese People's Liberation Army and the grave consequences—for them—of a failure of deterrence.

Thank you for the opportunity to testify today. I look forward to your questions.

[The prepared statement of Mr. Shugart follows:]

Prepared Statement of Tom Shugart

MARCH 17, 2021

TESTIMONY BEFORE THE SENATE FOREIGN RELATIONS COMMITTEE

Hearing on Advancing Effective U.S. Policy for Strategic Competition with China in the Twenty-First Century

Trends, Timelines, and Uncertainty: an Assessment of the Military Balance in the Indo-Pacific

BY

Thomas H. Shugart III
Adjunct Senior Fellow, Defense Program
Center for a New American Security

I. Introduction

Chairman Menendez, Ranking Member Risch, and members of the committee, thank you for the opportunity to share my thoughts on the military balance of power in the Indo-Pacific. It is a privilege to testify here on matters that are important to the vital national security interests of the United States, as well as those of our allies and partners in the region.

I will specifically address the ability of the United States—with our allies and partners—to deter military aggression by the People's Republic of China (PRC) in the region, both now and in the future. I will then examine PRC and U.S. capabilities, points of vulnerability for China, and important points of uncertainty. Finally, I will offer recommendations about some of the steps that might be considered to improve and maintain deterrence, in the hopes of avoiding what would be, were it to occur, a catastrophic conflict for all concerned.

II. Status, trends and timelines in regional deterrence

When I consider the state of the military balance in the Indo-Pacific, my assessment is that we are entering a period of deep uncertainty. This is in stark contrast to the situation of perhaps twenty years ago, when I would have unhesitatingly predicted failure for the PRC in any attempt to engage in military aggression against our allies and partners in the region. It is also in contrast to the situation that, absent significant changes in current trends, we seem headed towards in ten to twenty more years' time: PRC military domination of the region. Along these lines, though couched in somewhat more restrained language, the Air Force Chief of Staff and Marine Corps Commandant wrote just this week that, "Based on assessments conducted by senior military and civilian leaders over the past several years, to include multiple wargaming iterations, the prevailing wisdom is that the readiness and modernization trend lines indicate the joint force is not ready to satisfy the demands of great-power competition in the Indo-Pacific."

That we could be headed toward that situation should be unsurprising given the larger strategic environment. With rough economic parity between the United States and China, over a longer timeline U.S. efforts to prevent Chinese military aggression or coercion in the region will run against a clear asymmetry of both geography and national will, given what the stakes mean to China. As such, efforts to deter China must be extraordinarily focused on the parts of the United States and our allies remain successful. To date, they have not been. Instead, some of the United States' focus has been lost to distractions from Russia and the Middle East, while—for example—Taiwan's focus has at times wandered to investments in conventional "status" weapon systems such as fighter aircraft and armored vehicles, instead of the capabilities genuinely needed to deter a Chinese invasion. While the United States and our allies have begun to recognize and take action to address the growing scale of the threat from China, these efforts continue to face institutional inertia as well as impediments from those who would be negatively affected by their implementation. As such, they have thus far been of somewhat limited impact in terms of their implementation.

The ongoing trends related to the regional military balance that concern me the most are not those directly tied to comparisons between, for example, Taiwan and Taiwan-adjacent forces of the People's Liberation Army (PLA). Rather, I am most concerned about China's development of broader regional capabilities which are clearly intended to counter or deter a U.S. intervention to defend our allies against Chinese aggression through the imposition of prohibitive costs, or the threat thereof. These are most visible in the form of China's deployment of large numbers of capable precision-strike Intermediate Range Ballistic Missiles (IRBMs), its growing long-range bomber force, and its rapidly growing blue-water navy.

In my estimation the mid-to-late 2020s may be the period of greatest peril for a failure of deterrence in the region. This timeframe will see the trailing edge of a period of mass retirement of late-Cold War-era U.S. platforms, combined with the continued growth and modernization of China's counter-intervention forces. In particular, the retirement of the Navy's oldest cruisers, at nearly the same time as that of its four guided-missile submarines (SSGNs), will result in

a significant drop in the available number of vertical-launch missile tubes that could be deployed in support of a regional contingency. This will occur before many of the most important China-focused changes implemented by the United States and its allies begin to bear fruit, but after sufficient time has elapsed for China to rectify some of its current capability gaps—for example, its capacity for sealift across the Taiwan Strait.

III. PRC capabilities to deter or deny U.S. intervention in a regional conflict

In an effort to prevent or deter a U.S. intervention in the region, the PLA has been engaged in what could be accurately described as the largest and most rapid expansion of maritime and aerospace power in generations. Based on its scope, its scale, and the capabilities being developed, this buildup appears to be specifically designed to threaten or hold at arm's length U.S. forces across the Indo-Pacific. Some of the most obvious manifestations of this can be seen in three specific areas:

1) **The rapid growth of the PLA's long range missile force:** Probably the most well-known threat to U.S. and allied forces in the western Pacific is the huge arsenal of precision-strike conventionally-armed ballistic missiles fielded by the Chinese PLA Rocket Force (PLARF). Already by far the world's largest, this force continues to grow at a rate that only makes sense for the purpose of threatening U.S. forces throughout the region. This is most apparent in China's force of DF-26 IRBMs, arguably one of the crown jewels of the Chinese military. Specifically, the Department of Defense's 2020 China Military Power report recently revealed an apparent more-than-doubling, in a single year, of China's inventory of DF-26 launchers. We know from Chinese TV footage that DF-26 units practice reloading missiles routinely, and that the missiles have different warhead types that are swappable. Thus, if each of the 200-odd launchers had only one reload missile available (and there may be well more than that), this would eventually mean an IRBM force of more than 400 missiles, nearly all configurable to anti-ship or land-attack missions, including nuclear strike.

   Given that China's DF-26 missile has been known about for several years, one might be tempted consider its deployment to be already "baked in" to considerations of cross-strait deterrence, and of the U.S.'s ability to intervene in a conflict. But the apparent scale of the IRBM force's expansion matters: going from what had been dozens of medium-range missiles, to what instead may be *hundreds* of much longer-range ones, will drive changes on a number of different levels. Quantitative changes of this magnitude can drive qualitative effects in a number of ways.

   First, the number of available Anti-ship Ballistic Missiles (ASBMs) could broaden the PLARF's anti-ship mission from what has been thought of as a "carrier-killer" role to a broader and more generic "ship-killer" mission. China itself describes the DF-26 as capable against large *and medium-size* ships. With so many more ASBMs at hand, smaller groups or individual warships–such as destroyers, and especially logistics ships–could become "ASBM-worthy". In a similar vein, given the ability to swap the DF-26's warheads to a land attack mission, a more massive force of them could complicate the execution efforts such as the U.S. Marine Corps' Expeditionary Advanced Base Operations (EABO) concept. As long as China maintains a robust space-based radio-frequency sensing capability, ground units that transmit via means such as radar, drone control equipment, or command-and-control (C2) circuits, could be subject to attack by submunition-equipped IRBMs anywhere within the First and Second Island Chains.

   Another way in which a DF-26-equipped PLARF could change things would be through its much greater reach, in particular the specific additional areas that it could strike. In the Philippine Sea, areas of relative sanctuary beyond the range of the shorter-range DF-21 lie well within range of the DF-26 (See Figure 1). These areas have mattered in how American and allied defense thinkers have looked at the regional anti-access/area-denial challenge (A2/AD, a term that did not originate in China), having previously posited the ability to operate forces reasonably safely outside the First Island Chain as a means to enable episodic operations closer-in to defend locations such as Taiwan. Looking further southwest, Chinese strategists have obsessed since the early 2000s over

the "Malacca dilemma", referring to the vulnerability to interception of China's oil imports from the Middle East. With large numbers of IRBMs, the PLA could have the ability to strike U.S. and allied warships attempting to maintain such a blockade across southeast Asia. And similar missile coverage could extend across the vital sea lanes leading from the Middle East to Asia and Europe, with coverage extending from PLARF bases in western China (see Figure 2).

One factor related that may be supporting the PLARF's growth in long range missiles is the apparent deployment by the PLA Ground Force (PLAGF) of a new long-range Multiple Launch Rocket System that appears capable of ranging either much or all of Taiwan, depending on the variant. By putting weapons in the hands of the PLAGF that are capable of conducting strikes across Taiwan, some of the shorter-range units of the PLARF may be able to convert to longer-range missiles, accelerating the transition of the PLARF from a force mostly focused on striking Taiwan with short range ballistic missiles (SRBMs) to one capable of broader goals such as deterring or denying U.S. intervention in potential conflicts across the Indo-Pacific.

To be sure, as has been discussed by the U.S. Navy's leadership before, the range arcs of the PLA's missiles are not impenetrable, and the PLARF is not the first A2/AD challenge that the Navy and Marines have dealt with. There will, without a doubt, be a back-and-forth between seeker and jammer, hider and finder, that will mitigate—to a degree—the threat of the PLARF's long range missiles. But it is hard to deny a substantially increased level of risk, and over a much larger area.

The challenges discussed above are by no means restricted to U.S. maritime power projection, as the story is perhaps even worse for land-based tactical aircraft and bombers. Ships are at least moving targets, whereas fixed land bases exist at a known latitude and longitude, only a few keystrokes away from targeting. In 2017, a colleague of mine and I at the Center for a New American Security estimated that a pre-emptive Chinese missile strike on U.S. bases in Asia could crater every runway and runway-length taxiway at every major U.S. air base in Japan, and destroy more than 200 aircraft on the ground. We also estimated that, in addition to shorter-range missiles, an inventory of approximately 60 DF-21 medium-range ballistic missiles would be necessary to conduct such a strike.[1] Considering the National Air and Space Intelligence Center's recent estimate that China now possesses "approximately 350" medium and intermediate range ballistic missiles, the threat appears to have become graver than we estimated.[2]

In addition, since we issued our report in 2017, open-source imagery now indicates that China's ballistic missile forces may be developing the ability to target specific U.S. high value aircraft. This previously unpublished imagery (see Figure 3), from the PLARF's ballistic missile impact range in western China, shows the use of what appears to be a mock target specifically designed to imitate a parked E-3 Sentry airborne early warning and control aircraft (AWACS). While previous aircraft targets at this test range were mostly older Chinese models, sufficient to test the efficacy of ballistic missile warheads targeted at a specific location, the use of a mock target built to represent a specific U.S. aircraft type (no other nation in the region operates them) may indicate the development of a warhead with the capability to recognize and home in on specific aircraft, rather than having to blanket an entire airfield with munitions. If operationalized, this advance could reduce the number of missiles required for the PLARF to destroy key aircraft at U.S. and allied airfields throughout the region.

2) **The modernization and growth of China's long-range bomber force:** In recent years, China has also dramatically increased the capability of its force of long-range strike aircraft. China has the world's only operating bomber production line (see Figure 4), which has been producing brand-new, long-range aircraft seemingly purpose-built to strike American and allied bases well away from China's borders, and to overwhelm U.S. carrier strike groups.

[1] Thomas Shugart and Javier Gonzalez, "First Strike: China's Missile Threat to U.S. Bases in Asia" (Center for a New American Security, 2017), 13.
[2] "2020 Ballistic and Cruise Missile Threat" (Defense Intelligence Ballistic Missile Analysis Committee, 2020), 25.

Before the last decade, China's bomber force had fairly limited capabilities. Centered around the Xi'an Aircraft Company's H-6, a dated copy of the Soviet-era Tupolev Tu-16, its aircraft only carried a small number of missiles of fairly limited capability and could deliver them to a limited range. This began to change in 2009 with the introduction of the H-6K, a major redesign and update of the basic airframe. Equipped with completely new engines and avionics, the H-6K enjoys a much longer combat radius (about 3500km), and is capable of carrying three times the number of missiles (6 compared to 2 each in previous versions), with each land-attack cruise missile having a much longer range compared to previous versions.

Incorporating the improvements provided by the PLA Air Force's H-6K, the PLA Navy has gained its own maritime strike-focused version of the aircraft—the H-6J. First seen in 2018, the H-6J is capable of carrying 6 YJ-12 long-range supersonic anti-ship cruise missiles (ASCMs), again three times as many as its predecessor. More recently, China revealed the development of a new model, the H-6N, which is capable of aerial refueling and carries a single, air-launched ballistic missile, with what appears to be a hypersonic glide vehicle. While it is as yet unclear what targets the H-6N's new missile is intended to strike, with the range extension provided by refueling, the reach of China's bomber force will grow ever further.

It is important to note that it is not only in individual platform capability that China's bomber force has been improving, but also in numbers. China is not merely replacing older bombers with improved ones; it appears to be growing the size of the force as well. Prior to the introduction of the H-6K, most estimates were that China's H-6 inventory was in the mid to low-100s, with a total production run since the early 1960s of about 200 aircraft. In order to attempt to determine the approximate size of China's bomber force, over the last several years I conducted two surveys of available commercial satellite imagery, using open-source lists of Chinese bomber bases. These counts, which did not include any aircraft in flight, in hangars, deployed to secondary airfields, or otherwise missing from imagery, produced results of just over 200 aircraft in 2018, and more than 230 in 2020. Given that China has a number of recently-built or upgraded H-6 bases which have shelters for their aircraft, the actual numbers may be higher if bombers have already been assigned there and parked under cover. In any case, while a handful of aircraft in these totals may have been tankers or training aircraft, it is clear that China's bomber force likely now numbers well over 200, and has been growing substantially since production of the newer H-6 variants commenced. When combined with its potent conventional ballistic missile force, China's long-range striking power will be vastly greater than would be necessary to deal with any regional challenger, and seems clearly directed at gaining the ability to deny U.S. forces the ability to operate with reasonable risk at ranges from which they could deliver effective support to our allies within the First Island Chain.

3) **China's world-class naval expansion:** In recent decades China has grown to be the world's premier sea power by most measures. In three of the pillars of maritime power—fishing fleets, merchant shipping, and maritime law enforcement—China holds already holds first place. China's shipbuilding industry dwarfs that of the United States, building 23 million tons of shipping in 2019 compared to just over 130,000 tons from American yards. The same is true in maritime law enforcement, with China building coast guard cutters and "maritime safety" vessels weighing over ten thousand tons, larger even than our Navy's newest destroyers. China's huge fishing fleet, also the world's largest, is depleting fish stocks worldwide,—most notoriously off the coast of South America in recent months. In the vanguard of the fishing fleet is a force of government-subsidized and directed maritime militia, with vessels specifically constructed to be able to successfully ram others.

It is only in the realm of hard naval power that the United States has retained superiority, though the trend lines even there are distinctly negative. In addition to its growing regional air and missile strike forces described above, in recent years China has engaged in a naval buildup unlike any seen since the U.S. "600-ship Navy" effort of the 1980s. Xi Jinping has declared on more than one occasion that China must have a "world-class naval force",[3] and

[3] "President Xi calls for establishment of world-class naval force," CGTN, April 12, 2018.

a program of naval construction appears to be underway to make that a reality. As an example, during the five years of 1982-1986, the U.S. Navy procured 86 warships;[4] over the years 2015-2019, China appears to have launched the same number. As a predictable result, the U.S. Department of Defense recently revealed that China's navy is now the "largest navy in the world" in terms of the sheer number of ships (see Figure 5).[5] Chinese shipyards have been seen churning out large numbers of warships, including aircraft carriers, state of the art multi-mission destroyers, and cruisers that are the world's largest current-production surface combatants. This naval buildup does not appear to be unbalanced in nature, as China has also been constructing modern at-sea replenishment ships and amphibious assault ships to carry its rapidly-expanding Marine Corps.

Many commentators have pointed out, and not incorrectly, that China's warships have been on average much smaller; that the U.S. Navy remains much larger in terms of its overall tonnage, i.e., the sheer heft of the force. Assuming that combat power at sea has a somewhat comparable density among modern warships, tonnage may indeed be a better measure than the number of hulls.[6] But by that measure the trend lines are little better. By my calculations, from 2015-2019 China launched almost six hundred thousand tons of warships, roughly fifty percent more than the United States launched over the same time period (see Figure 6). While the U.S. Pacific Fleet is currently larger than the PLA Navy by tonnage, my rough calculations indicate that, on current trend lines, the PLA Navy will reach near-parity on this basis as well in fifteen to twenty years. Given that there are ongoing or planned major expansions both at the primary shipyard that builds China's surface combatants and aircraft carriers, and at the one that builds its nuclear submarines, it seems that the pace of Chinese naval shipbuilding is unlikely to slow over the long-term.

When we consider China's historic economic expansion over recent decades, this naval buildup should not surprise us—it follows the pattern laid out more than a century ago by the seminal American naval thinker Alfred Thayer Mahan: that "the flag follows trade". Vigorous and growing trading nations like China gain overseas interests and become dependent on trade routes, and then work to gain the means to protect them. This is a self-reinforcing cycle where the Chinese economy's ever-growing appetite for energy and raw materials, as well as a growing array of Chinese overseas economic interests and investments, drive increased Chinese perceptions of insecurity. This feeling of insecurity is most clearly illustrated by what was described by Hu Jintao in 2003 as China's "Malacca dilemma", a recognition that China's energy supplies could be interdicted by hostile foreign nations in strategic locations. Prior to China's industrial development, no such dilemma existed; but as China's economy continues to grow and become ever-more-dependent on access to overseas resources and markets, this feeling of insecurity, as well as the resulting appetite for the military means to solve it, continues to grow—and it is a process that is not going to stop or go away. As U.S. Naval War College professors Toshi Yoshihara and James Holmes stated in their seminal work on the modern Chinese Navy, *Red Star Over the Pacific*:

> "China's maritime presence and activism are permanent because the forces impelling it to the seas are structural in nature. They are basic to contemporary China. A thoroughgoing socioeconomic transformation has reoriented the nation toward the seas since paramount leader Deng Xiaoping launched his reform and opening project four decades ago. After decades of integration into the global economic order—defined as it is by maritime commerce—the Chinese state and society have come to depend on free access to and free use of the seas for their well-being and even their survival. That reliance has compelled Beijing to develop durable commercial and military means to nurture and protect the nautical sources of China's wealth and power."[7]

As the international scope of China's economic interests has expanded over time, the horizons of China's strategic thinking have broadened correspondingly. In the 1980s, China's leaders established a timeline with three

4 "Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress", Congressional Research Service, January 25, 2021.
5 "Military and Security Developments Involving the People's Republic of China 2020", U.S. Department of Defense, Sep 1, 2020.
6 Factors that could cause this to be more likely would include similarities in warship design and capability, sufficiency of fleet logistics, and the state of personnel and material readiness. Factors that could cause divergence might include significant differences in munitions capability and magazine depth, effectiveness of C2 and fleet employment, and the ability to cope with battle damage.
7 Yoshihara and Holmes, Red Star Over the Pacific, 6.

broader goals for the PLAN: by 2000, developing forces sufficient to exert control over the sea regions within the First Island Chain; by 2020, extending control out to the Second Island Chain, running from New Guinea up through the Mariana Islands to northern Japan; and by 2050, to develop a truly global navy. In 2004, President Hu Jintao provided a further update to the PLA's guidance with a declaration of "New Historic Missions" that broadened the PLA's goals to encompass "far seas defense", covering seas past the First Island Chain. In more recent years, the PRC's 2015 Defense White Paper explicitly included defense of overseas interests and sea lines of communication in its goals, to be accomplished by the added mission of "open seas protection", signaling a need to be able to project maritime power wherever China's interests lie. As outgoing PLA Navy chief Admiral Wu stated upon his departure from office in 2017, "wherever the scope of the nation's interests extends, that is where the perimeter of our combat development will reach…"[8]

Some observers might consider that China's understandable desire to protect its overseas interests and defend its maritime trade is an anodyne one. After all, such a statement on the part of other nations (and many do say similar things) would raise little alarm. But this is largely because of what would be assumed to be benign intent on the part of other nations or, in almost all cases, a lack of any real ability to do so on a large-scale basis. But in the case of China, we see a nation that seems to have the motivation, maritime industrial might, and iron will to power to give its words an entirely different meaning: a stated strategy that, if actualized, would take the form of military—and especially naval—capability of a scale that many Western observers have not quite come to fully apprehend, and that is only now taking shape before us as I have described above.

In summary, when one considers a Chinese military that includes an ever growing and highly threatening ballistic missile force, the development of a large force of long-range strike aircraft, and a highly capable and rapidly growing blue-water navy, it hardly seems like a defensive force intended only to uphold Chinese sovereignty, prevent piracy, etc. Rather, China's military seems like a force being forged specifically to be able to deter or prevent U.S. military intervention to defend our allies and partners, and to eventually be able to seize and maintain control of key maritime routes across the region.

IV. U.S. capabilities and PRC vulnerabilities in a cross-Strait conflict

Even given the ominous developments discussed above, invading or coercing our allies within the region will remain a high bar for the PLA. Additionally, as the PLA stretches its capabilities further away from its shores in search of power projection, it is in turn gaining its own new vulnerabilities as it begins to mimic in some ways the traditional American markers of world-class military capability.

1) **U.S. capabilities to intervene in a cross-Strait conflict:** The U.S. military has hard-won advantages over the PLA based on operational and warfighting experience, flexible and multi-purpose platforms, and difficult-to-replicate capabilities in key warfare areas.

   First, the U.S. military has gained extensive experience conducting real-world combat operations over decades of conflict in the Middle East and Central Asia, whereas the PLA has had little combat experience since its invasion of Vietnam in 1979. At sea, the U.S. Navy has had generations of experience operating worldwide, whereas the bulk of the PLA Navy typically stays within the home waters of the western Pacific, with smaller numbers of ships dispatched on missions such as anti-piracy patrols in the Red Sea. All of this should provide a level of flexibility and capability for U.S. forces to respond to uncertain circumstances, something that may not be matched within the PLA. This may be true, in particular, in cases where units of both sides may lack guidance from above due to disrupted communications. One countervailing factor to consider is the possibility that U.S. experience gained mostly fighting insurgents in permissive environments will be of little utility (and perhaps even negative utility) in knowing how to fight a major war against a peer competitor.

8 Toshi Yoshihara and James Holmes, Red Star Over the Pacific: China's Rise and the Challenge to U.S. Maritime Strategy (Annapolis, Naval Institute Press, 2018), 132.

While some observers have applauded China's apparent focus on asymmetric means of fighting, such as the use of artificial intelligence, unmanned systems, and ballistic missiles, we should keep in mind that the multi-purpose nature of U.S. power projection platforms may also help to provide operational flexibility in a cross-Strait conflict. As a specific example, consider the Navy's Arleigh Burke-class destroyer. This modern U.S. surface combatant, the evolutionary winner of centuries of warship development, can engage in diverse mission areas such as long-range anti-aircraft defense, strike warfare, anti-surface warfare, and anti-submarine warfare. If cut off from communication, it can use its own sensors to locate and attack enemy targets and defend itself and others; if its information systems are affected by cyber-attacks, there are personnel onboard who can take corrective measures to patch and restore them to service. By contrast, a battery of ground-based missiles has no significant capability to detect targets or to defend itself; if cut off from communication, its military capability is reduced to near-zero. If unmanned combat systems are similarly cut off from communication, their capability may also be severely affected, at least in the absence of truly forward-leaning lethal autonomy. While it is difficult due to classification and other factors to characterize the struggle that would surely take place to gain a command and information advantage in a cross-Strait conflict, what we can be sure of is that such efforts would be taking place on both sides, with mutual degradations of these functions likely to result. Over the course of a longer regional conflict such as a blockade or a stalemated invasion, this seems likely to favor U.S. and allied forces due to their greater flexibility and operational experience.

Benefiting from decades of investment, the United States also holds significant military advantages in areas such as undersea warfare, stealth aircraft, and the worldwide reach of its naval forces and Marine Corps. These areas, particularly technically-demanding ones such as submarine quieting and stealth technology, will take time for to China to erode, though we should remain watchful given recent indications such as China's apparent building of a new class of submarines, as well as the forthcoming debut of China's own long-range stealth bomber. Working against these U.S. military advantages, over time the cost of individual platforms on which the U.S. military relies has gone up, with resulting reductions in the numbers available given other resource pressures such as ongoing combat operations and rising personnel costs. As a result, as some of the last waves of late-Cold War U.S. platforms retire, the U.S. military is seeing ongoing reductions in the number of combat-capable platforms available, with looming retirements of some of the Navy's most capable surface combatants, a mid-2020s trough in the number of nuclear-powered fast attack submarines, and an Air Force aircraft inventory whose average age has increased to almost 30 years. While the Navy, for one, has a plan to increase its numbers in coming years, much of the technology supporting its proposed use of unmanned vessels is still developmental in nature, with deployment at a meaningful warfighting scale still years away and without certainty of success. The level of budgetary support to achieve fulfillment of this plan also seems somewhat uncertain given budget pressures related to the COVID-19 pandemic, as well as understandable congressional mistrust in the wake of troubled programs such as the Littoral Combat Ship and Zumwalt-class destroyer.

2) **PLA vulnerabilities in a conflict:** Perhaps the greatest vulnerability that China faces in its ability to coerce or invade our allies and partners in the region is its lack sufficient amphibious sealift capability to deliver and sustain an invasion force. Recent added focus on the part of both Taiwan and Japan in developing their own A2/AD capabilities should help to exacerbate this limitation by focusing on the use of weapons such as mines and ASCMs to inflict losses on PLA amphibious forces. The actualization of this can be seen in Taiwan's ongoing deployment of supersonic HF-3 ASCMs both at sea and ashore, a planned purchase by Taiwan of as many as 400 subsonic Harpoon ASCMs from the United States, and Japan's ongoing development of a new, longer-range ASCM. Additionally, in recent years the U.S. Department of Defense has developed or purchased a number of new ASCMs such as the Maritime Strike Tomahawk (MST), Naval Strike Missile (NSM), and Long Range Anti-Ship Missile (LRASM) in an effort to rapidly increase its ship-killing capabilities in the wake of decades of relative neglect of this mission area. It has also embarked on efforts to upgrade existing Harpoon ASCMs and has re-introduced their use onboard U.S. attack submarines.

More points of PLA vulnerability are likely to emerge as China continues to develop the capability to engage in long-range power projection, as the forces that it will need to do so will become subject to interdiction in manners similar to those that that have provoked concerns about the vulnerability of U.S. power projection platforms. Put simply, if one desires to go somewhere over the sea or through the air, one will have to leave the protective clutter of the earth, as well as the protective umbrella of defensive coastal sensors and weapon systems, and become subject to detection and attack on the open sea or airspace. More specifically, China's new aircraft carriers and large amphibious ships will make lucrative targets for U.S. attack submarines, having to venture into deep water if they are to project power outside of China's near seas. China's nuclear submarines are noisy and still limited in numbers, and thus also would be subject to detection and destruction after they leave their home waters. The level of support required for China's large bomber fleet will probably limit them to a relatively small number of known fixed bases and avenues of approach, making them also subject to destruction in flight on their way to distant targets. The relevance that all of this has for a regional scenario is largely related to how far PLA power projection forces will be able to push back U.S. and allied forces, and what costs China may suffer in doing so as its newer, prestige platforms come under threat.

V. Points of uncertainty

Considering all of the factors discussed above—extraordinarily rapid advances in Chinese military capabilities, enduring U.S. and allied strengths, and new U.S. and allied warfighting initiatives—what I am left with is a humbling sense of uncertainty as to the spectrum of possible results in a regional conflict. We should remind ourselves that there has not been a major power conflict, particularly at sea, within the last 75 years. Entire generations of weapon systems have come and gone without seeing significant use in peer combat. As a specific data point, it bears considering that the only currently commissioned warship in the U.S. Navy that has sunk another warship in combat is the USS Constitution, from the War of 1812.

To provide some perspective for when one hears confident predictions about how a major U.S.-China war would play out, it bears considering that during the last major power war in the Pacific, most platforms involved ended up being used for quite different purposes than those for which they were originally designed. Battleships, intended to be the main striking force of both sides' navies, ended up being used mostly for shore bombardment and anti-aircraft defense, with aircraft carriers (thought to be most useful as scouts) taking the place of the striking arm of the fleets. U.S. submarines, intended mostly for scouting and attrition of enemy battlefleets, ended up being focused on sinking merchant ships and strangling the Japanese economy. The B-29 bomber, which was originally developed to interdict fleets in mid-ocean from bases in the continental United States, ended up mostly being used to firebomb Japanese cities.[9] Considering this, we would do well to exercise humility in our planning for the future, and do what we can to ensure that the forces that we do deploy are as resilient and flexible as possible.

With this sense of uncertainty in mind, in my assessment the following unanswered questions come to the fore regarding the future regional military balance and state of deterrence:

1) **Will China close its gap in sealift capacity?** While some may take comfort that China may appear to lack sufficient amphibious lift to conduct a cross-Strait invasion, for example, this is not a factor upon which our allies' and partners' defense should rest, as China may be able to close this gap faster than may be commonly understood.

   First, while recent commentary has documented the growing level of integration, as part of China's Military-Civil Fusion effort, between Chinese civilian industry and the PLA, some may not appreciate the scale and pace of such integration or of the improvements in relevant Chinese merchant fleet capabilities in recent years. Take for an example the case of Bohai Ferry Group, the primary Chinese ferry operator across the Yellow Sea. As described

[9] Ian Toll, *Twilight of the Gods: War in the Western Pacific, 1944-1945* (New York: W.W. Norton & Company, 2020), 335.

by the manager of the group (a Communist Party Deputy), in recent years the group has constructed 7 new large roll-on/roll-off passenger ships specifically built to national defense requirements, has used them to transport military equipment more than 40 times, and has increased its ferries' vehicle capacity by a factor of 100 over the last 20 years. This sort of vehicle transportation capability could contribute significantly to China's overall sealift capacity, in a manner not normally accounted for by assessments of the PLA Navy's amphibious fleet.

Next, we must consider that given the scale of its status as the world's largest shipbuilder, as well as the fact that its prime shipyards are dual-purpose producers of civilian and military vessels, China may be able to build sealift capacity fast enough that we may already be within the window of strategic surprise with respect to China's capability to conduct a successful invasion. That is, China may be able to increase its sealift capacity, one of the last missing pieces in its ability to invade and coerce its neighbors, faster than the U.S. and its allies may be able to make strategic changes in response, given the typical pace of change within our democratic systems. For some perspective on the Chinese shipbuilding capacity to which I am referring, during the emergency shipbuilding program of World War II, which supported massive, mechanized armies in two theaters of war thousands of miles from home, U.S. shipbuilding production peaked at 18.5 million tons annually,[10] and the United States finished the war with a merchant fleet that weighed in at 39 million tons.[11] In 2019, during peacetime, China built more than 23 million tons of shipping, and China's merchant fleet (including Hong Kong's) totals more than 300 million tons. We would also do well to note that China's shipyards have recently commenced serial production of large amphibious assault ships, with three 40,000 ton Type 075 Landing Ship Dock (LHDs) launched within the past two years alone.

Finally, we would be wise to assume that China will bring all of its tools of maritime power to bear in ensuring success in a regional conflict, including the use of the China Coast Guard, the world's largest such force; and its fishing fleet, specifically in the form of the People's Armed Forces Maritime Militia (PAFMM). In something like the form of a reverse-Dunkirk, we should expect that instead of only dealing with dozens of gray-painted PLA Navy amphibious vessels and their escorts, we would likely see an effort supported by many hundreds of fishing boats, merchant ships, and Coast Guard and Maritime Safety Administration vessels. It is worth noting that Chinese PAFMM vessels have already been seen using radar reflectors and other tools to increase their radar signatures to resemble that of larger vessels;[12] in the event that U.S. and allied weapons such as ASCMs and torpedoes are unable to effectively distinguish between key amphibious assault ships and all of the other vessels that may be provided as decoys, we may find the number of anti-ship weapons able to be brought to bear to be lacking, especially given what are likely to be vigorous Chinese efforts at jamming, spoofing, and missile defense.

2) **In a conflict, would the PLA strike U.S. forces preemptively, degrading their ability to respond?** As China's ability to strike U.S. forces in the region has grown, some analysts have continued to assess that China is unlikely to quickly strike major U.S. bases and forces in the region, out of a concern that such a move would widen a conflict in a way that China would not desire. This may be true, with the United States and its allies able to marshal and disperse forces before major damage is done, thereby retaining sufficient military capability to respond meaningfully in support of our allies and partners during a regional conflict. An optimistic reading of Chinese strategic documents would support this view, focusing on China's statements that its doctrine of "active defense" is largely defensive in nature, that its preferred concept of "war control" would seek to keep a crisis below the level of military conflict, and that it would in any case seek to minimize the spread of any such conflict to additional countries.

Such an interpretation minimizes a number of factors which indicate that, in some situations, China may indeed opt for large-scale and crippling pre-emptive strikes against U.S. forces and bases in the region. First, as other analysts have pointed out, China's strategic writings advocate, in cases where conflict seems inevitable, "seizing

[10] "U.S. Shipping and Shipbuilding: Trends and Policy Choices", Congressional Budget Office, August 1984.
[11] Thomas Cochran, "How Many Tons of Ships Do We Have Now?", in *EM 25: What Shall We Do with Our Merchant Fleet?* (January 1946).
[12] Michael McDevitt, *China as a Twenty-First Century Naval Power* (Annapolis: Naval Institute Press, 2020), 215.

the initiative early, through rapid, violent, and possibly pre-emptive attack."[13] The nature of precision strike weapons, coupled with the relative difficulty of replacing modern and sophisticated weapon systems, has also created powerful first-mover advantages in going first—and going big—in a conflict. This factor is amplified by what seem to be additional offense-dominant, first-mover advantages in the cyber and space domains. Finally, and perhaps most obviously, the PLA appears to be putting significant resources into building just such a strike force, as discussed above, and has been seen exercising and testing it accordingly (see Figures 7 and 8).

3) **How would key weapon system interactions play out?** To a far greater extent than in major-power wars in the past, the resolution of peer conflicts in the precision-strike era may be dramatically affected by individual weapon, sensor, and information system interactions whose resolution may not be truly known until the shooting actually starts. Given the smaller numbers of platforms, the accuracy of individual weapons, and the relative difficulty of replacing all of them, the consequences of the interplay of jammer versus seeker, sensor versus signature, and hacker versus data stream are likely to propagate from the tactical to the operational and perhaps strategic level in ways not seen before. As one specific and obvious example, a conflict where China's ASBMs could be consistently made to miss through the use of jammers might be a completely different war than one where that was not the case. We should expect to be surprised, and the ability to adapt quickly may well be the key to victory.

VI. Policy recommendations

Given the scale of the problem, and in light of China's ongoing improvements in military capability, we must carefully focus our efforts to ensure continued deterrence of Chinese aggression.

In particular, we must work in conjunction with our allies to ensure continued cross-Taiwan Strait deterrence, as the military and geo-political consequences of a forcible incorporation of Taiwan into the PRC would have grave effects on the regional military balance. Were China to gain control of Taiwan's east coast, the PLA Navy—which is currently forced to transit via First Island Chain choke points—would gain direct access the open ocean from Taiwan's east coast ports. More specifically, China's submarine force—which for now has to transit shallow waters surrounding all of its current bases—could gain immediate access to the deep water of the Philippine Sea (see Figure 9). Were China to base long-range ASCMs and anti-air missiles on Taiwan, the area coverage of these weapons (see the red arc in Figure 9) could extend across the near-entirety of the Luzon Strait, which constitutes the largest exit from the South China Sea to the Philippine Sea and cover the most vital shipping routes to South Korea and Japan (see Figure 10).

In case of a failure of deterrence, or were U.S. forces driven or withdrawn from the region, the effects on our allies' and partners' ability to maintain freedom of action as independent democracies would be dramatically negative. For a specific example on why this could be the case, let's return briefly to the topic of naval construction. Figure 11 shows the total warship tonnage launched from 2015 through 2019 for the major sea-going navies in the Indo-Pacific region, including the rough proportion of the U.S. Navy that is assigned to the Pacific Fleet (about 60%). One can see quite clearly that if one removes the U.S. contribution from the total, the PLA Navy is on pace to exceed in size the *combination* of the rest of the major navies in the region—and would dwarf any individual one. Notably, these totals do not include China's coast guard and maritime safety agencies, which each have shipbuilding programs that probably rival those of individual regional navies, and that will populate the front lines of China's maritime "gray zone" operations. This comparison also leaves out the PLA's land-based maritime strike air and missile forces, none of which are approached in capability by any other regional power. If China *were* to achieve this level of air and maritime dominance in the Indo-Pacific, the fact of our allies' and partners' near-complete dependence on seaborne trade—all of them are island nations or might as well be—could give China major coercive power over them via the threat of blockade or quarantine.

[13] Alison Kaufman and Daniel Hartnett, "Managing Conflict: Examining Recent PLA Writings on Escalation Control" (CNA China Studies, 2015), 68.

Given these stakes, and China's likely desire to ensure "war control" prior to escalation, U.S. and allied deterrent efforts must focus on ensuring that China lacks confidence that military aggression on its part would succeed. Influenced by a Marxian belief in correct processes and scientific principles, China's strategists are thought to believe that "crises and wars need to be controlled". This arises from a concern that "an uncontrolled war could derail China's economy and, in the process, foster widespread domestic discontent and instability that would threaten the legitimacy of the Chinese Communist Party".[14] It is this factor—the desire to avoid uncertainty and ensure the stability of the CCP—and not the prospect of known costs, that is most likely to deter China from engaging in armed conflict. Assuming that the primary goal of U.S. policy continues to be deterrence of a regional conflict, we should therefore encourage measures that are likely to raise the uncertainty of success in the minds of Chinese leadership, seeding doubt as to whether the PLA can establish effective "war control" at the level of armed conflict and thus delaying a decision to move up to the next level of conflict in the continuum that it sees between peace, a "quasi-war" struggle, and open conflict.[15] Efforts to merely impose costs and "provide off-ramps" to deter a conflict may not be enough, as China's strategists have indicated that China's core interests, such as its claim to sovereignty over Taiwan, "must be protected, presumably even at a high cost".[16]

To succeed, efforts to create uncertainty in the minds of China's leadership must directly attack the PLA's theory of victory, which is based on waging "system destruction warfare"—efforts to paralyze and destroy an enemy's operational system—and which the PLA would intend to actualize via "system-vs-system operations featuring information dominance, precision strikes, and joint operations." These operations would focus on disruption of U.S. and allied information flow, attacking command and control, reconnaissance, and firepower capabilities and networks; and disrupting the time sequence and tempo of our operational architecture.[17] Of note, a perfect example of such efforts would be the potential capability to single out and strike high-value command and control assets like the E-3 Sentry AWACS aircraft, as discussed above.

With these factors in consideration, my specific policy recommendations are as follows:

1) **Undermine China's plans to strike at U.S. and allied command and control and firepower capabilities at the start of a conflict:**

   As a general axiom, planning for a regional conflict against the PLA should *not* rely on any of the following to succeed:
   - Units or forces that require anything but episodic communication or data flow (for example, unmanned vehicles that rely on consistent human oversight to do their job, particularly given current policy restraints on lethal autonomous weapons).
   - Any important fixed and hard-to-repair facility on or within the Second Island Chain (for example, fixed fuel tanks, headquarters buildings, repair facilities, and fixed communications equipment).
   - Assuming that political considerations may require letting the PLA shoot first, any non-stealthy and non-dispersed platforms within DF-26 range at the beginning of a conflict (for example, aircraft on the ground at major U.S. and allied bases, valuable ships within ASBM range, and non-dispersed air and missile defense assets). To be clear, this applies specifically to the beginning of a conflict, when the PLA has a peacetime-quality targeting picture, and may not apply to forces brought in after conflict has begun and the PLA's targeting picture has been degraded.

   It should go without saying, for those familiar with U.S. military forces and facilities in the region, that on any given day this list describes the bulk of them. This is not to say that forces or facilities that meet this description would not be useful in a conflict with China, or for purposes of peacetime presence operations. But they should not be *relied upon* for victory, or to deter the PRC from taking aggressive military action.

[14] Burgess Laird, "WAR CONTROL: Chinese Writings on the Control of Escalation in Crisis and Conflict" (Center for a New American Security, 2017), 6.
[15] Kaufman and Hartnett, "Managing Conflict", 20-30.
[16] Kaufman and Hartnett, "Managing Conflict", 79.
[17] Jeffrey Engstrom, "Systems Confrontation and System Destruction Warfare: How the Chinese People's Liberation Army Seeks to Wage Modern Warfare" (RAND Corporation, 2018), x.

When Congress is presented with plans and programs that do rely on any of these types of forces, facilities, and capabilities to deter China, hard questions should be asked about how they will evade targeting in China's planning for war initiation. Any corrective action that results should not be to take steps to improve survivability, minimize attrition, etc., but rather to find *different* capabilities, to ensure that China's leadership knows that our plans *do not rely on* capabilities that are within their easy reach in the region. Otherwise, the PLA may simply add additional resources (such as building hundreds *more* missiles) to ensure they gain the confidence that they desire to be able to move forward with conflict initiation.

Any fixed facilities or non-dispersed forces that are still fielded within the region must be provided with robust and visibly-exercised defenses against precision strike, such as hardening and robust ballistic missile defense. The point in this case is not to provide a 100% assured, leak-proof defense, but to at least raise some doubt as to whether the PLA's precision strikes would succeed at scale. Network-dependent forces within the region must similarly build resilience against command-and-control disruption via means such as the extensive and well-rehearsed use of independent "mission command", forward-leaning rules of engagement, and capable organic sensors. The PLA must not believe that it can paralyze U.S. and allied forces by cutting them off from command and control and targeting networks, *even if they are wrong in this belief.*

2) **Visibly prepare for protracted war:** In order to undermine China's confidence that it can win by seizing the initiative via a short, violent fait-accompli, or by cutting Taiwan off from the international system, we should take clear action to ensure U.S. and allied preparation for a protracted conflict. This could include measures such as stockpiling critical supplies to ensure support for allied populations during an extended blockade, conducting joint exercises with allies and partners focused on interdiction of Chinese maritime commerce, and designing common and easy-to-produce weapons and platforms whose production could be rapidly ramped up in the event of a protracted conflict. The last of these could include plans to bring to bear the industrial capabilities of our allies as well, such as the substantial shipbuilding capacity of Japan and South Korea. China must see visible commitment on the part of the United States and our allies and partners, and not gain the confidence that it can win via a short, sharp, system-destruction-type campaign.

3) **Ensure that our allies and partners fully appreciate the threat posed by the growing capabilities of the PLA, and the consequences of a failure of deterrence:** Despite the scale of the challenge laid out above, with appropriate resourcing, focus, and urgency, I believe that the U.S. and our allies should be able to maintain deterrence and prevent Chinese domination of the region. Our combined economic output, demographic advantages, and sources of technological innovation should suffice to maintain at least an uneasy peace—*if we collectively apply ourselves.* But this will require greater efforts and focus than have been apparent in recent years, particularly on the part of our allies.

As a specific example, while Taiwan has produced a new Overall Defense Concept that is more focused on deterring Chinese aggression, the resources that it is applying to its own defense remain woefully inadequate to the task, despite recent promises to increase them. Looking at trends in defense expenditures by Taiwan and the PRC over recent decades (see Figure 12), one could be forgiven for gaining the impression that Taiwan is not taking seriously the regularly-repeated threats to its freedom from across the Strait. [It bears noting that these relative trendlines are not only a matter of China's economic power increasing, as Taiwan's defense spending as a percent of GDP has actually *declined* over recent decades, even as the threat from China has grown (see Figure 13).]

As democracies, gaining traction for increased efforts to prepare for the China challenge will ultimately be a matter of educating and alerting our publics to what we are facing, as well as the likely consequences of failure to live up to the moment. Our allies should be informing their people about the sorts of facts I have presented today and provide them with a clear-eyed assessment of what China's goals appear to be in the region—despite China's claims to the contrary. They should know that the question of what a Chinese-dominated Indo-Pacific would look

like has largely already been answered by demonstrated behavior, such as China's attempts to coerce allies like South Korea and Australia economically, and its demonstrated willingness to use the threat of force to get its way elsewhere. In its recently-revealed list of "14 grievances" with Australia, for example, China has indicated that resolution of its problems with Australia will require fundamental changes to Australia as a functioning democracy, such as the freedom of its leaders and thinkers to speak out on human rights issues as they see fit. And as China's military power has grown, one need only ask Filipino fishermen—or Vietnamese energy companies—what a taste of Chinese military dominance looks like: when Vietnam commenced exploration drilling for energy resources off its own coast in 2017, China "threatened to attack Vietnamese bases in the Spratly Islands if the drilling did not stop". As China's military capabilities have increased over time, so have the horizons across which China plans to be able to use them, and there are no indications that this trend is going to change. The peoples of the Indo-Pacific democracies deserve to know this.

We should be clear-eyed, of course, about the scale of the diplomatic challenge involved in getting this message across throughout the region. Unlike during the 20th-century Cold War, the intertwining of Chinese and regional economic interests has made the risk of elite capture by China a grave one, with natural temptations to just "get along" in support of short-term interests. We have already seen this intertwining at work in the acceptance by some local governments of Chinese infrastructure help, as well as the construction of critical infrastructure within regional partner nations by now-sanctioned Chinese companies—in some cases even partly funded by U.S. and allied tax dollars. Nevertheless, we must overcome these hurdles and speak the truth to our allies and partners, lest a lack of preparedness tempt China to progress from a war of words in the region to one of missiles.

This concludes my prepared remarks. Thank you for the opportunity to present this information to you today. I look forward to any questions you might have.

Appendix: Graphs and Figures

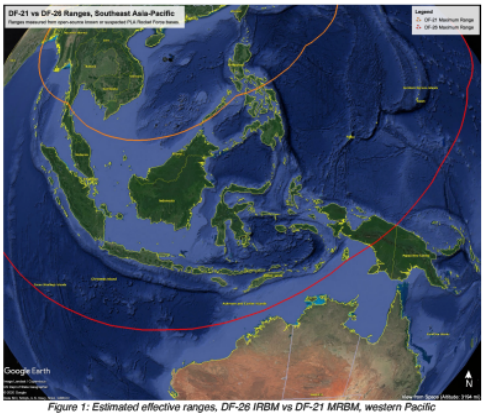

Figure 1: Estimated effective ranges, DF-26 IRBM vs DF-21 MRBM, western Pacific

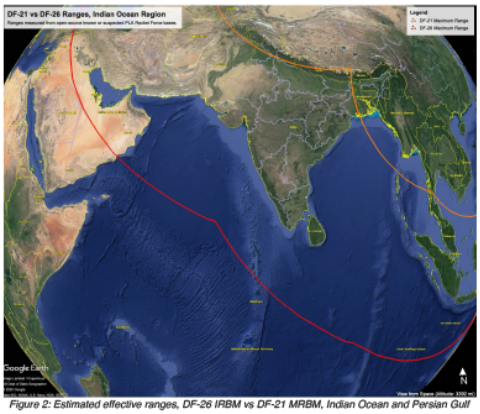

Figure 2: Estimated effective ranges, DF-26 IRBM vs DF-21 MRBM, Indian Ocean and Persian Gulf

Figure 3: Possible mockup E-3 AWACS target, western China. Sources: DigitalGlobe (upper left) and Google Earth (lower right).

Figure 4: New H-6 bombers and strategic airlift aircraft under construction in Xi'an, China, March 2020. Source: Google Earth.

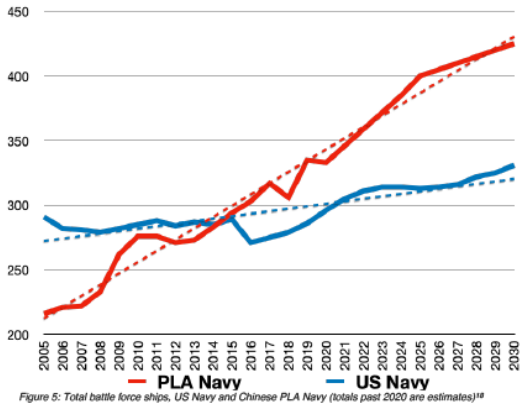

Figure 5: Total battle force ships, US Navy and Chinese PLA Navy (totals past 2020 are estimates)[18]

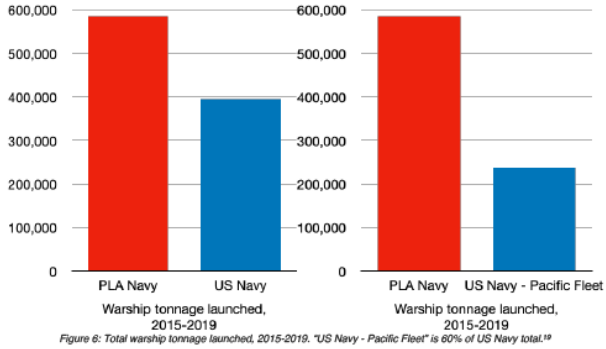

Figure 6: Total warship tonnage launched, 2015-2019. "US Navy - Pacific Fleet" is 60% of US Navy total.[19]

[18] Source Data: Congressional Research Service, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress" (dated 27 January 2021), and "Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress" (dated 26 January 2021).
[19] Author's calculations, using data obtained from Janes, Congressional Research Service, the Center for Strategic and International Studies, Google Earth, The Diplomat, and other sources.

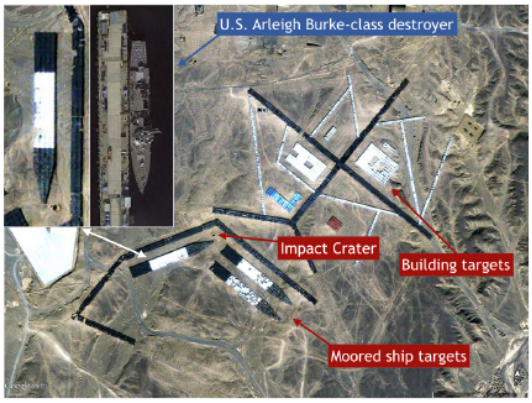

Figure 7: Possible ballistic missile test targets, western China, 2013.

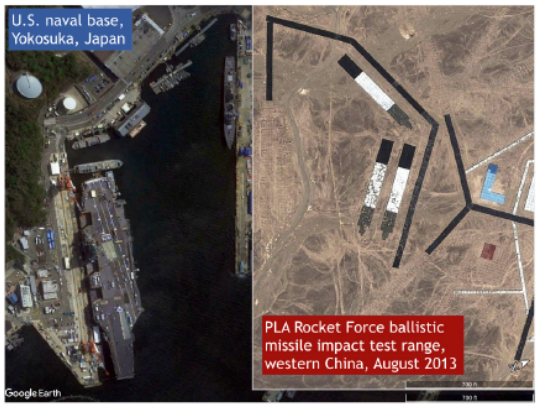

Figure 8: Possible ballistic missile test targets, western China, 2013.

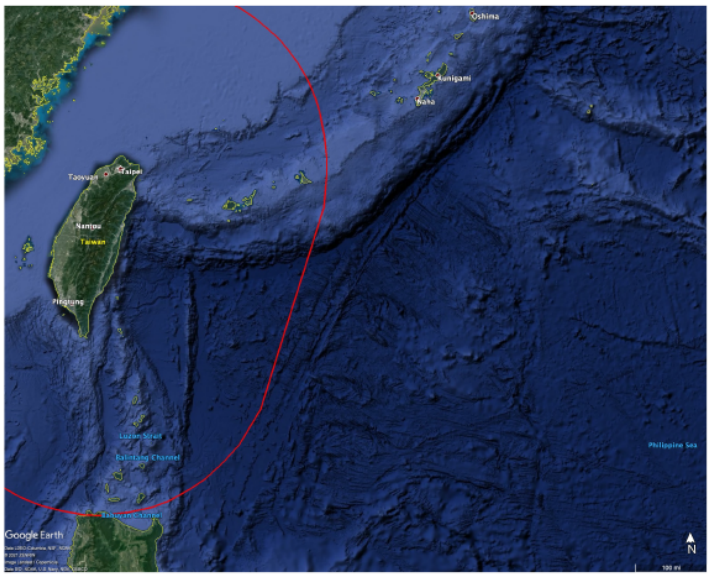

Figure 9: Taiwan and the deep water of the Philippine Sea. Also shown: range arcs (red) representing approximate ranges of potential Taiwan-based PLA anti-ship and anti-air weapons (400km).

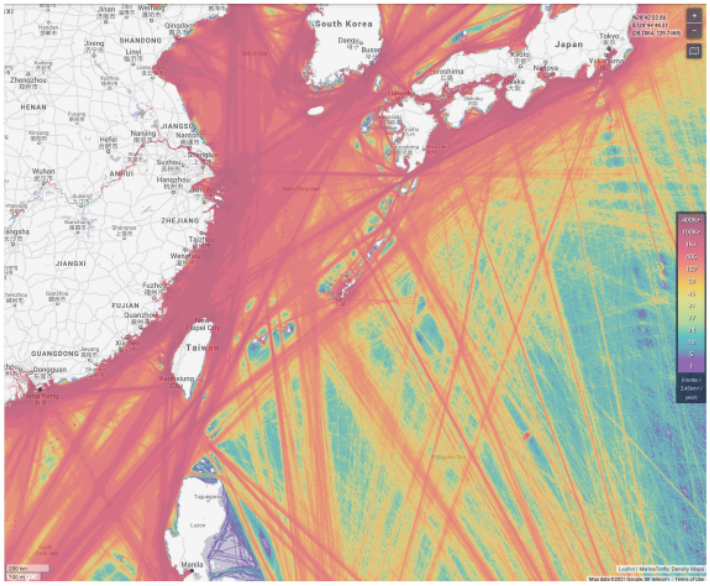

Figure 10: Historical marine shipping density in the vicinity of Taiwan and the Philippine Sea (source: MarineTraffic, 2019 data)

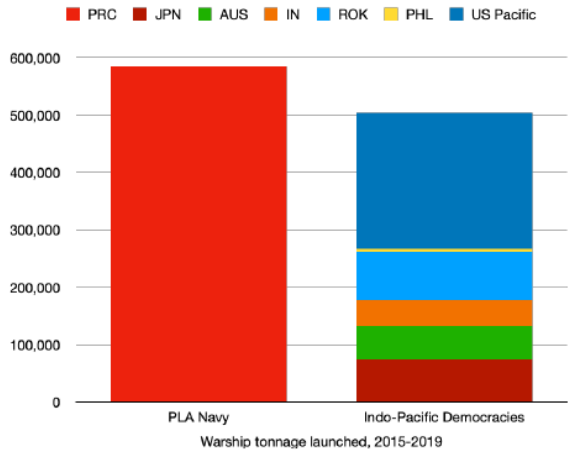

Figure 11: Total warship tonnage launched by Indo-Pacific democracies, 2015-2019. "US Navy - Pacific Fleet" is 60% of US Navy total.

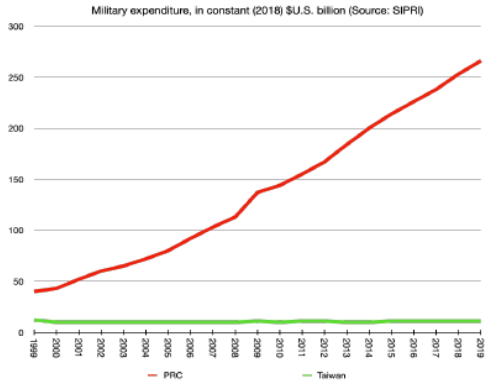

Figure 13: PRC vs. Taiwan defense expenditures, 1999-2019

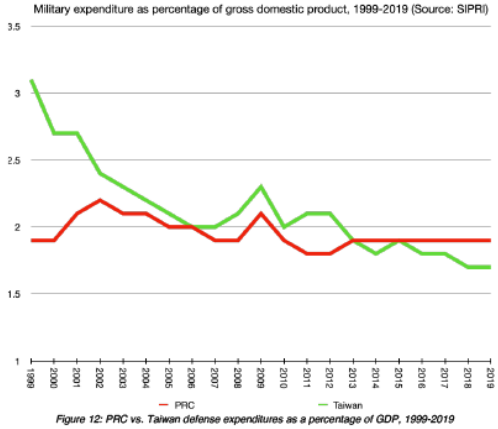

Figure 12: PRC vs. Taiwan defense expenditures as a percentage of GDP, 1999-2019

The CHAIRMAN. Thank you very much.

Mr. Khan.

STATEMENT OF SAIF KHAN, RESEARCH FELLOW, CENTER FOR SECURITY AND EMERGING TECHNOLOGY, WASHINGTON, DC

Mr. KHAN. Chairman Menendez, Ranking Member Risch, members of the committee, good morning and thank you for the opportunity to speak today.

I am a research fellow specializing in semiconductor policy at the Center for Security and Emerging Technology, a nonpartisan think tank at Georgetown University that studies the security implications of new technologies.

Today, I will cover three topics: first, the United States' and China's respective advantages in technology competition; second, how our best strategy to sustain long-term leadership will be to double down on our current strengths, our international partnerships, and ability to attract the world's top talent; third, the importance of maintaining U.S. competitiveness in two linchpin technologies: semiconductors and artificial intelligence.

China's science and technology has progressed faster than U.S. efforts to track it. China has a vast technology transfer infrastructure, R&D investments equal to the United States, and more than twice as many yearly S&T graduates as America does.

China's efforts have resulted in competitive capabilities across facial recognition, genomics, IT applications, military aviation, and materials science.

But the United States and its allies retain advantages in many core technologies, especially areas with hard-to-acquire know-how and high capital costs that pose barriers to entry.

These areas include semiconductor chips, jet engines, certain space-related technologies, and equipment for quantum computing. The U.S. also leads China in fundamental research. But the areas in which the U.S. is currently ahead may not provide a durable strategic advantage.

First, the technology landscape evolves quickly and unpredictably. Where China is behind in a critical domain it seeks to leapfrog ahead by acquiring cutting-edge technologies from abroad and investing in new paradigms that render U.S. and allied advantages obsolete.

Second, supply chains have become increasingly globalized, meaning no single country controls all inputs necessary to secure technological capabilities through unilateral trade controls.

Third, unlike decades ago, the private sector dominates today's most strategic technologies, requiring governments to adapt them before any strategic advantage can be gained.

To compete with the increasing scale and quality of China's S&T efforts, we must double down on our asymmetric advantages.

First, our network of allies is the world's strongest. The U.S. funds only 28 percent of global R&D compared to China's 26 percent, but the U.S., plus six allies, fund over half. And although the United States is just one node in globalized supply chains, together with allies we control key technologies such as chip manufacturing equipment.

To mount an effective response to China, we must cooperate with allies on research, investment, technology standards, and export controls.

Second, America's open society has continually attracted the world's best and brightest. Half of the Ph.D.-level scientists and engineers employed in the United States were born abroad. But outdated immigration restrictions have made other nations increasingly attractive.

Meanwhile, China's science and engineering workforce is growing faster than its U.S. counterpart and will become the world's largest if it has not already.

We must both invest in our domestic workforce and ensure the U.S. remains the world's top destination for global talent by broad-

ening and accelerating pathways to permanent residency for scientists and engineers.

They want to stay. Foreign nationals graduating from U.S. science and engineering Ph.D. programs overwhelmingly remain in the United States. Strong evidence suggests that increases in high-skilled immigration improve innovation, jobs, and wages for U.S.-born workers.

Finally, I want to call special attention to two linchpin technologies, semiconductor chips and artificial intelligence.

Semiconductor chips underpin all modern technology. While the U.S. and allies still lead in semiconductors, China is investing at an unprecedented rate. If trends continue, China will become the world's largest semiconductor manufacturer, fundamentally altering the global economic and security landscape.

Meanwhile, U.S. manufacturers have lost market share and will continue to fall behind without policy action. To reduce supply chain risks and create high-quality American jobs, we should generously fund semiconductor manufacturing incentives.

And to ensure that democracies lead in advanced chips and that they are used for good, we must partner with allies on joint R&D and tightening multilateral export controls on chip-manufacturing equipment.

Semiconductor chips provide the computing power for artificial intelligence, the second technology I want to discuss. AI promises to revolutionize sectors from transportation to scientific discovery.

But AI systems are fragile and error prone. Deploying them in critical systems without verifying their trustworthiness poses grave risks.

We must better collaborate with allies on R&D for AI safety and security and test beds and standards for AI development. We must also identify opportunities to collaborate with competitors, including China, to build confidence and avoid races to the bottom.

We should invest in new AI technologies that protect privacy and other civil liberties, and restrict exports of American technology to human rights abusers, such as Chinese companies using AI systems for surveillance.

The U.S. can ensure long-term technological leadership, but only with concerted action. I thank the committee for the opportunity to speak today.

[The prepared statement of Mr. Khan follows:]

Prepared Statement of Saif Khan [1]

Chairman Menendez, Ranking Member Risch, members of the Committee: Good morning, and thank you for the opportunity to speak today. I'm a research fellow specializing in semiconductor policy at the Center for Security and Emerging Technology (CSET), a nonpartisan think tank at Georgetown University that studies the security implications of new technologies.

Today, I'll cover three topics. First, the United States' and China's respective advantages in technological competition. Second, our best strategy to sustain long-term leadership will be to double down on our current strengths, including our international partnerships and ability to attract the world's top talent. Third, the importance of maintaining U.S. competitiveness in two linchpin technologies: semiconductors and artificial intelligence.

China's science and technology has progressed faster than U.S. efforts to track it. China has a vast technology transfer infrastructure, R&D investments equal to the United States, and more than twice as many yearly S&T graduates as America does.[2] China's efforts have resulted in competitive capabilities across facial recogni-

tion, genomics, IT applications, military aviation, and materials science. But the United States and its allies retain advantages in many core technologies, especially areas with hard-to-acquire implicit know-how and high capital costs that pose barriers to entry.[3] These areas include semiconductor chips, jet engines, certain space-related technologies, and equipment for quantum computing.[4] The United States also leads China in fundamental research.[5]

But the areas in which the United States is currently ahead may not provide a durable strategic advantage. First, the technology landscape evolves quickly and unpredictably. Where China is behind in a critical domain, it seeks to "leapfrog" ahead by acquiring cutting-edge technologies from abroad and investing in new paradigms that render U.S. and allied advantages obsolete.[6] Second, supply chains have become increasingly complex and globalized, meaning no single country controls all inputs necessary to secure technological capabilities through unilateral trade controls. Third, unlike decades ago, the private sector dominates today's most strategic technologies, requiring governments to adapt them before any strategic advantage can be gained.[7]

To compete with the increasing scale and quality of China's science and technology efforts, we must double down on our asymmetric advantages.

First, our network of allies is the world's strongest. The United States funds only 28 percent of global R&D compared to China's 26 percent. But the United States plus six allies fund over half.[8] And although the United States is just one node in globalized supply chains, together with allies it controls key technologies, such as chip manufacturing equipment. To mount an effective response to China, we must cooperate with allies on research, investment, technology standards, and export controls.

Second, America's open society has continually attracted the world's best and brightest. About half of the Ph.D.-level scientists and engineers employed in the United States were born abroad.[9] Immigrants to the United States invented the modern computer chip and launched companies critical to America's security and prosperity today, from SpaceX to Google. But outdated U.S. immigration restrictions have made other nations increasingly attractive.[10] At the same time, China's science and engineering workforce is growing much faster than its U.S. counterpart—and will become the world's largest, if it hasn't already. In response, we must both invest in our domestic workforce and ensure the United States remains the world's top destination for global talent by broadening and accelerating pathways to permanent residency for scientists and engineers.[11] They want to stay: foreign nationals graduating from U.S. science and engineering Ph.D. programs overwhelmingly remain in the United States.[12] Strong evidence suggests that increases in high-skilled immigration improve innovation, jobs, and wages for U.S.-born workers.[13]

Finally, I want to call special attention to two linchpin technologies: semiconductor chips and artificial intelligence.

Semiconductor chips underpin all modern technology. While the United States and allies still enjoy the lead in semiconductors, China is investing at an unprecedented rate. If current trends continue, China will become the world's largest semiconductor manufacturer, fundamentally altering the global economic and security landscape. Meanwhile, U.S. manufacturers have lost market share, and will continue to fall behind under the policy status quo. To reduce supply chain risks and create high-quality American jobs, we should generously fund the manufacturing incentives program in the CHIPS for America Act. And to ensure that democracies lead in advanced chips and that they are used for good, we must partner with allied democracies on joint R&D and tighten multilateral export controls on chip manufacturing equipment.[14]

The second technology I want to discuss is artificial intelligence. AI promises to revolutionize national security, healthcare, agriculture, energy, transportation, and scientific discovery. But AI systems are fragile and error-prone. Deploying them in critical systems without verifying their trustworthiness poses grave risks. We must better collaborate with allies on R&D for AI safety and security; test & evaluation, validation & verification (TEVV) of AI systems; and testbeds and standards for AI development. We must also identify opportunities to collaborate with competitors, including China, to build confidence and avoid races to the bottom.[15] We should invest in new types of AI technologies that protect privacy and other civil liberties,[16] and tightly control exports of American technology to human rights abusers, such as Chinese companies using advanced AI systems for surveillance.[17]

In summary:

- The United States and China each have technological advantages; and U.S. advantages may not provide a durable strategic edge.

- We must double down on our international partnerships and openness to the world's top talent.
- We must place a special focus on leadership in certain linchpin technologies such as semiconductors and artificial intelligence.

The U.S. can ensure long-term technological leadership, but only with concerted action. I thank the Committee for the opportunity to speak today. I look forward to your questions.

Notes

[1] For helpful feedback, I thank Zachary Arnold, Daniel Hague, Helen Toner, Igor Mikolic-Torreira, Lynne Weil, and Remco Zwetsloot.

[2] National Science Foundation, "The State of U.S. Science and Engineering 2020," January 2020, https://ncses.nsf.gov/pubs/nsb20201/u-s-and-global-education.

[3] Andrea Gilli and Mauro Gilli, "Why China Has Not Caught Up Yet: Military-Technological Superiority and the Limits of Imitation, Reverse Engineering, and Cyber Espionage," International Security, vol. 43, no. 3, p. 141, https://www.mitpressjournals.org/doi/full/10.1162/isec_a_00337.

[4] Saif M. Khan, Alexander Mann, and Dahlia Peterson, "The Semiconductor Supply Chain: Assessing National Competitiveness" (Center for Security and Emerging Technology, January 2021), https://cset.georgetown.edu/research/the-semiconductor-supply-chain/; Matt Daniels, "The History and Future of US–China Competition and Cooperation in Space" (John Hopkins University Applied Physics Laboratory, 2020), https://www.jhuapl.edu/Content/documents/Daniels-Space.pdf.

[5] See William Hannas and Huey-Meei Chang, "China's Access to Foreign AI Technology: An Assessment" (Center for Security and Emerging Technology, September 2019), 7–8, https://cset.georgetown.edu/research/chinas-access-to-foreign-ai-technology/.

[6] Lauren Dudley, "China's Quest for Self-Reliance in the Fourteenth Five-Year Plan," CFR Net Politics, March 8, 2021, https://www.cfr.org/blog/chinas-quest-self-reliance-fourteenth-five-year-plan.

[7] This analysis derives from a more detailed assessment of U.S.-China technology competition in Zachary Arnold, "U.S. Investment in China's Capital Markets and Military-Industrial Complex," Testimony before the U.S.-China Economic and Security Review Commission, March 19, 2021, https://www.uscc.gov/hearings/us-investment-chinas-capital-markets-and-military-industrial-complex.

[8] Melissa Flagg, "Global R&D and a New Era of Alliances" (Center for Security and Emerging Technology, June 2020), https://cset.georgetown.edu/research/global-rd-and-a-new-era-of-alliances/.

[9] National Science Foundation, "Science and Engineering Labor Force," September 2019, https://ncses.nsf.gov/pubs/nsb20198/immigration-and-the-s-e-workforce.

[10] Tina Huang and Zachary Arnold, "Immigration Policy and the Global Competition for AI Talent" (Center for Security and Emerging Technology, June 2020), https://cset.georgetown.edu/research/immigration-policy-and-the-global-competition-for-ai-talent/.

[11] Zachary Arnold, Roxanne Heston, Remco Zwetsloot and Tina Huang, "Immigration Policy and the U.S. AI Sector" (Center for Security and Emerging Technology, September 2019), https://cset.georgetown.edu/research/immigration-policy-and-the-u-s-ai-sector/.

[12] Remco Zwetsloot, Jacob Feldgoise, and James Dunham, "Trends in U.S. Intention-to-Stay Rates of International Ph.D. Graduates Across Nationality and STEM Fields" (Center for Security and Emerging Technology, September 2020), https://cset.georgetown.edu/research/trends-in-u-s-intention-to-stay-rates-of-international-ph-d-graduates-across-nationality-and-stem-fields/; Remco Zwetsloot, James Dunham, Zachary Arnold, and Tina Huang, "Keeping Top AI Talent in the United States" (Center for Security and Emerging Technology, December 2019), https://cset.georgetown.edu/research/keeping-top-ai-talent-in-the-united-states/.

[13] See, e.g., National Academies of Sciences, Engineering, and Medicine, "The Economic and Fiscal Consequences of Immigration," Washington, DC: The National Academies Press, 2017, https://doi.org/10.17226/23550; Jennifer Hunt and Marjolaine Gauthier-Loiselle, "How Much Does Immigration Boost Innovation?," American Economic Journal: Macroeconomics, Vol. 2, No. 2, April 2010, 31–56, https://www.aeaweb.org/articles?id=10.1257/mac.2.2.31; Stuart Anderson, "Immigrants and Billion-Dollar Companies" (National Foundation for Economic Policy, 2018), https://nfap.com/wp-content/uploads/2018/10/2018-BILLION-DOLLAR-STARTUPS.NFAP-Policy-Brief.2018.pdf; Giovanni Peri, Kevin Y. Shih, and Chad Sparber, "Foreign STEM Workers and Native Wages and Employment in U.S. Cities," NBER Working Paper 20093, May 2014, https://www.nber.org/papers/w20093.

[14] Saif M. Khan, "Securing Semiconductor Supply Chains" (Center for Security and Emerging Technology, January 2021), https://cset.georgetown.edu/research/securing-semiconductor-supply-chains/.

[15] Andrew Imbrie and Elsa Kania, "AI Safety, Security, and Stability Among Great Powers: Options, Challenges, and Lessons Learned for Pragmatic Engagement" (Center for Security and Emerging Technology, December 2019), https://cset.georgetown.edu/research/ai-safety-security-and-stability-among-great-powers-options-challenges-and-lessons-learned-for-pragmatic-engagement/; Michael Horowitz and Paul Scharre, "AI and International Stability: Risks and Confidence-Building Measures" (Center for a New American Security, January 12, 2021), https://www.cnas.org/publications/reports/ai-and-international-stability-risks-and-confidence-building-measures.

[16] Tim Hwang, "Shaping the Terrain of AI Competition" (Center for Security and Emerging Technology, June 2020), https://cset.georgetown.edu/research/shaping-the-terrain-of-ai-competition/.

[17] Dahlia Peterson, "China's System of Oppression in Xinjiang: How It Developed and How to Curb It" (Brookings Institution, September 2020), https://cset.georgetown.edu/research/chinas-system-of-oppression-in-xinjiang-how-it-developed-and-how-to-curb-it/.

The CHAIRMAN. Well, thank you all for your testimony. We will start a round of 5-minute questioning and we will recognize members by seniority in the order of their appearance at the time of the gavel. In order to be recognized, please have your video on so that I know you are ready to be called upon.

So I will start the first 5 minutes.

It is no secret that China seeks to exert its influence and power through conventional and emerging tools. But there is still some debate about exactly to what end. I have my own views, but I would like to hear yours.

What do you believe is China's goal in the near term, in the long term, and why?

Dr. Economy?

Dr. ECONOMY. Thank you very much.

As I suggested, I think China seeks a transformed world order, one which is reclaimed centrality on the global stage, where its norms and values are reflected instead of those of liberal democracies, and where it has regional preeminence where it is reunified, it is an innovation and technological powerhouse so that its technologies from fiber optic cables to e-commerce to satellite systems also dominate globally.

We have seen China move ahead with it, digital currency. So I think it is seeking to escape from the dollar dominance in the future.

So I think it is all about returning China to past glory, but it is glory for the 21st century.

The CHAIRMAN. Mm-hmm. Let me ask you all, Secretary Blinken and National Security Advisor Sullivan are planning on meeting with their Chinese counterparts this weekend.

The Administration has cautioned that this meeting is not intended to be the first of a dialogue but, rather, an initial meeting to set expectation and priorities and to inform the Administration's Indo-Pacific and China policy reviews.

What would you hope to see out of this Alaska meeting? What should they hope to accomplish in this trip, from your perspectives?

Anyone in particular want to share?

Dr. ECONOMY. I, certainly, would hope that they will clearly articulate sort of the U.S.'s new approach that is rooted in values, that this is going to be a policy that is an alliance-based policy and that the United States is going to be back assuming a leadership position in international institutions, that we take seriously China's human rights abuses in Xinjiang and its policies in Hong Kong.

I think Kurt Campbell was extremely articulate in his defense of Australia when he said that the United States is not going to improve its relationship with China unless China improves its relationship with Australia.

I think it is an important signal that the United States is standing by its allies. So I think it is establishing a new framework for

the U.S. approach to China that is embedded in values and allies and multilateral institutions.

The CHAIRMAN. All right. And then let me ask, and I think both to you, Dr. Economy and Mr. Shugart, in this particular respect, do you believe that our Indo-Pacific strategy ought to be a function of our China policy, as it was during the Trump administration, or that our China policy ought to be a function of our Indo-Pacific strategy? Put another way, can we get China right if we do not get the region right first?

Dr. ECONOMY. Okay. I think, absolutely, our allies come first and it is, an Indo-Pacific strategy because Indo-Pacific strategy is at the center, but again, it is about a global strategy and it is based in our allies, it is based in our values, and that is what the free and open Indo-Pacific represents.

And I think China should be placed within that. We do not want to be in a reactive and defensive position where we are simply responding to China. We want to be in a proactive position, and I think we can only do that if we are asserting our own values up front.

Mr. SHUGART. On that question, Senator, I think that, I mean, we should be expressing the basic goals that support—I mean, I think that the unfortunate military confrontation largely arises out of their apparent desire to contravene what we are used to for decades now.

A free and open Pacific—freedom of navigation, et cetera, really, those are the challenges that drive the military confrontation for the most part that we are seeing there.

Under the question of defense goals, or their goals in the defense realm, they have made it fairly clear in their defense white papers and other strategic documents what those are.

It is just we have very different interpretation sometimes of what those words mean and what that translates into. They talk about sovereignty.

We may think that that sovereignty is the control of individual nations, but they may define it as reuniting themselves with Taiwan.

When they talk about maritime rights and interests, those are not the maritime rights and interests, in accordance with international law, as we understand them.

So they have made that pretty obvious. The biggest one, what I think we can see over time, is their Navy's expansion for what they call protecting overseas interests and their sea lines of communication.

We can see that, as their capabilities have grown, their military capabilities have grown, so have their strategic objectives to go along with those.

And I think it is when you consider the full list of what they have said their interests are and objectives are, that they really do want to maintain sea lines of communication overseas—that is what explains, to some degree, the really major expansion of their Blue Water Navy that we have seen in recent years.

The CHAIRMAN. Thank you.

Senator Risch.

[Audio issue.]

Senator RISCH. —and that is one of the things we did not talk about much was the student exchange that our countries do. There are almost 370,000 students, Chinese students, studying in America. Let me say that again. Three hundred and seventy thousand Chinese students study in America.

On the other hand, the United States has less than 12,000 students studying in China. We do not talk about this much because as being an open society we encourage exchange of culture, but for those of us who work in the intelligence space we know at least part of those 370,000 are actually in the collection business. And so as a result of that, this whole thing gets mixed together and not much gets done about it.

But for Chinese students studying high-tech matters here and all matters, really, in the United States, it is easy for them to extricate the value that we have and the knowledge that we have and take it home.

Now, we do not want to in any way curb exchange of culture. But on the other hand, I think we need to protect ourselves.

I would like to hear each of your thoughts on this obviously unbalanced situation with the number of students studying in each place and what we do about having students placed in areas where our very valuable information is stored.

Why do you not do it the same way you started?

Ms. Economy, if you would——

Dr. ECONOMY. Okay. So I think as you suggested, there are differences between undergraduates and graduate students. For undergraduate students, I would say the danger is, really, that some students are there to report on other students and I think we need to make clear at the college level maybe they should have a civics class on American values.

They maybe sign a pledge that they are not going to report on their fellow students or face expulsion.

I think we should not allow for Chinese Government funding of Chinese student organizations on campuses and I, certainly, know that Congress has moved very aggressively to encourage universities to shut down their Confucius Institutes.

So I do not think we should close down avenues of study for Chinese students. I think it is essential that we keep those doors open.

And just let me make one point on the return part of it. You mentioned the disparity in number. I mean, the truth is that the number of U.S. students studying in China has declined and some campuses have closed their programs because of lack of U.S. student interest.

I think that is the problem. It is not that the Chinese are keeping American students out but that American students are not actually pursuing Chinese language study or want to study in mainland China. That is the challenge.

As far as the graduate students are concerned, I think we have discovered PLA members posing as students. Obviously, that needs to stop and the FBI is doing its investigations.

Universities that are accepting defense funding in labs should not have Chinese graduate students there unless they have some very intense security within their labs, and I think we need to be very careful and do a lot of vetting of Chinese graduate students.

But, again, I do not want to limit their opportunities, but our priority has to be to secure our intellectual property.

Mr. SHUGART. Senator, I would say while educational policy is mostly beyond my area of expertise, clearly, any information flowing in that direction regarding technical advances would, obviously, be detrimental, potentially, to the long-term military advantage in the region for us.

Senator RISCH. Thank you.

Mr. KHAN. I would like to quote a senior counterintelligence official who actually noted that 99.9 percent of Chinese students in the U.S. are just here to contribute to the economy. We are talking about a very, very small percentage of the total that actually presents any concern.

Another point is, Chinese officials are on record as noting that the brain drain that they are experiencing to the United States is actually very much to their disadvantage and to our advantage.

I think that the Chinese students are actually contributing quite a bit to our economy, and it is actually a source of comparative advantage.

Another piece is that virtually all of the notable cases of espionage have actually not involved students but, rather, other types of institutions such as industry or Government labs, for example. And so students really are not the population that we should be very concerned about.

But I absolutely agree with Dr. Economy and Mr. Shugart that we should be concerned about our intellectual property. I do think that there are more targeted measures that we can take to ensure protection of that intellectual property.

Senator RISCH. Thank you. Thank you very much. I will have to say I respect your opinion, Mr. Khan. But I can tell you that dealing with the intelligence people, they are substantially more concerned about the issue than you are. That is a fair way of laying out both of our views on it and I think all of us need to explore that a bit further.

My time is probably up or close to it. But I would like to hear from Dr. Economy, very briefly, about the reference she made to the dollar being, obviously, your national standard. That is something that we have enjoyed for many, many years. If that changes, it is going to affect things dramatically.

Dr. Economy, would you care to comment about that?

Dr. ECONOMY. Sure. I think, for a long time, the Chinese have sought to increase the role of the yuan in world trade, but now they are pursuing this digital currency.

There is actually a program that we are starting up at the Hoover Institution just now to explore sort of the Chinese objectives and ambitions with regard to this.

But, certainly, one of the things that we are going to be looking at is how they might use a digital currency to push the use of the renminbi and move away from the role of the dollar as the world's reserve currency.

Senator RISCH. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

For all members' purposes, there should be a clock on your screen just so you can measure your time.

Senator Shaheen.

Senator SHAHEEN. Thank you, Mr. Chairman, and thank you to all of our witnesses.

Yesterday, we held a hearing in the Armed Services Committee with the head of SOUTHCOM, Southern Command, who is responsible for the Western Hemisphere south of the United States, so Central America and Latin America, and he gave us a map of Chinese influence in Latin America that I found very troubling. I am going to hold this up.

Now, I appreciate that you will not be able to see the specifics, but just look at the red color because that is where China has so much of its influence.

And I want to read a couple of the statistics here. Of the 31 countries in Latin America, 25 host Chinese infrastructure projects. Nineteen countries have joined the One Belt One Road Initiative.

The cumulative value of COVID–19 assistance to Latin America is greater than $120 million. The goal for China is to provide $250 billion in loans to Latin America by 2025, and they have had 44 heads of state meetings there since 2015 with heads of state from countries in Latin America.

So I would like, Mr. Chairman, if I could to submit this for the record, this map.

The CHAIRMAN. Without objection.

[The information referred to follows:]

UNCLASSIFIED

CHINESE INFLUENCE

25 of 31
Countries Host Chinese Infrastructure Projects

29+
Ongoing and Completed Port Development Projects

25
Port Calls since 2009

$120+Million
Cumulative Value of COVID-19 Aid

8
Countries Producing, Using, Testing, or Interested in Purchasing Chinese COVID-19 Vaccine

19 of 31
Countries Joined One Belt, One Road

$250 Billion
Loans Goal by 2025

$500 Billion
Trade goal by 2025

$615+ Million
Weapons Sales to Venezuela since 2010

44
Heads of State Meetings since 2015

CAO: 20210305
OPR: J2/JIOC

UNCLASSIFIED

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(U) "Chile regulator greenlights Sinovac COVID-19 vaccine for emergency use," https://www.reuters.com/article/us-health-coronavirus-chile-sinovac-idUSKBN29P1Z6

(U) "Peru secures 23.1 million future coronavirus vaccine doses from Pfizer, COVAX," https://www.reuters.com/article/us-health-coronavirus-peru-vaccines-idUSKBN2872OE

(U) "Beijing races to deploy five vaccines despite questions over results," https://www.smh.com.au/world/asia/beijing-races-for-vaccine-advantage-20201209-p56m0j.html

(U) "Chinese CoronaVac vaccine in demand across Latin America," https://www.smh.com.au/world/south-america/chinese-coronavac-vaccine-in-demand-across-latin-america-20201211-p56mr0.html

(U) "China's Engagement with Latin America and the Caribbean," https://fas.org/sgp/crs/row/IF10982.pdf

Senator SHAHEEN. Thank you.

So, clearly—you have been talking mostly about China's influence in the Indo-Pacific but, clearly, they are moving into Europe. They are moving into Latin America, in the Western Hemisphere. In fact, they have significant diplomatic and economic assistance throughout Latin America.

So and while they are doing that, in the last 4 years we have had only one ambassador in the Central American countries and that is in Guatemala.

So can you talk about what advantage it gives to China when we leave the playing field to them in places like Latin America and what the implications of that are for the United States?

I can direct it or anyone can take it.

Dr. ECONOMY. Sure, I can start and then maybe others can add in.

Absolutely. The Belt and Road Initiative is a global initiative includes technology like deploying Huawei, but also fiber optic cables in e-commerce. So you are going to see the Chinese e-commerce companies coming in as well.

It includes hard infrastructure—ports and railroads and highways. There is a military component to it. So you can watch China

building ports and have PLA navy ships stop by for some visits. I do not think that has happened yet there, but this is the kind of thing that you can expect.

And it includes political capacity building and so offering seminars for Belt and Road countries on how to manage the internet and control civil society.

So for authoritarian-leaning countries, of course, this is very attractive. You know, it is a one-stop shop on how to bolster your control over the economy.

There is a lot of attraction for many countries and I participated in a seminar with Latin American scholars and some former officials and they say, China listens to us.

They are engaging in joint innovation projects, which they find very exciting and attractive in ways that the United States does not. They are pouring money into having students from Latin America go to China. So they have full scholarships for students to go there.

China is trying to deploy the type of soft power that the United States has traditionally——

Senator SHAHEEN. Right.

Dr. ECONOMY. —been known for, and they are making inroads.

Senator SHAHEEN. They are. Thank you. And I think it was just fair to say that most of us who saw that map yesterday in the Armed Services Committee were surprised to see—not just see what China is doing in the Indo-Pacific but surprised to see what they are doing in our hemisphere in Latin America.

And recognizing that our Government cannot order American companies to invest abroad in the same way that the PRC can, can you all talk about what we can do to better encourage our companies to invest in places where there are interests I hope not just of those private companies but of the American Government around the world?

Dr. ECONOMY. Sure. Part of that last proposal that I mentioned in my testimony about developing a new economic development initiative with our larger market democracy allies has to do with just that.

So using Development Finance Corporation funding to support American firms to go into some of these countries, thinking about how to bring these countries—when we are talking about developing resilient supply chains, when we are encouraging our companies to diversify out of China, to develop more regional-based supply chains, then why not think about encouraging them to go into some countries in Latin America.

So I think there are ways that we can do that. But I think we need to think in a grand and strategic way in partnership with others. We are not going to be able to do it alone.

We are not going to be able to match China investment for investment. So we need to come up with, I think, a creative way of reengaging.

And, again, I think part of it, to be frank, is listening, because one thing that China does, at least at the outset of its—you mentioned all those visits that the Chinese leaders make and they are holding all these seminars—they give leaders and other officials the feeling that they are being listened to and I think that is some-

thing very much that sometimes we are good at it and sometimes we are not.

Senator SHAHEEN. Thank you. Thanks, Mr. Chairman.

The CHAIRMAN. Senator Portman.

Senator PORTMAN. Chairman, thank you very much for holding the hearing. To you and Senator Risch, I appreciate your focus on China. I noted the commitment to an April 14th markup of the China bill. I thank you for that. It is timely.

So many great questions to ask but, Mr. Khan, I want to start with you. You talked about the need for us to enhance our own research here to keep up with China. You talked about artificial intelligence in particular and you talked about the semiconductor crisis we face right now without a supply chain that is reliable.

Let me just ask you two quick questions, if I could. In the National Defense Authorization Act, we got the CHIPS Act included. It is an authorization. It would require a $37 billion appropriations to make it effective.

Then we also got AI legislation in, including senators of this committee and I worked on this. It is called the AI Initiative Act, as you know, and it is about the Government—the Federal Government's coordination of artificial intelligence response and research that would require a $6 billion commitment.

Do you support those levels of funding, and, if not, do you support more or less? What is the appropriate amount of funding for the taxpayers to work with the private sector to enhance our ability to keep up with China and to surpass them, hopefully, in some of these areas?

Mr. KHAN. Yeah, Senator, thanks for the great questions. So yes, I do support those ranges of funding for the CHIPS Act.

That would certainly work as an initial down payment, and depending on the effectiveness of incentives and the other programs in the CHIPS Act, we can consider later appropriating even additional funds on top of that.

I do think that keeping semiconductor manufacturing in the United States is an absolutely critical national security priority. Right now, the supply chains for this technology are too centralized and there are risks that we could be cut off. And so it should be a very high priority and I think even those levels of funding are actually quite cost effective.

Senator PORTMAN. I look at what is happening to the auto industry in Ohio and elsewhere around the country, and we are literally stopping production of automobiles right now.

Over 200,000 cars were not made this year that would have been made but for the semiconductors, and we are totally dependent on Taiwan, as you know, and China's developed them quickly.

Another point, Mr. Chairman, on the China legislation, we have legislation called Securing the American Innovation Act and it comes from a year-long investigation by the Subcommittee of Investigations, a deep dive, bipartisan, and what we are able to reveal, sadly, was that for two decades now China has been systematically targeting promising American researchers, promising American research paid for by the U.S. taxpayer and taking it to China to improve their conditions, including the rise of the Chinese military and the economy.

And we have begun to crack down on it, finally. You know, you have seen the number of arrests by the FBI and the U.S. Attorney's Offices. But, frankly, we need legislation to give them more tools to be able to deal with it.

So as we put more money into some of our research institutions in order to respond to the threat from China economically, we have got to be sure we are protecting that money.

So I appreciate Senator Risch, Senator Coons, and others in the committee who have been co-sponsors of that legislation, and I hope it can be included in whatever final China bill we have because it provides what we need to ensure that we have that balance.

We need foreign researchers to work with our researchers here, but we also need to take common steps to prevent bad actors from taking that research, which has been done over, again, two decades.

On the issue of China, Dr. Economy, I want to talk to you about what we are doing with the Global Engagement Center. This is to try to push back on disinformation and propaganda. China is very good at it.

Last year, Senator Booker and I chaired an oversight hearing of this committee on combating disinformation and the expert witnesses told us that China spends over $10 billion annually in state-sponsored disinformation operations. Ten billion dollars annually.

And so my question to you, Dr. Economy, is can you elaborate a little on China's use of disinformation? It is inexpensive. It has got a lot of deniability attached to it.

I listened carefully to what Senator Shaheen said about Latin America. They are certainly engaged in there and in Africa. What are the most pressing areas where you have studied China disinformation campaigns and why do they use this tactic and what should we be doing to push back against it?

Dr. ECONOMY. Thank you, Senator.

Certainly, look, we are right in the midst of a Chinese disinformation campaign ourselves, right, as the Chinese are spreading untruths about the United States as the source of COVID–19, you know.

So, obviously, shedding light and pushing back against Chinese efforts is critical. But I think in other countries that have a less robust free press is one of the greatest concerns in my mind. If you look in Africa, for example, where Chinese media companies are managing not only, for example, the digitization of villages in Kenya but also providing the content for Kenyan television in many villages, and the newspapers are, basically, doing what they used to do with AP. It is much cheaper—they can just get for free from Renmin Ribao or China Daily.

And so what you are getting in many developing countries now is just a flood of Chinese information. And so it is a little bit different, maybe, from disinformation, but it is a close second because it is, basically, spreading a Chinese narrative and cutting out access to, you know, other sources of information.

For example, in Kenya they price access to the BBC and other international stations at a higher rate to dissuade people from buying access to that kind of information.

So, they influenced the recent Taiwanese elections or attempted to. They spread all sorts of disinformation over the course of COVID–19 pandemic about other countries' responses.

I think that the most important thing we can do is simply to shed light on the lies, to push back against them and act in concert with our allies on this.

Our best response is sort of the transparency that is inherent in our own system.

Senator PORTMAN. Well, I think my time is up. But the Global Engagement Center is directed at all those things, and Senator Murphy and I have attempted to get more funding into it for that reason, because it does support a free press, as an example, to get to the truth in those countries.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Schatz.

Senator SCHATZ. Thank you, Mr. Chairman. Thank you to the testifiers.

Dr. Economy. I want to stay with you for a few minutes. I want to ask about the Arctic and China's interests there. China is taking advantage of the fact that the Arctic is becoming more accessible because of climate change.

In 2013, it became an observer of the Arctic Council, the primary forum Arctic states use to discuss regional issues, and in 2018, the Chinese Government published its own Arctic strategy where it proclaimed itself to be a near Arctic state, which is pretty much meaningless.

But it does indicate to us that they are trying to get a seat at the table as Arctic states discuss the rules of the road.

China has also announced a Polar Silk Road plan to finance a port airfield and undersea cable and other infrastructure projects in the region. And last year, its first domestic-built icebreaker completed an Arctic expedition.

So can you talk about China's goals in the Arctic and specifically what the United States can and should be doing about it? And if you would not mind commenting on whether or not you think we should ratify the Law of the Sea Treaty?

Dr. ECONOMY. So the last question first.

Yes, I think we should ratify the United Nations Convention, the Law of the Sea, both because of what is taking place in the South China Sea but also, as I think you are intimating, in terms of the Arctic.

168 countries have ratified. We should be part of that. It gives us a platform to engage with them. So, absolutely.

In terms of China's move to become a great Polar power—it is very interesting, this has begun as early as 2008. Right at the moment of the global financial crisis, China established its own Polar Institute, as you said.

It is, I think, the perfect example of that kind of multi-actor multi-domain approach that I was talking about, long-term strategic objectives. They deployed their diplomats and their scholars, so they are reframing the narrative around the Arctic to talk about it as because it is global climate change, because of the resources there, it is an issue of global commons so it should not be managed

by merely the few Arctic countries that are there that are part of the Arctic Council.

You have their scientists taking part in Arctic research. They have done more polar expeditions now than any other country. Their military is developing great capabilities with the icebreakers, pursuing a very aggressive campaign that already is outstripping us.

They see this, as you said, Xi Jinping wants to be a great Polar power. They are going to try to reshape the way that Arctic governance is sort of considered so that they will get a seat at the table, a formal seat, not simply an observer seat, and they have been investing, as I noted, in Nordic countries.

So they have deployed both state-owned enterprises and private enterprises to tick up strategic investments, and one of the things that we see, beginning in 2018, is that a number of Nordic countries have noticed this and their defense intelligence agencies have said, this has to stop. So you are beginning to see pushback.

So I think——

Senator SCHATZ. Hold on.

Dr. ECONOMY. Sorry.

Senator SCHATZ. I want to go—I want to go south, with my remaining time, to Oceania. Most of China's influence in the region comes from financing loans, more than one and a half billion in the last decade, and we know about the debt trap diplomacy that they deploy.

It is becoming increasingly a problem in Oceania where economies are fragile during the pandemic, and I worry that China could take advantage of indebted countries to gain a foothold in the Pacific to develop ports and airstrips.

In Vanuatu, China agreed to finance a $90 million dollar wharf large enough to dock cruise ships. But Vanuatu is also already highly indebted to China with China holding half of its external debt. As we look at post-pandemic society, the risk of default and recapturing these assets may be high.

Can you talk about what the United States should be doing in the region in terms of soft power, economic power, whether it is USAID or any of our other tools of diplomacy?

Clearly, we are not going to be financing ports all over the place, but we have got to have tools in our toolkit and we have got to be engaged in Oceania and not think of our Asia Pacific strategy as just South China Sea, DPRK, Japan, and TPP.

We have got to look at the vast ocean in between our country and China, and the many, many countries that are in the Pacific.

Dr. ECONOMY. Thank you. So I think this is an area where we have a program in place, the Blue Dot Initiative, that if it were really moved forward in an aggressive way with Australia and Japan to work with countries to help them develop the capacity to appropriately evaluate Chinese bids and Chinese initiatives, and then to offer alternatives that we cannot be there doing this.

But, Japan is a larger provider of infrastructure in Southeast Asia than China is. So there may be opportunities for Australia, Japan, and other countries to step in and do some of this infrastructure development as well, or, at the very least, if China is

going to do it to ensure that it is done in a way that is economically sustainable for these countries.

Senator SCHATZ. I will make two final points. Your point earlier with Senator Shaheen about the value of listening and treating a head of state like a head of state really applies to FSM, to the Marshalls, throughout Oceania.

And then one final sort of point of personal privilege, I just think this committee and U.S. Government officials should be extremely precise when describing the Government of China as opposed to the Chinese, because I think that, given what is happening in U.S. society to Chinese Americans and other Asian Americans, we owe everyone that kind of precision.

Thank you.

Dr. ECONOMY. Thank you.

The CHAIRMAN. Thank you, Senator Schatz, and a point well taken.

Senator Rounds.

Senator ROUNDS. Thank you, Mr. Chairman.

Let me just begin by telling you that I very seldom find one of these committee hearings where all of the individuals involved in providing testimony seem to agree on a particular item, and in this particular case, we hear all of our separate members here in front of us all talking about the very serious challenges that we have regarding the People's Republic of China.

And I look back at the time in which I served as the chairman and now the ranking member of the Armed Services Subcommittee on Cybersecurity and the impact that China has on the way that we look at the international norms, and in particular, thinking—the numbers that we most recently heard about what China has done across the globe—intellectual property, the theft of over $600 billion in international property or intellectual properties, their lack of respect for copyrights, lack of respect for patents, their interest in not just espionage but in theft through cyber activity—all seems to point to a difference in norms between what most of the rest of the normalized international society accept as being good for all of our countries versus what this particular Government believes is the right way to react with other governments.

I would like to just work our way through. Should we be involved and do you think it is worthwhile to discuss with the Government of China what the appropriate norms are and in the establishment of norms with regard to cyber activity, just as an example?

Look, I mean, it used to be we talked about air, land, and sea. Now we have got cyberspace and we have got space, and in both cases we have an outlier with China in terms of their apparent lack of regard for what most of us thought were norms.

I would like to just get on the line with each of you and just briefly share with us what you think the possibilities are of actually having a good dialogue, and what the benefits to them would be for having that dialogue with us and what we can do if they decide not to.

Dr. Economy, would you like to begin and just, briefly, your thoughts.

Dr. ECONOMY. So, briefly, I think the Chinese very well understand what appropriate norms are. We had a cyber agreement with

them. I think it was signed in 2015 under the Obama administration. There seemed to be a dip in cyber attacks.

But then later people said it was simply because the cyber attacks were more sophisticated and we just were not picking up on them at the same rate.

So I do not think there is an issue where China does not understand what it means to protect intellectual property or does not understand what they are doing with their cyber economic espionage.

And I am afraid that there is not much point in norm discussions, but there probably is some point in working with allies to bring pressure to bear upon them in some way.

Senator ROUNDS. Thank you.

Mr. Shugart?

Mr. SHUGART. I, largely, agree with Dr. Economy there.

We know that Chinese cyber activity has been quite deleterious to the military balance in the Pacific. There are numerous examples of Chinese platforms of weapon systems and sensors that are very closely modeled on what we have developed.

It explains, to some extent, the ability that is sometimes people will ask, how is it that when we spend so much more than them that they are able to become so threatening in the region, and part of it is because they are able to have a second-mover advantage in terms of the costs associated with it.

That does not mean they are not innovative in their own ways. But, certainly, the cyber angle has helped them out a lot. I agree that they know what the right answer is, from our perspective and I do not see them changing anytime soon just because we ask them about it.

Senator ROUNDS. Mr. Khan, a comment?

Mr. KHAN. I do think we have to continue to harp on our values, say what they are. But at the end the day, we have to respond effectively to Chinese attempts at technology transfer, and there are a lot of changes we can potentially make to better combat that.

One is just better applying export controls and investment screening measures more multilaterally and in a more targeted way. We also just do not know enough about China's technology transfer infrastructure as well as their emerging technology developments.

And so we, ideally, need a stronger base of open source intelligence, just tracking all of those developments so we know what to fight against.

And, finally, I think we need a better whole of society approach on research security. Some of my colleagues at Georgetown have talked about creating public-private partnerships that bring Government, industry, and academia together to create best practices for how to combat tech transfer.

I think we have to take an approach to respond to China's technology transfer. I think just stating our norms is not going to be enough.

Senator ROUNDS. Thank you.

Mr. Chairman, my time is expired. Thank you.

The CHAIRMAN. Thank you, Senator Rounds.

Senator Cardin.

Senator CARDIN. Thank you, Mr. Chairman, and let me thank all of our witnesses. This is, certainly, a critically important subject when we talk about strategic competition with China.

So I want to talk about where China is out of norm, and that is in good governance issues, and there are so many areas that we could talk about—the way they treat the Muslim minority, the Uighurs, what they have done with the people of Hong Kong and the commitment that they made in regards to the system that would be used in Hong Kong.

And we have taken action. Congress has passed legislation to impose certain sanctions against China as a result of these behaviors. The administrations, the Trump administration, the Biden administration, have all taken and considered action against China as a result of their violations of human rights.

My question is, there is still a lot of space left on which we can impose sanctions against China, including trade sanctions.

It would certainly be much stronger if we worked with our allies in a common strategy. I would like to get your view as to what has worked, what more can be done, and what allies are going to be critically important for us to have working in unison with us to make it clear to China that there will be consequences if they continue the oppression in Hong Kong and the way that they treat their own citizens?

Dr. ECONOMY. What allies would be critical to work with if we were to impose more sanctions on China? Germany, certainly, they are a huge exporter to China. Japan—I think we can go down the line.

But I have to say, unfortunately, that I believe when it comes to issues that China considers core sovereignty issues like Xinjiang, and like Hong Kong—I am not certain that any amount of economic sanction is going to bring about change.

I think, instead, China will continue to hunker down and assert its sovereignty. So I am not saying we should not do it. I am just saying I do not anticipate that it is going to engender the desired result.

Senator CARDIN. Let me just respond to your point, and I recognize that and you mentioned Germany. We lost an opportunity in the Trans-Pacific Partnership to be in unity with the Asian countries and Pacific countries in a policy that could have isolated China's influence on the trade front.

Germany, of course, is very much in tune with the EU. So working with the European Union would, certainly, be critically important. So if we can deal with the Pacific nations and we can deal with Europe and isolate China economically for these types of behaviors, it seems to me that our sanction policy would be more effective.

I recognize that China will never acknowledge their justification of sovereignty, even though it is no justification for violating their international commitments on Hong Kong, the way they treat their own citizens.

But my point is that we are not going to give up. President Biden has made it clear that our foreign policy is going to be wrapped in our values.

My question is, how can we be more effective at changing behavior in China, and to me, perhaps reengaging the Pacific nations on trade, perhaps dealing with Europe on specific sanctions related to Hong Kong?

I welcome your additional thoughts, any member of the panel that may have thoughts on that.

Dr. ECONOMY. Let me just offer one quick additional thought and that is, it is fairly easy when it comes—for China when it comes to the United States sanctioning China or even, I would say, United States and its closest allies for China to say it is just United States trying to contain China. That is why it is doing this, right.

What would be more helpful would be if we could engage a broader swath of the developing economies to stand up. As I mentioned earlier, those are the countries that come to China's defense in the United Nations around things like Xinjiang and Hong Kong.

Those are the countries that we need to get to our side. I think once China feels as though it has, you know, nowhere, has no support, I think that is when we are going to begin to—that is when China will begin to feel the heat.

And I will just quickly note that from 2019 to 2020 there were two different resolutions brought before the United Nations on Xinjiang. The Central Asian nations dropped off their support for China from the first to the second.

So it is possible to peel them away. They did not sign up to criticize China but they did not support China. So I think we need to do more work in that arena.

Senator CARDIN. Very good points. I would also recognize my colleagues' talk about the Belt and Road Initiative. Very much we have to diminish China's influence that they are trying to buy in otherwise democratic free countries that influence their judgment in joining us in isolating China because of their human rights violations.

I think putting together that entire package it can be much more effective in bringing about change in China's governance activities.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Cardin. We love your green tie. You are followed by someone who has an even deeper green tie, Senator Romney.

Senator ROMNEY. Thank you, Mr. Chairman.

Dr. Economy, as I have listened to the three people testifying this morning, I am struck by the massive investment China is making around the world, an investment and propaganda, investment in sending students around the world.

Of course, the Belt and Road, making loans all throughout Latin America, through Africa, to the Middle East. The number in Iran was massive.

How are they financing all this? How do they afford it? Where is the money coming from? Because we are not providing anywhere near the kind of investment around the world that they are. And yet, we are the larger economy in the world. How is it they are able to afford all of these massive investments?

Dr. ECONOMY. First, a lot of the Belt and Road investment is not actually investment loans, and I think that is important to remem-

ber that they are lending the money to these countries and then they are using—these countries are often using Chinese construction firms, Chinese equipment, and so—or they are getting paid back through resources.

So it is one big cycle of Chinese money going through and leading back to China, and they are able to do that because they have such low-cost labor, they underbid, and they subsidize.

So, you know, I think they have put a priority on this is also how they are able to do it, and we have not put a priority on this.

I mean, it is also less expensive, frankly, to, host a student in China than it is to host a student in the United States.

So I think there are a number of ways, but I think, fundamentally, what it speaks to is Xi Jinping's belief that this kind of outreach is going to pay off over the long term, and that it is bent on, especially in the technology field with the Digital Silk Road.

China is going to, basically, provide the technological infrastructure for the 21st century. It is a long-term investment in play.

Senator ROMNEY. But as they loan money to a foreign country to build a port or to build whatever—the country is going to pay them back in the future, but in the current, they are actually spending the money to pay people to go to that country to build the port and so forth.

So there is a lot of money coming in. A lot of that money is coming from the U.S. and we have pension funds and others that are investing in China. So I think we need to think of that.

Just another question I will ask you, Dr. Economy, or the other members of the panel as well, which it is very clear that China has an extraordinarily comprehensive strategy to dominate the region, and I would suggest once they feel they have dominated the region they intend to dominate the world.

And, I mean, their strategy includes their military, their competitiveness economically, their propaganda efforts, the management of their own people, their monitoring of their own people, their geopolitical strategy with Belt and Road, the technology transfer.

It is an unbelievably comprehensive strategy. There is no way that a bunch of men and women in Congress are going to come up with a strategy to confront that. We are being outcompeted in a dramatic way on the world stage, and we are not equipped, as a group of folks that are a little long of tooth, to come up with some that is so comprehensive that we are going to push back in a positive way and assert our leadership in the world.

And so I wonder, what do we do? How would you suggest that we develop the kind of comprehensive approach and the decisions on where to invest money and how much to invest to counter what China is doing around the world? Because at this stage, we are highly reactive and, frankly, for the last decade or so we are losing pretty badly.

Dr. ECONOMY. So I am going to make one quick point and then, please, everybody else jump in, and that is; we have to have our own vision.

We have to have our own vision for what the United States, its place, is going to be in the world and for what the world is going to look like in 2049, and then we have to structure down from that.

And then we have to work with our allies to realize that vision, because I think you are right. Otherwise, we end up simply responding to the thousand different initiatives that China is putting forth.

And so even to say about strategic competition against China, really, it should be about, you know, what does the United States want this world to look like in 2050 and how are we going to get there. I think that is how we have to approach this.

Senator ROMNEY. Thank you.

The other members, happy to have you comment.

Mr. SHUGART. So I think—sorry, Mr. Khan. Go ahead, please.

Mr. KHAN. Within the technology domain, I think China still recognizes that with respect to certain high-end technology supply chains, semiconductors being one of them, they are actually still relatively dependent on the United States and allies.

That might not remain the case in the years ahead. But they are investing quite heavily to, hopefully, gain technology independence in some of those domains. They are trying to localize supply chains.

And so whatever we can do in our technology strategy to maintain that leverage that we have now will have huge geopolitical and strategic relevance in the years ahead.

Senator ROMNEY. Thank you.

Mr. SHUGART. And from the military perspective, I think that it is definitely going to have to be a team effort. We are going to have to have an association of like-minded democracies and nations that are going to have to band together ever tighter in order to counteract Chinese military power in the region and further abroad.

I would point out that, from a military perspective, China is not really trying all that hard yet. I mean, outside estimates, not theirs. I never believe theirs. But outside estimates of their military spending is less than 2 percent of GDP.

So they are not really quite breaking a sweat yet, which means it is going to take greater involvement, contribution, both in terms of perspectives provided, strategies considered, and just shoulders put to the wheel to be able to succeed in the long run.

Senator ROMNEY. Thank you. My time is up.

The CHAIRMAN. Thank you.

Senator Murphy.

Senator MURPHY. Thank you very much, Mr. Chairman. This has been incredibly informative. A fantastic panel. Thanks for taking the time with us.

I want to build upon Senator Romney's questions regarding the scope of Chinese economic development efforts and just note that we have, essentially, voluntarily put one hand behind our back.

We have an International Development Finance Bank, one that is more nimble and more comprehensive today, thanks to efforts of Congress to establish the DFC. But its cap is around $60 billion, whereas the Chinese development bank's overall portfolio today is $1.3 trillion. And so if we do not start getting in the international economic development game, at the very least with the capacities that we have today, then there is absolutely no way to be able to meet China where they are.

And so I wanted to ask that question about whether the DFC is the proper entity to be able to compete internationally for develop-

ment finance projects, whether you think that we need some new special purpose vehicle, and then to ask about, you know, this question of how we can better integrate with our European partners.

There is no effective China strategy that does not involve very close cooperation with Europe, and these development financing projects can be much more effective if they are done jointly with European partners.

So I wanted to open up that line of questioning for the panel.

Dr. ECONOMY. Okay. So I will start, I guess. So I think the Development Finance Corporation was a terrific innovation. Some people have proposed that perhaps there should be another one that is explicitly devoted to technology so that the Development Finance Corporation can focus on the harder infrastructure and then we can have one that deals with technology infrastructure.

So we would need more investment. But obviously, you are right, we need to partner with Asian allies and European allies.

Europeans are concerned about China's inroads within Europe, in particular. They also have their own Asian connectivity strategy that they have talked about.

But my experience in dealing with the Europeans is that they have a less of a threat perception when it comes to China than our Asian partners, and so they are a little bit slower off the mark.

That does not mean that we should not continue to try to work with them. But I do think that they are not quite as invested in terms of pushing back against China.

They do not have the same degree of threat perception, I think, as the United States and our Asian partners. So I am all for cooperating with Europe.

I just think it will be more difficult than not with some of the major economies. U.K. may be an exception. But I think France and Britain, in particular, are a little bit dragging their heels.

Senator MURPHY. Let me follow up with a question about our diplomatic efforts. Last year was the first year that China had more diplomatic posts around the world than the United States did, and I have conveyed a few times during the committee's proceedings a story from a recent trip I took to Dublin at the exact moment that they were going through a tender for a 5G contract.

Our embassy there noted that the Chinese embassy had swelled in personnel that—not coincidental to this private sector contract tender. Chinese diplomats had all of a sudden shown up to make the case.

We have no capacity to do that nor do we, frankly, have any strategy that would involve integration of U.S. diplomats with private sector contracts in any meaningful way.

A group of us yesterday proposed a pretty dramatic increase in just the size of the U.S. diplomatic corps, in part to be more nimble in order to support private sector efforts to compete with China around the world.

What do you make of China's investment in diplomacy posts and is it necessary for us to keep up?

Dr. ECONOMY. Absolutely, and again, it speaks to that sort of strategic and multi-level, multi-domain approach that I mentioned.

China basically grasps everybody and deploys them toward a single objective, as you point out.

So their embassy people become involved in pushing for Huawei. They will fund universities to do studies on the Belt and Road and provide students to—on the Digital Silk Road provide scholarships for students to come back for the best essays to talk about why it works.

You are right, we are not going to compete. But I will say I did research in Greece, and I will say that the American ambassador there, he blogs. They hosted the American Pavilion. It was the year of the United States when he was there.

He brought American companies like Google and others and they did sort of incubator things and innovation workshops. And everywhere I went in Greece people talked about how effective that diplomacy was.

Secretary Pompeo visited once, if not twice. The head of the Development Finance Corporation went to Greece and all of a sudden Greece, which had to pilot projects on Huawei underway, now is not going to use Huawei in its 5G infrastructure, moving forward.

So I think it is enormously important to have a strong diplomatic presence that is capable of understanding what is happening on the ground and to bring in the firepower from Washington when needed and also from the private sector.

Senator MURPHY. It is a good reminder that diplomacy is both about quantity and quality. Ambassador Pyatt is truly exceptional and we can learn from his efforts in Greece.

Thank you for your time. Appreciate it.

The CHAIRMAN. Thank you.

Senator Young.

Senator YOUNG. Well, thank you, Mr. Chairman, Ranking Member, and I thank our witnesses very much.

Mr. Khan, you highlighted in your testimony the ways in which China is pulling ahead in this technological competition with the United States and that it is critically important for us to take action to keep up.

I wholeheartedly agree with this concern. I believe that we need to recognize that in order to compete with China we must not ignore America's unprecedented capacity for innovation.

We have done this successfully in the past, of course, as a country, most notably during the Cold War. In the 20th century, the United States led the world with investments in science and technology and infrastructure that would highlight the crucial role of the Federal Government in catalyzing innovation in national defense, economic security, and American prosperity.

The Apollo program may be one of the greatest examples. In response to Sputnik, the Federal Government spent $140 billion in today's dollars to land a man on the moon and to win the space race.

The success of NASA would lead to spinoffs and hundreds of new products, new industries, and American leadership in aerospace itself. By 2018, U.S. dominance in this aerospace sector contributed $2.3 trillion in GDP to the U.S. economy, including $143 billion dollars in exports annually, more than the entire investment to put a man on the moon over a decade.

I believe we are staring at another Sputnik moment, only this time with China's investments in research into emerging technologies, technologies that have the power to dramatically reshape our world, especially if they are developed by the authoritarian regime in Beijing.

This is why I am working on bipartisan legislation, the Endless Frontier Act, to confront this challenge head on, invest in R&D, and keep America in our leadership position, in short.

The bill focuses a $100 billion investment in research and development over 5 years on 10 key emerging technologies, including the two you highlighted in your testimony, artificial intelligence and semiconductors.

Recognizing and embracing the global challenge that China presents, these funds would be used to crowd in the expertise of both U.S. private industry and also crowd in the expertise and capital of our global partners and allies.

I would note that the model I favor to scale up proven technologies would be the very DFC like structure just endorsed by Dr. Economy. I believe the time is right to get this done, and I look forward to the Senate considering this issue in coming weeks.

Mr. Khan, what are the risks to the United States if we are not successful in this competition over technology with China?

Mr. KHAN. Senator, first, I would just like to note that I agree wholeheartedly with your characterization of China's challenge to U.S. technology leadership as really a Sputnik moment.

We really should be increasing R&D at the federal level quite substantially. You look at the numbers over the last few decades, and the percentage of GDP we are spending on R&D has continually declined and it is really now the time that we should be looking to stabilize that and perhaps increase it.

The Federal Government has a unique role in funding precompetitive breakthrough research that industry is not always well placed to consider, and if we do not do this traditional technology paradigms are going to slow down.

People talk about that in semiconductors, Moore's law, which is this observed law of progress with computer chips. Without basic investments, we probably are going to start seeing slow progress, and in a time of slow progress that means competitors can catch up, and China in particular.

If technology leadership is going to be a key piece of overall strategic relevance in the long term, then we have to keep investing and running faster than China in order to maintain that leadership, and at the same time, we do have to work with allies, given the scale of these challenges.

Senator YOUNG. So, Mr. Khan, I am grateful for the response. Let me just follow up on a thread there. You talked about the importance of federal investment. I would expand that, paired with whatever monies we can get from the private sector as well as partner and allied countries and so forth.

Why cannot the market alone take care of this? Is it because, and I will volunteer to you my understanding of it. It is because venture capital, venture capital, will not invest in technologies that are not entirely proven or do not have a strong record of being proven.

It is too speculative, and the time horizon for a return on investment is too long and the spillover benefits that are realized in terms of national security and in our collective benefits are not—would not be captured in terms of the return on investment for venture capital. So that initial investment would not be possible.

And then as it relates to scaling, which is where the real money is, ultimately required, you need a DFC like structure or some other federal construct to help scale proven technologies because private equity does not do this. Private equity, instead, they identify existing proven business models and they go in, as Mitt Romney can tell you—he has worked in this space—and they prove they will optimize existing models and squeeze more value out of them.

So is it that reason or are there other reasons why federal investment, premarket, in technologies as opposed to just hard science are required here?

Mr. KHAN. Senator, I think you are absolutely right to point out time horizons as a big piece of the issue, also spillovers as well.

I think in mature industry areas it is also easier for the industry to set a target in a known paradigm.

But when you are talking about the next technology paradigm, there could be 20 different things that are going to be important, and industry is not always going to be focused on that. In fact, that technology could disrupt existing industries. So that is a big risk.

A few decades ago in America it was the time of the dominance of the corporate research lab, which had a similar place where they were able to have very long time horizons.

But right now, that model is less common in industry, and I do think the Federal Government can fill that role of long-term investments that prioritize wide spillovers to the broader economy.

Senator YOUNG. I am over my time. I apologize, Chairman. Thank you so much to all our witnesses.

The CHAIRMAN. Thank you.

Senator Van Hollen.

[No response.]

The CHAIRMAN. Senator Van Hollen, I believe you are muted.

Senator VAN HOLLEN. Thank you, Mr. Chairman and Ranking Member. Great hearing. I want to thank all the witnesses testifying today.

I do believe we have a dangerous misalignment between the nature of our foreign policy challenges today and our current strategy and resources for meeting them, and I was pleased to join with Senator Murphy and some of our House colleagues yesterday in proposing changes to our foreign affairs budget, including significantly increasing the DFC, which has been mentioned, but also providing more of a diplomatic search to counter China's global initiatives to export their model and also meet other foreign policy challenges.

I do want to salute the Biden administration for their action today in sanctioning 24 officials from China and Hong Kong for their crackdown on democracy and human rights in Hong Kong, based on a bipartisan bill Congress passed last year.

But I agree with Dr. Economy that those measures are much more effective if taken in concert with a multiplier effect with our allies and partners around the world.

That is true whether you are talking about human rights or the other major challenges before us. I agree with Senator Young and others who have said we need a major sort of Apollo program when it comes to our investment in these cutting-edge technologies, given China's very expressly stated goals around the China 2025 agenda.

So, Dr. Economy, there have been lots of talk about how we need to work with our democratic partners and allies around the world in terms of organizing some kind of strategy to counter China's moves around the world to export its model to leverage some of its unfair economic practices.

There has been talk of techno democracies versus techno autocracies. Many different lenses through which we could view this.

Here is my question. I am trying to boil down these concepts into specific actions. So if you were the secretary of state right now and you were sitting down with the heads of state of our partners and allies around the world, what specific actions would you say we should take today, as specific as you can, in laying out a strategy to bring democracies together to counter some of China's actions? And thank you for all your good work in this area over many years.

Dr. ECONOMY. So thank you, Senator Van Hollen.

I think approach to China has to happen at two levels. One is the defensive strategy and one is the offensive strategy, and the defensive one is looking across each one of those domains that I mentioned from China's reunification strategy to the Asia Pacific region, out to the Belt and Road and up into global governance institutions.

So it matters that we coordinate policy in each one of those areas. For example, in global governance institutions, you know, we need to coordinate, for example, in the OECD to develop consensus candidates to head U.N. agencies and programs.

We need to work together to flood expert committees in the technical standards areas where China has been doing that and taking control of these committees.

So in each one of those domains, we need to have a coordinated strategy to push back when we can identify those Chinese policies and push back against them.

Beyond that, I will go back to my last recommendation, which is we need a coordinated effort to bring a vision that is rooted in democratic values that addresses the kinds of issues that the Biden administration has laid out—corruption, the cyber and climate—through into the developing world.

It cannot be all about just the allies and our partners. We need to engage the rest of the world, and how do we get buy-in from those countries into the liberal international order into the vision, you know, that we believe sustains the rules-based order.

And so for me, the biggest and most important thing that the United States and its allies can do is to think through a comprehensive initiative, again, rooted in our values and our partnerships that brings together the economic development needs of the rest of the world in a sustainable way and brings innovation to these economies.

I think that is the way that we actually counter China.

Senator VAN HOLLEN. I appreciate that. I see my time is already out. So I will just follow up with the other witnesses separately. But thank you all very much for your good guidance and counsel.

The CHAIRMAN. Thank you.

Senator Hagerty.

[No response.]

The CHAIRMAN. Senator Hagerty, I believe you are muted.

Senator HAGERTY. Thank you, Senator Menendez, Ranking Member Risch. I appreciate this very informative hearing that you have organized and I want to thank all of our witnesses as well.

I would like to turn our discussion to an area where we've had tremendous progress, frankly, since 2004, and I put a lot of effort on my own behalf into this area, and that is our cooperation in the countries known as the Quad—our allies Japan, India, and Australia.

This cooperation, I think, can have a great impact on our relationship with China. We have seen great progress, particularly accelerating over the past several years, and I am very pleased to see the Biden administration continue a focus on the Quad.

In fact, there was a leaders meeting that took place just this past Friday between our President and his counterparts in Japan, Australia, and India.

I would like to open a question to the group. Given our progress to date, what new milestones can you offer for cooperation with our Quad partners? And the second part of the question is whether there might be other nations that we should include in this cooperative effort?

[No response.]

Senator HAGERTY. I will first ask Dr. Economy.

Dr. ECONOMY. I wanted to give somebody else a chance to start off.

Senator HAGERTY. I keep picking on you, Elizabeth. I am sorry.

Dr. ECONOMY. No, no, it is okay.

I mean, let me take the second part of your question first, and that is are there other nations. I think there are a lot of opportunities to engage other countries one by one, with the Quad, and I also think the general secretary of NATO has expressed a lot of interest in expanding cooperation in the Asia Pacific on cyber issues, on space issues. So I could see some partnership between the Quad and NATO developing in the future.

In terms of the issues that the Quad should look at moving forward, I think that, basically, what we are hoping for is that the Quad is going to become the foundation for the entire Asia Pacific region in terms of maintaining freedom of navigation and free trade and better human rights and governance practices.

So I think initiatives that reflect those basic principles are what we would want to see. And I could offer some suggestions but I want to give some time to other people who have some concrete ideas.

Senator HAGERTY. Please. Thank you.

Mr. SHUGART. So from a military perspective, the ever-closer Quad engagement is very good to see. I am a former naval officer so I tend to see things perhaps from a maritime perspective, but it seems like the greatest challenge we are going to see worldwide

is, to a pretty large extent, going to be a maritime one. That as China, somewhat understandably, tries to develop the ability to secure their sea lines of communication against—in the case of a military conflict, that is going to result in development like we have not seen in quite some time, and all the Quad nations are maritime nations.

But I think keeping moving along those lines of like-minded nations who are interested in free trade and open economic development, because we have to remember that in the world as we know it the worldwide global commons has been in the caring hands of either us or, prior to us, the Royal Navy for the previous several hundred years.

We have not seen a time period where we have allowed an authoritarian-collectively that is, have allowed an authoritarian nation like China to gain control of the global commons.

So any nation that is interested in making sure that does not happen should be somebody who it would be helpful to have on board and achieve ever closer collaboration.

Thank you.

Mr. KHAN. I would just like to add from the perspective of technology diplomacy, it is critical to partner with the key high-technology producing nations in the region.

That includes Korea and Singapore at a minimum, but we also have to be working with many of the emerging economies in Southeast Asia who are going to become increasingly important for technology supply chains in the future.

Senator HAGERTY. I appreciate that suggestion, Mr. Khan, and I must add that the U.S. has a tremendous military presence, a tremendous maritime presence, in the region. And I also concur that we need to continue to cooperate with the other maritime nations in the area but look for ways to cooperate and partner with other nations.

And I particularly appreciate the direction you are taking us, Mr. Khan, in terms of finding ways to advance our technological cooperation.

Thank you very much.

The CHAIRMAN. Thank you.

Senator Markey.

Senator MARKEY. Thank you, Mr. Chairman, very much. Senator Cory Gardner and I introduced the landmark Asia Reassurance Initiative Act, which was passed into law in 2018 and has since provided $2.5 billion per year towards initiatives in the areas of security, economic development, human rights, and fighting corruption in the Indo-Pacific.

These investments are meant to cement the United States place in the Indo-Pacific, allowing us to work with our regional allies and partners to compete effectively with China and advance the mission of a free and open Indo-Pacific region.

Dr. Economy, how do investments such as those implemented through ARIA move the ball forward in terms of combating China's influence in the Indo-Pacific?

Dr. ECONOMY. I think they are critical. I sit on the board of the Asia Foundation, for example, and so the type of grassroots effort to cement the rule of law to help develop innovative ways for coun-

tries to develop their export capabilities, women's empowerment issues—I think all of these things are essential.

Personally, what I think is missing from this is some form of a branding initiative, and I worry sometimes that we in the United States do a lot in terms of capacity building, which is essential.

And yet, somehow it gets diluted and there is not the same sense of everything that the United States is bringing to the table, and even with our allies as the Belt and Road Initiative.

And so, to some extent, I think what we really need to do is to have a comprehensive initiative, with a name attached to it that sort of lays out very clearly for countries this is what the United States is bringing to the table. In a very sort of five points, this is our effort.

So I think it is terrific. But I think we are missing an opportunity in terms of actually selling the United States in some of these countries.

Senator MARKEY. Thank you.

Senator Gardner and I thought that Asia Reassurance Initiative was a good headline. But you are right, maybe they need to—thank you—we have to do a better job. I agree with you.

May I also ask you, Dr. Economy, how do we balance these interests? We need China on climate change, on nuclear nonproliferation. But at the same time, they are engaging in activities against the Uighurs, and in Hong Kong that are absolutely reprehensible.

So how do we balance those interests? Because, clearly, we need them on climate change, for example.

Dr. ECONOMY. We need them. But, it is in their own interest to respond to climate change. So I am firmly in the camp that says we should not be trading out any issues of importance to us to try to garner Chinese support on climate change.

Xi Jinping has established himself, ostensibly, as the leader on the global stage on climate change. I think that gives us leverage to hold him to account. That does not mean we should not take advantage of opportunities to partner with China on climate change.

When they emerge, we can help them make a more robust emissions trading system. We can model best behavior by setting out our benchmarks for how we are going to achieve carbon neutrality by 2050.

We can push them to green the Belt and Road Initiative. There is a lot that we can do. But one thing I do not ever want to see us do is trade out other priorities to get them on board.

Senator MARKEY. No, and I agree with you. I agree with you. But it is a delicate balance we have to strike. I agree with you.

And finally, Mr. Khan, on green infrastructure, China is now manufacturing 95 percent of solar panels. What should the United States be doing in that one specific area of green energy in order for us to be competitive globally?

Mr. KHAN. Senator, I have not investigated that issue in much detail, but I absolutely think that should be an area that we are heavily investing in as well.

Senator MARKEY. Okay, great.

Dr. Economy, have you looked at that, the green energy gap that has been created in terms of production coming out of China?

Dr. ECONOMY. Right. China, beginning in 1992, started to encourage foreign firms to invest in China as a condition of their access to Chinese market. They had to set up manufacturing plants in China and slowly over that time it has captured the wind and solar markets.

There are other green technologies where I think we can still be leaders. There is smart green technologies, et cetera. We have battery production.

We need—there are areas that we—look, we have to set out the objectives, allow for some support for these——

Senator MARKEY. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

I see no other colleagues that have booked on, and unless someone is on and has not shown their video and recognizing that there is a vote underway, with the thanks of the committee to an incredible panel.

We have different dimensions here that we have explored. We appreciate your insights. The record for this hearing shall continue until the close of business tomorrow for questions to be asked for the record.

And with the thanks of the committee, this hearing is adjourned.

[Whereupon, at 11:50 a.m., the committee was adjourned.]

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