
5G Dynamic Briefing

Generated 14 September 2020 for Jose Rios



Executive summary

The fast, intelligent internet connectivity enabled by 5G technology is expected to create about \$12 trillion in global economic value within the next two decades. In order to make that happen, however, trillions will first have to be invested in the rollout of global 5G networks (which may be delayed in some cases due to COVID-19). Greater cooperation is needed to foster deployment; when used to power the Internet of Things, artificial intelligence, and big data, 5G can deliver significant social value. One study indicated that it will support hundreds of thousands of jobs in Switzerland (population 8.5 million) alone. While several countries have initiated roadmaps for 5G rollout, others are falling behind - partly due to the lack of alignment among policy-makers, regulators and the private sector.

1. The Regulatory Environment for 5G

Operators are wary of regulatory roadblocks related to spectrum auctions and rollout.

2. 5G Spectrum and Network Needs

In order for 5G to realize its potential, a wide variety of airwaves will have to be put to work.

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As more things around us are connected to the internet at high speeds, security risks will proliferate.

4. The Return on 5G Investment

Rolling out the technology worldwide will require trillions of dollars in infrastructure spending.

5. 5G Business Model Transformation

The technology is a critical enabler of driverless cars, efficient factories and smarter power use.

6. The Geo-economic and Trade Impacts of 5G

The technology is fuelling geo-economic one-upmanship, though COVID-19 threatens to delay rollouts.

7. 5G Value Creation

The technology could spur trillions of dollars in new investment and benefit a number of industries.

The Regulatory Environment for 5G

Operators are wary of regulatory roadblocks related to spectrum auctions and rollout

A number of countries are trying to influence the regulatory environment for 5G in their respective regions of the world. Japan and China, for example, have focused their efforts on spectrum bands that can potentially ensure compatibility with the US and South Korea, while the European Union has decided to pursue frequencies between 24.25 GHz and 27.5 GHz as a pioneer 5G band. Regulators and governments may want 5G to succeed, but their interpretations of what constitutes network neutrality vary, according to a report published by PwC in 2019; governments in general will have to appreciate that 5G requires a novel regulatory approach. Operators should engage with regulators by putting forward real-world use cases and pressing for incentives that will justify their 5G-related investments, according to the report. According to the results of a survey published by McKinsey & Company in 2019, nearly a quarter of participating telecom operators flagged regulation as a key stumbling block for 5G rollouts. High on their lists of concerns: spectrum auctions and rollout obligations (Europe, for example, has taken a relatively slow approach to auctioning the millimetre-wave spectrum deemed necessary for very high data rates).

With the advent of 5G rollouts around the world, there is an urgent need to strengthen laws related to the testing of new 5G use cases, to closely assess potential social impacts including those related to health and equal access, to bolster related consumer and personal data protection, and to clarify rules for cross-border data monetization and taxation. The use of 5G for things like autonomous mobility, and flying drones in particular, will require dealing with national authorities including federal ministries on matters like air traffic control and road safety department, and with international agencies like the International Telecommunication Union on issues like harmonizing frequencies. The commercial introduction of autonomous vehicles will require timely software upgrades, for example, in order to ensure error-free operations in tandem with changing infrastructure. National regulators and policy-makers have a critical role to play in fostering potential 5G-related benefits for their economies, by focusing on prompt and adequate spectrum allocation for testbeds, the proper incentives for investing in strong networks, and the crafting of helpful data and monetization policies.

Related insight areas: [Internet Governance](#), [Sustainable Development](#), [Digital Identity](#), [Global Governance](#), [Digital Communications](#), [Civic Participation](#), [Public Finance and Social Protection](#), [Justice and Law](#), [Future of Economic Progress](#), [Inclusive Design](#), [Agile Governance](#)



Royal United Services Institute (RUSI)
More Than Just Business: The Political Context of the UK–China Commercial Relationship

11 September 2020

As the UK formulates its post-Brexit relationship with China, one key policy question is how to develop the bilateral commercial relationship most effectively. This requires not just an understanding of the business opportunities, but also of the political and foreign policy backdrop to UK–China relations. Download the Article (PDF) In our first article , we reviewed the nature of the contemporary UK–China commercial relationship and its potential for growth. We also observed that business with China is ‘just business’, until, suddenly, it is not. ‘Business as usual’ becomes ‘business unusual’. This second article considers how non-economic factors influence the commercial relationship, and explores whether this creates dependence or interdependence and how the UK is responding.



VoxEU
Globalisation and the COVID-19 pandemic

16 August 2020

Unlike previous infectious diseases, which tended to be connected to poor environments, the epicentres of the COVID-19 pandemic have been the wealthiest metropolises of industrialised countries. This column argues that the population concentration in large cities has provoked an even more intensive agglomeration of social and economic activities in high-interaction environments, driving urban development but also fostering conditions for the spread of COVID-19. Globalisation further promoted concentration, migration, and inequality, which might hamper the restructuring of the post-pandemic global economy if effective international coordination and a multi-core international regime that values diversity and competition in creative endeavours continue to be threatened.



The Conversation
How China lost central and eastern Europe

27 July 2020

Bulgaria became the most recent country from central and eastern Europe (CEE) to show hostility toward China. In the latest sign of relations souring between the region and the Asian superpower, Bulgaria’s prime minister, Boiko Borissov, claimed that a series of compromising pictures, appearing to show him sleeping with a gun and wads of cash by his bedside, were acquired by his opponents with a drone supplied by the Chinese government. This was the same Borissov who had hosted a China-CEE summit 2018 in Sofia despite persistent EU pressure not to do so. Bulgaria is not the only country in the region to have qualms about China. In the Czech Republic, Prague city council ended its sister-city relationship with Beijing in October 2019 in favour of a partnership with Taipei.



Project Syndicate
China’s Deepening Geopolitical Hole

16 July 2020

The UK’s decision to ban Huawei from its 5G networks is only the latest diplomatic setback for China. So, as China’s leaders ponder how to respond, they should heed the first rule of holes: when you are in one, stop digging.



Asia Global Institute
The India-China Conflict: Covid-19 and the China-Pakistan Economic Corridor

08 July 2020

China is upsetting the balance of power in South Asia to further its own economic and political interests. There is a grave danger of further armed conflict, and even a war, argues 2018 AsiaGlobal Fellow Amit Wanchoo, Founder Chairman of the HN Wanchoo Trust in Srinagar, Jammu and Kashmir, India. To preserve peace and prosperity, India, China and Pakistan need to move from confrontation in the Himalayas to cooperation around the negotiating table.

5G Spectrum and Network Needs

In order for 5G to realize its potential, a wide variety of airwaves will have to be put to work

Spectrum is the necessary oil for 5G networks, and a swift rollout will require that this oil is allocated efficiently to network operators. As private companies bulk up on necessary licensed and unlicensed spectrum, there is a need for regulators to zero in on the best ways to put it all to work. 5G requires relatively dense networks in order to meet coverage and capacity objectives; that means that most operators are taking a phased approach to network deployment, beginning with “non-standalone” architecture (using 5G cells with legacy equipment) before transitioning to a standalone model. While automation could make 5G networks more efficient and agile, the mobile industry has made clear that a significant amount of new, harmonized mobile spectrum across key frequency ranges is needed - in order to avoid interference, and deliver faster speeds and broader coverage. Some of the potential scenarios for widescale use include public 5G networks, private and unlicensed 5G spectrum, network slicing of 5G spectrum, and privately-licensed 5G spectrum. Future networks will rely on a combination of mainstream and alternative technologies in order to make the best use of both licensed and unlicensed spectrum, across different bands.

GSMA, a trade organization for mobile operators, has said the success of 5G is dependent on harmonizing mobile spectrum across three different frequency bands: both sub-1 GHz and between 1 and 6 GHz for coverage and capacity, and above 6GHz for very high data rates. These different bands will be necessary to address challenges related to dense urban areas and larger, more sparse regions. This will require 5G devices that support the different bands - initially sub-6GHz, and later on so-called millimetre wave spectrum found on the highest bands (which will be necessary to realize 5G’s true bandwidth potential). In addition to spectrum, fibre optic networks may play a significant role in the transition to 5G. However, it is expected that \$150 billion will have to be invested in necessary fibre infrastructure in the US alone. 5G fibre optic networks can complement wireless networks in way that provides a better internet experience than either could muster on its own. Clearly, more reinforcement is needed to support the race to 5G, which is already pushing existing 4G networks to new limits by integrating new technologies - including those related to millimetre wave spectrum - according to the IEEE.

Related insight areas: [Future of Computing](#), [Digital Communications](#), [Sustainable Development](#), [Internet Governance](#), [Public Finance and Social Protection](#), [Cities and Urbanization](#), [Agile Governance](#), [Infrastructure](#)

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The German Marshall Fund of the United States

Could a Digital New Deal Rewrite Tech Policy?

10 September 2020

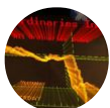
Karen Kornbluh, the director of the Digital Innovation and Democracy Initiative at the German Marshall Fund, joins Molly Wood on Marketplace Tech to discuss a digital New Deal, an initiative that aims to create more transparency around how tech companies operate.



Royal United Services Institute (RUSI)
How the UK Can Lead in 5G and 6G Security and Standards

14 August 2020

The UK has created one of the best tools for mitigating Huawei’s risks. Whether or not the UK Huawei ban stands, its Huawei Cyber Security Evaluation Centre should receive increased funding and support to protect and enhance its interests at home and abroad. Download the Article (PDF) The UK is well positioned to fill the 5G and 6G leadership vacuums which the US has largely abdicated to China via a combination of negligence and obstinance . Whether or not the UK continues to allow high-risk network vendors such as Huawei to operate within the UK, the UK can and should lead its partners in establishing an international body or bodies to better secure the future of 5G, 6G and the ‘Internet of Things’.



London School of Economics and Political Science

Looking beyond 5G: Why Europe is far from naïve when it comes to issues of strategic dependence

20 July 2020

The United States has advised countries in Europe to avoid using technology provided by the Chinese company Huawei in their 5G networks. Yet so far, these warnings have had a relatively limited impact on European governments. Vasileios Theodosopoulos argues that despite disagreements over 5G, the United States should not overlook the EU’s efforts elsewhere to develop supply chain security and [...].



London School of Economics and Political Science

Can ‘dodgy data’ explain the UK’s productivity problem?

14 July 2020

An article in The Economist recently suggested that the UK’s ‘productivity problem’ may be a product of the Office for National Statistics failing to estimate prices in the telecommunications industry accurately. Bob Hancké writes that this is unlikely to explain why UK productivity appears to lag behind countries like France and Germany. If the UK has failed to measure productivity [...].



Social Europe

Technological sovereignty – and a sepia-image Britain

30 June 2020

Paul Mason bemoans how ‘Brexit’ has left the UK a beached whale in a world in need of technological regulation driven by European values. I was on a public Zoom call last week with senior Conservative MPs who have decided to get tough on China. Until last year the default Tory position on China was ‘it’s a market, fill your boots’. The soul-searching started when it became clear that the UK was overdependent on Huawei’s 5G technology—and in 2020 the Covid-19 outbreak, the declaration of systemic rivalry between China and the United States and the Hong Kong crisis have each given it added impetus.



SpringerOpen

Conceptualisation of Cyberattack prediction with deep learning

17 June 2020

The state of the cyberspace portends uncertainty for the future Internet and its accelerated number of users. New paradigms add more concerns with big data collected through device sensors divulging large amou...

5G Security and Critical Infrastructure

As more things around us are connected to the internet at high speeds, security risks will proliferate

5G networks can potentially create many new connections across a variety of services that have previously operated in relative isolation. They are also likely to dramatically expand the universe of devices connected to the internet, moving well beyond just computers and phones. This promises to create unprecedented risks - which need to be considered carefully by a broader set of stakeholders than ever before. In addition to the relatively low latency and enhanced broadband quality enabled by 5G networks, enhanced security support is also critical. Providers of basic, fundamental services will increasingly come to rely on 5G mobile networks to run operations and provide access to customers - ranging from obvious candidates such as financial services, which is already providing a vast array of products via mobile networks and devices, to less-obvious candidates such as healthcare and transportation providers who may now be able to offer a greater number of interconnected services that rely on high-speed mobile networks. Both the actual and perceived end-to-end security of 5G-related infrastructure, devices, and services will be key factors for the people, companies and public institutions pondering moving to 5G.

Impending growth in the number of connected devices and a related proliferation of sensitive data demands comprehensive device- and cyber security measures. Results of a survey published by Gartner in late 2018 suggested that some two-thirds of all organizations had plans to deploy 5G by 2020 - mainly to power the Internet of Things and support video transmission. This makes it imperative that these organizations prepare for a fresh wave of cyber threats to be unleashed on an already-vulnerable environment. 5G infrastructure involves a lot of moving parts, from base stations to mobile backhaul (connecting different parts of a network), edge clouds (matching computing resources to high-traffic areas), and core networks, not to mention devices. According to an article published by the McKinsey Global Institute in 2015, the Internet of Things applications either in use or projected to be in use within a decade already had a potential \$11 trillion economic impact annually. Backed by 5G network technology, these applications should spur both increasing demand and better network security.

Related insight areas: [Internet of Things](#), [Geo-economics](#), [Healthcare Delivery](#), [Global Risks](#), [Digital Identity](#), [Digital Communications](#), [Supply Chain and Transport](#), [Banking and Capital Markets](#), [Infrastructure](#), [Cybersecurity](#), [International Security](#), [Financial and Monetary Systems](#)



World Economic Forum
Emerging technologies are reshaping financial services. Here's how
 10 September 2020

A new report from the World Economic Forum explores how emerging technology clusters are changing the financial services industry. Here are three examples.



International Institute for Strategic Studies
5G debate: security challenges still ahead
 14 August 2020

Is the country of origin of 5G components as critical for network security as we've been led to believe? And should governments or industry lead on the development of 5G standards? Greg Austin explores a series of reports that could reopen the 5G debate.



The Diplomat
The Global War for 5G Heats up
 31 July 2020

U.S. Secretary of State Mike Pompeo's claim that "the tide is turning against Huawei" seems to have been vindicated by several negative decisions in European countries regarding Huawei's involvement in their next-generation telecom networks. Most notably, the U.K. government changed its February decision allowing Huawei's participation as a "high-risk vendor" after a new security review. U.K. telecom operators are now required to stop buying new 5G equipment from Huawei by the end of 2020 and to remove such equipment from their networks by the end of 2027. Similarly, the new progress report on implementation of the European Union's "5G Toolbox" risk mitigation framework recommends that member-states establish plans to phase-out "high-risk suppliers."



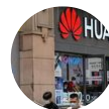
Royal United Services Institute (RUSI)
Huawei is No Way for British Strategy on China
 17 July 2020

It may be too early to predict China's reaction to the UK's decision to bar the Huawei telecommunications company from supplying equipment to the UK's 5G infrastructure. Beijing's bark may yet prove worse than its bite. However, the issue has highlighted a far bigger problem for the UK. London needs a more sophisticated debate, vision and plan for managing its relationship with China.



Harvard Kennedy School - Belfer Center for Science and International Affairs
Is COVID-19 a Game Changer for Transatlantic Narratives on China?
 30 June 2020

Four experts on both sides of the Atlantic give their perspectives on whether the pandemic has changed national understandings, narratives, and foreign policy debates on China. .



Carnegie Endowment for International Peace
Huawei's Courtship of Moscow Leaves West in the Cold
 21 June 2020

The British government's decision to launch a review of Huawei's activity in the UK is an indication that the US campaign to pressure its allies to shun China's biggest telecoms company is bearing fruit. Moreover, Downing Street is planning to forge an alliance of democracies with the mission of providing developing countries with alternatives to Huawei's market-leading 5G capability. Rather oddly, though, this western effort overlooks a key telecoms battleground: Russia. If Huawei succeeds in establishing control over Russia's 5G buildout, that will strengthen the Chinese company's position in the battle for other emerging markets.

The Return on 5G Investment

Rolling out the technology worldwide will require trillions of dollars in infrastructure spending

5G has the potential to contribute some \$2.2 trillion to the global economy in the next decade and a half, with the bulk of that registering in the manufacturing & utilities and professional & financial services sectors, according to GSMA (a trade organization for mobile operators). However, 5G rollouts will require intensive capital investment reaching as high as \$1 trillion worldwide by 2025. The practical impact of 5G has to be enormously significant in order to justify the building of ubiquitous and high-performing 5G network infrastructure (including base stations, mobile backhaul that connects different parts of a network, cloud-computing resources, the core networks themselves, and “end devices” that can include anything from phones and tablets to internet-connected cars). Key challenges for the further development of 5G infrastructure include the limited capacity and availability of fibre backhaul, the cost of deploying fibre across long distances, tapping new funding models for this deployment (and new ownership models), obtaining local permits, and dealing with the fallout of studies on the health impacts of 5G - in Switzerland, for example, the government has sought to assuage public concerns about the health impact of 5G emissions.

National authorities can limit the ability of cities to regulate local 5G infrastructure, establish tight deadlines for the approval of equipment installation, or cap the fees for rights of way to access areas to build infrastructure. In terms of hardware, the range of potential 5G devices goes well beyond the smartphones, tablets and modems that underpinned previous generations of mobile networks. 5G devices will not only need to support higher performance levels, but will also have to come in a wider variety of form factors to support different uses - such as the “massive machine-type communication” necessary to power the Internet of Things. One approach designed to ensure maximum return on investment is infrastructure sharing. For example, South Korea’s mobile operators have implemented the sharing of 5G infrastructure, in the interest of saving hundreds of millions of dollars in capital expenditures, accelerating rollouts, and incentivizing the involvement of more industries. However, infrastructure sharing is not the preferred solution in everywhere; for many players, a first-mover advantage is seen as necessary to ensure a sufficient return on investment.

Related insight areas: [Internet of Things](#), [Corporate Governance](#), [Digital Economy and New Value Creation](#), [Republic of Korea](#), [Automotive](#), [Global Health](#), [Future of Economic Progress](#), [Infrastructure](#)



Royal United Services Institute (RUSI)
**State Cyberspace Operations:
 Proposing a Cyber Response
 Framework**

08 September 2020

Using illustrative case studies, this paper proposes a response framework for states to avoid actions in cyberspace that would unintentionally engage them in armed conflict. Download the paper here (PDF)
 Cyberspace is the battleground of the new century – one that is likely to witness increased and diversified forms of aggression with the recent rise of world tension, driven by disputes over trade, territory and the coronavirus pandemic. Yet, increased tensions mean an increased chance of miscalculated intent. States would all benefit from a shared understanding of normal state behaviour in cyberspace.



SpringerOpen
**Integrated human-machine intelligence
 for EV charging prediction in 5G smart
 grid**

01 July 2020

With the rapid development of the power infrastructures and the increase in the number of electric vehicles (EVs), vehicle-to-grid (V2G) technologies have attracted great interest in both academia and industry as an energy management technology in 5G smart grid. Considering the inherently high mobility and low reliability of EVs, it is a great challenge for the smart grid to provide on-demand services for EVs. Therefore, we propose a novel smart grid architecture based on network slicing and edge computing technologies for the 5G smart grid. Under this architecture, the bidirectional traffic information between smart grids and EVs is collected to improve the EV charging experience and decrease the cost of energy service providers.



SpringerOpen
**A flexible ICT architecture to support
 ancillary services in future electricity
 distribution networks: an accounting
 use case for DSOs**

31 July 2020

With the increased penetration of distributed renewable energy sources (DRES) in the grid, new pathways are required to keep the electricity distribution system stable. The provision of ancillary services (AS)...



Carnegie Endowment for International Peace
**The United States and Japan Should
 Team Up on 5G**

23 July 2020

With the Tokyo Olympics postponed because of the coronavirus, Japan will delay its high-profile promotion of 5G commercial service this month. But the United States and Japan are still well-positioned for the intensifying race to harness the technology.



Wired
**5G Was Going to Unite the World –
 Instead It’s Tearing Us Apart**

02 July 2020

The world came together to build 5G. Now the next-generation wireless technology is pulling the world apart. .

5G Business Model Transformation

The technology is a critical enabler of driverless cars, efficient factories and smarter power use

5G is a potential game changer for a number of industries, though they will have to adapt their business models in order to harness its true potential. The technology will initially exist as an overlay on existing 4G networks, and will likely only start achieving meaningful scale sometime in the early 2020s. Some important services made possible by 5G will include “digital twin” technology that creates a digital mirror of a physical object in order to predict its performance, augmented and virtual reality (thanks to better download and upload speeds), and predictive maintenance in factories. 5G is also expected to support high-density autonomous vehicle platooning (to improve aerodynamic performance and traffic flow), remote vehicle control, remote driver health monitoring, in-car infotainment, and smart traffic control. The energy sector could meanwhile use 5G for the real-time monitoring of utility networks with drones, sensing hazards and maintenance needs, and monitoring residential smart meters. Each individual use case has the potential to impact additional industries; autonomous vehicles will not only have an impact in the automotive sector, but may also impact the mobility space more broadly. The insurance industry, for example, may benefit as vehicle accident rates decrease.

Ride-hailing platforms like Uber, Lyft, and Didi are expected transition within the next decade from human-driven, internal combustion engine cars to autonomous electric vehicles - potentially spawning millions of driverless cars on the roads, and potentially thousands of pilot-less vertical take-off and landing aircraft. An aggressive transition to self-driving vehicles is not a given, however. For such a transition to occur, political and regulatory support will be required. This will in turn largely determine the investment available for necessary infrastructure like vehicle charging stations and 5G connectivity. Intel has predicted the rise of a “passenger economy” worth \$800 billion by 2035, as people in cars have more time on their hands to shop and secure everything from entertainment to doctors’ appointments. As related technologies like artificial intelligence and virtual reality come to the fore, software companies and other industry players are expected to play a major role in designing new 5G business models. Those models will in turn rely on having a set of standardized regulations for 5G data monetization, related to cross-border data and services-sharing.

Related insight areas: [Infrastructure](#), [Virtual and Augmented Reality](#), [Corporate Governance](#), [Digital Economy and New Value Creation](#), [Batteries](#), [Insurance and Asset Management](#), [Digital Communications](#), [Innovation](#), [Advanced Manufacturing and Production](#), [Entrepreneurship](#), [Agile Governance](#), [Internet of Things](#), [Future of Mobility](#)

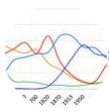


Science Daily

Teamwork can make the 5G dream work: A collaborative system architecture for 5G networks

25 August 2020

That many novel network- and cloud-dependent services will have become commonplace in the next few years is evident. This includes highly demanding technological feats like 8K video streaming, remote virtual reality, and large-scale data processing. It is also likely that today's network infrastructures won't make the cut unless significant improvements are made to enable the advanced, "killer" 5g applications expected in the imminent 5g era. .



Exponential View by Azeem Azhar

Remote and automated work; splinternet; predictions

26 July 2020

Overview of remote and automated work, splinternet and other predictions.



Royal United Services Institute (RUSI)

The UK's New Way on Huawei

14 July 2020

The UK's new approach to Huawei is more about the impact of US sanctions on supply rather than a fundamental rethink of technical security.



Social Europe

AI: those are citizens marching, not robots

09 July 2020

Artificial intelligence, usually thought of as substituting human endeavour, should be conceived as a way of enhancing it for all. We are witnessing another industrial revolution—a digital one. Rapidly evolving technology, superfast connections such as 5G, the massive amount of data this connectivity generates and artificial intelligence will reshape the lives and societies we know today.



World Economic Forum

17 ways technology could change the world by 2025

23 June 2020

We asked our 2020 intake of Technology Pioneers for their views on how technology will change the world in the next five years. Here are their predictions.

The Geo-economic and Trade Impacts of 5G

The technology is fuelling geo-economic one-upmanship, though COVID-19 threatens to delay rollouts

5G is designed to be a foundation connecting billions of devices and enabling better ways of doing things. The total number of 5G subscriptions has been projected to reach 2.6 billion by 2025 - though the COVID-19 pandemic halted the construction of base stations, and delayed related spectrum auctions in a number of countries. Ultimately, those countries able to take a leading position in terms of deployment are expected to enjoy relatively greater economic growth. According to a report published in 2019 by GSMA, a trade organization for mobile operators, 5G services provided on millimetre wave (“mmWave”) spectrum should increase GDP by \$5.2 billion in Sub-Saharan Africa by the year 2034, by bolstering vital functions like port logistics and helping to better coordinate the movement of goods. 5G’s promise is one of the reasons it is a factor in trade tensions and geo-economic positioning; in 2019, for example, China established a two-year action plan to promote the purchase of consumer goods including 5G handsets as a means to offset the impact of an escalating trade war with the US.

In a related geo-economic move, legislation was introduced in the US in 2019 intended to boost the presence of American firms in global industry standards bodies - in a bid to check China’s influence on future 5G networks. 5G has only ramped up tensions between the world’s two largest economies; the US has expressed security-related concerns about China’s status as a leader in 5G technology development and implementation, and about its acquisition of related intellectual property rights. China is likely to be the first nation to launch a 5G telecom network at scale, it plays a significant role in setting global standards, and both Huawei and ZTE have been among the biggest filers of related patents. Overall, China holds a significant percentage of 5G-related technology patents, and a far higher share than was the case with 3G or 4G at a comparable stage in development. Eventually, China may come to hold nearly a third of global 5G-related patents, according to one estimate, and it continues to participate actively in international standards-setting bodies like the Institute of Electrical and Electronics Engineers (IEEE).

Related insight areas: [Geopolitics](#), [International Security](#), [International Trade and Investment](#), [Geo-economics](#), [Global Governance](#), [COVID-19](#), [China](#), [United States](#), [Internet Governance](#), [Justice and Law](#), [Digital Communications](#)



The Diplomat
How China Lost Nigeria
 25 August 2020

China is currently being hit in Nigeria by a burst of discontent whose outcome is still uncertain. Triggered in late July 2020 by what has become known as the “sovereignty clause” controversy in loan agreements between Nigeria and China, the discontent has, however, a longer history. The current backlash draws mainly on anger over the timeline of the COVID-19 pandemic in Wuhan, China dateline; questions about Huawei’s participation in 5G networks; claims of uniquely Chinese racial practices against Nigerians; and the image of “China in Africa” more broadly. The intensity and magnitude of the discontent means that this cannot be dismissed.



Der Spiegel
**China as a Systemic Rival to the EU:
 "The Security of Our Citizens Is at Stake"**
 02 August 2020

How should the EU stand up to China's power? Europe must demonstrate greater unity and use the single market as a lever, argues top German government official Michael Roth. When it comes to 5G, Europe must rely on domestic suppliers.



Observer Research Foundation
Trump and the art of 5G war
 25 July 2020

The effectiveness of the American countercharge is built on 5 pillars: Clean communication, collaboration, Washington’s investment in the success of non-Chinese telecom companies and not just governments, igniting investor interest in do-ability and not punishing legacy networks who got wedded to Huawei and gang in a more innocent world.



European Council on Foreign Relations
Putting China in its place: Britain prepares to sack Huawei
 14 July 2020

Whatever good reasons the British government may have to reverse its position on Huawei, the key factor has been a rebellion on its backbenches and a mood of righteous indignation about the behaviour of Xi Jinping’s China.



Asian Development Bank
Fintech and Financial Literacy in Viet Nam
 23 June 2020

ADB Working Paper Series FINTECH AND FINANCIAL LITERACY IN VIET NAM Peter J. Morgan and Long Q. Trinh 1154 June 2020 Asian Development Bank Institute Peter J. Morgan is senior consulting economist and vice chair of the Research Department of the Asian Development Bank Institute (ADB) in Tokyo. Long Q. Trinh is a project consultant at ADB. The views expressed in this paper are the views of the author and do not necessarily reflect the views or policies of ADB, its Board of Directors, or the governments they represent. ADB does not guarantee the accuracy of the data included in this paper and accepts no responsibility for any consequences of their use. Terminology used may not necessarily be consistent with ADB official terms.

5G Value Creation

The technology could spur trillions of dollars in new investment and benefit a number of industries

5G brings with it the possibility for fundamental industry change, by enabling a whole new set of services based on its strengths. If these services are properly enabled by the right mix of infrastructure and devices, they could create serious benefits for both governments and businesses; by the year 2035, 5G could enable an estimated \$12.3 trillion in global economic value, according to a report published by IHS Markit, nearly equivalent to the value of all US consumer spending in 2016, and equal to more than all combined consumer spending in China, the United Kingdom, Japan, France, and Germany that year. Between 2020 and 2035, IHS Markit expects that 5G will contribute 0.2% of the average annual global GDP growth of 2.9%, a contribution equivalent to total current GDP in India, the world's 7th-biggest economy. At a regional level, a European Commission report published in 2016 estimated that that 5G investment will help create 2.3 million jobs in European Union member states, while a study conducted by the Korea Telecom research institute KT EMRI has suggested that commercial use of 5G in South Korea may generate 47.8 trillion won (\$42 billion) in local value.

While this new value could be broadly distributed, certain industries may be able to unlock more of it than others as the first networks start rolling out - with features like enhanced mobile broadband connectivity and lower latency. A study conducted by the 5G Alliance for Connected Industries and Automation has estimated that digitalization-related revenue based on 5G at information and communications firms may exceed \$1.2 trillion by 2026, of which approximately \$234 billion would be accounted for by related manufacturing aspects. With government support, this commercial impact can have social benefits - as long as commitments are made to aligning industry goals with public-sector goals in the interest of socio-economic progress. For example, 5G could improve so-called "cooperative collision avoidance" for self-driving cars, by ensuring that information is passed among sensors on thousands of connected cars in the same area reliably and in real time - even in areas without network coverage. This could potentially help to reduce deaths and injuries from road traffic accidents, which are both a significant problem in many countries (annual worldwide road traffic deaths reached 1.35 million in 2018, according to the World Health Organization) and a potential impediment for industries banking on the mainstream use of self-driving vehicles.

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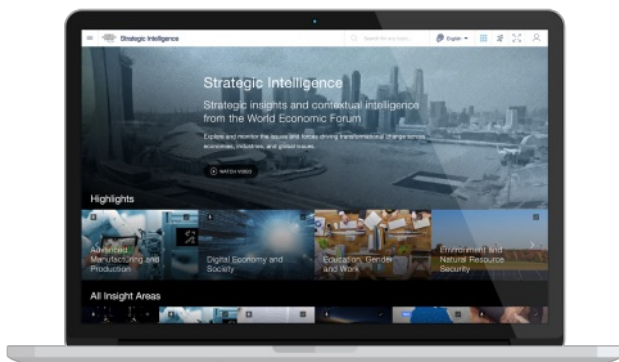
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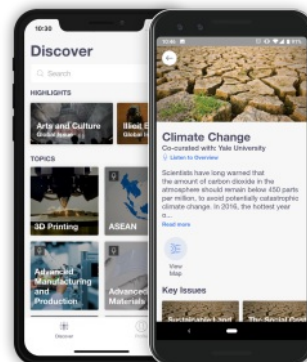
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