Digital Corridors

Developing Connectivity in Central Asia

By: Dariush Onsori

Global TechnoPolitics Forum

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FOREWORD

The mission of the Global TechnoPolitics Forum to understand the intersection of technology and geopolitics means we are on the look-out for instances where that intersection is important but not well examined. This paper, by Dariush Onsori on central Asia, is a happy example. Often regarded as a backwater still languishing in its Soviet and Russian-dominated past, it is now an arena of geopolitical competition, especially between China and India, whose approaches and wherewithal differ. China's Belt Road Initiative (BRI) has a pretty explicit political component, one visible in what has been termed "debt-trap diplomacy" and its use of the Shanghai Cooperation Organization (SCO) to advance its view of surveillance governance. India's approach, on the other hand, is necessarily more limited in ambition, as reflected in the 2002 agreement among Iran and Russia, to develop the International North-South Transport Corridor (INSTC), a far more efficient route for travel than the standard route from Mumbai to Moscow.

Technology and geopolitics are turning the old Silk Road into a digital silk corridor. The transition of central Asian states to 5G communication will be a long one, given long distances, sparse populations, and limited resources. That will make them especially dependent on commercial providers, ranging from Huawei to IBM. Parsing the role of the private sector, so critical in information technology, is also central to the Forum's mission, and it is also a critical component of Onsori's paper. We commend this wide-ranging and thoughtful analysis to you and would welcome any comments.

The Global Techno Politics Forum is an innovative new organization that strives to shape the public debate and facilitate global coordination at the intersection of technology and geopolitics. The Forum is independent and nonpartisan, and the analyses and suggestions in this paper are the authors' alone. Yet, the Forum's work is very much that of the team, and we salute the entire team for this effort.

Gregory Treverton   *Pari Esfandiari*   *Maura Godinez*
Chairman   **President**   **Senior Director of Programs & Studies**

INTRODUCTION

Central Asia has had untapped resources, an underserved population, underdeveloped infrastructure, and a need for strong strategic partnerships since the beginning of the post-Soviet era. Although Kazakhstan and, to a lesser extent, Uzbekistan, have undergone some economic development since gaining independence, both are still held back by internal corruption and relative isolation from the international arena. Historically, Central Asia's link to the world has been Russia; its railway systems, trade, and practices all followed Russian norms. However, Russia has had little to offer in return as of late, never fully committing to developing Central Asia but instead seeking continual exploitation of its energy reserves. This has led Central Asia to turn away from Russia in the pursuit of substantial investment and modernization.

Recently, major global actors have begun to recognize the potential in developing Central Asia and have made investments in physical and digital connectivity infrastructure throughout the region, often co-deploying the two for ease of access.[1] China and India have emerged as the two most consistent and hands-on state actors in the region, while the United States has a considerable amount of ground to make up to fulfill its recent desire to establish military bases and grant Afghani refugees asylum in the region. Control over emerging physical and digital corridors through Central Asia will become a significant factor in dictating international norms and challenging the United States' global dominance; in the process, however, Central Asia is at risk to give up a disproportionate amount of sovereignty and continue its cycle of exploitation with a new master.

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[1] "ICT Infrastructure Co Deployment with Transport and Energy Infrastructure in North and Central Asia." *UNESCAP*, United Nations ESCAP, Feb. 2020,

www.unescap.org/resources/ict-infrastructure-co-deployment-transport-and-energy-infrastructure-north-and-central.

TIMELINE OF KEY EVENTS

Year	Key Events
2001	SCO formed
2002	Russia, India, and Iran sign agreement for INSTC's development
2006	India and Japan announce plans for Dehli-Mumbai Industrial Corridor, to be completed by 2040. IBM will later help create the ICT master plan
2011	International Code of Conduct for Information Security shows China's desire to be a norm-builder in data governance
2012	Modi announces his 'Connect Central Asia' policy
2013	China officially announces their Belt and Road Initiative in Kazakhstan
2014	Dry runs of INSTC routes successful, slowly starts to become operational
2015	International Code of Conduct updated to reflect modern information security threats China releases 'Vision and Actions on Jointly Building Silk Road Economic Belt and 21st Century Maritime Silk Road', which discusses 'Information Silk Road'
2017	India and Pakistan join SCO Xi Jinping states desire to turn BRI nations into a "digital silk road"

	'Digital Kazakhstan' initiative started, which will eventually evolve to promising more 'Safe Cities' IBM corporate service mission to Kazakhstan
2018	India joins Ashgabat Agreement to aid in INSTC initiative IBM intelligence training in Central Asia through UN
2019	Maiden voyages from China to Europe along Central Asian BRI corridors Uzbekistan signs deal with Huawei to turn all cities into 'Safe Cities' by 2023
2020	China leads '5+1' format meeting with Central Asian republics, lashing against the United States and reasserting their ICC rhetoric, along with promising further aid and development to Central Asian leaders IBM collaborates with KAZ Minerals
2021	US finishes pulling out of Afghanistan, causing their renewed and intensified interest in Central Asia as a new regional stronghold

THE REGION - SIGNIFICANCE & CHALLENGES

In this paper, Central Asia refers to Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, and Turkmenistan. The landmass connects the East to the West and the North to the South, which historically has made it a key piece of geography to control for trade and empire-building.[2] Additionally, the region is rife with natural resources. Besides the well-known boom of oil in the region that powered the Soviet Union, its potential in natural gas and renewables is immense but has mostly been hampered by cronyism, nepotism, Soviet-style paranoia and the prevalence of government interference. These factors, combined with regional instability, have warded off investors for decades. Without being able to attract foreign investment, Central Asia has stagnated and continued in a regressive and autocratic style of governance, especially economically.[3] Therefore, Central Asian Republics have not only lacked leadership and planning, but also the means to develop critical infrastructure in terms of both connectivity and the transportation of energy resources, leaving them a far cry from their past as the Silk Road's cornerstone (Fig. 1).

Central Asian states have been involved in multilateralism; Kazakhstan and Kyrgyzstan are member states of the Eurasian Economic Union (EEU), giving the nations and their trade partners access to a multi-trillion-dollar market[4]; additionally, all but Turkmenistan are founding members of the security-oriented Shanghai Cooperation

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[2] Wani, Ayjaz. "India and China in Central Asia: Understanding the New Rivalry in the Heart of Eurasia." *ORFOnline*, Observer Research Foundation, 17 Feb. 2020,

www.orfonline.org/research/india-and-china-in-central-asia-understanding-the-new-rivalry-in-the-heart-of-eurasia-61473/#_edn71.

[3]Burunciuc, Lilia, and Ivailo Izvorski. "Encouraging Transformations in Central Asia." *Brookings*, Brookings Institution, 13 Dec. 2019, www.brookings.edu/blog/future-development/2019/12/13/encouraging-transformations-in-central-asia/.

[4]"The Treaty on the Eurasian Economic Union Is Effective." *Eurasian Commission*, Eurasian Economic Commission, 1 Jan. 2015, www.eurasiancommission.org/en/nae/news/Pages/01-01-2015-1.aspx.

Organization, which was spearheaded by China.[5] The SCO also includes Russia and, as of 2017, both India and Pakistan. Central Asia is part of organizations that span a majority of Eurasia as well as almost half of the world's population, yet it lacks the infrastructure to take advantage of these partnerships.
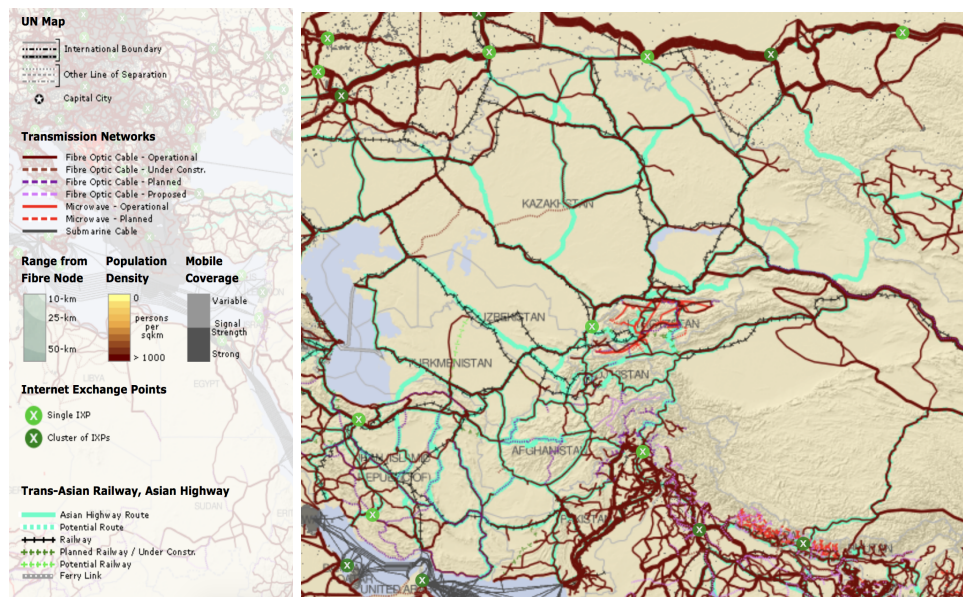
Figure 1

(https://www.itu.int/itu-d/tnd-map-public/)

Greater investments and strong alliances with Central Asia to either empower or exploit the region and to bring it into the international arena would be a transformative factor in establishing global order.

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[5] Sajjanhar, Ashok. "SCO Comes to India." *ORFOnline*, Observer Research Foundation , 5 Dec. 2020, www.orfonline.org/expert-speak/sco-comes-to-india/.

"Whoever gains the most influence in Central Asia will have access to resources that will both fuel and enrich them, while adding a geopolitically significant ally with the ability to make trade much more efficient. Increased investments in digital connectivity will allow those building that infrastructure to dictate standards for the movement of data, which has major implications for international financial systems, communications, data sovereignty, and surveillance in the East."

UZBEKISTAN AND KAZAKHSTAN

Although Central Asian countries have similar cultures, politics, and economic systems, the region is by no means homogenous. Uzbekistan is the most populous of the countries, with a population of approximately 31 million. Urbanization is centered around the fertile Fergana Valley, where around 50% of Uzbekistanis live, while the deserts to the north and west are largely uninhabited and inarable. Fixed line telecommunications connectivity is sparse, as the world had already moved on to mobile connections before the lines could be implemented. However, these mobile connections are localized to Tashkent; only 52% of Uzbekistan's population has access to the internet. Concerning natural resources: Uzbekistan is 15th in the world in natural gas production and 18th in proven reserves;[6] Uzbekistan holds a significant portion of the world's identifiable uranium reserves, ranking in the top 10 of inferred reserves but taking up a much larger share of low-procurement cost uranium.[7] After Islam Karimov's violent, oppressive, authoritarian rule ended in 2016, President Shavkat Mirziyoyev's reforms have had mixed results in addressing the roots of corruption. Despite the lack of free elections and persisting government control of the media, there have been semi-effective economic reforms to liberalize currency markets, allow commodities prices to stabilize, and decrease--but not eliminate--government interference.[8]

Kazakhstan has just two thirds of Uzbekistan's population (approximately 20 million), yet it is by far the biggest Central Asian country by land, and its GDP of around

[6] "Uzbekistan." *CIA World Factbook*, Central Intelligence Agency, 3 May 2021, www.cia.gov/the-world-factbook/countries/uzbekistan/.

[7] "Uranium 2020: Resources, Production and Demand." *OECD-NEA*, ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT, 2020, www.oecd-nea.org/upload/docs/application/pdf/2020-12/7555_uranium_-_resources_production_and_demand_2020__web.pdf.

[8] "BTI 2020: Post-Soviet Eurasia." *BTI Project*, Bertelsmann Stiftung, 2020, www.bti-project.org/en/reports/regional-dashboard-CIS.html?&cb=00000.

$180 billion is more than all other Central Asian countries combined. 58% of the population is urban but urban centers are clustered around the border. The rest of the land is what gives Kazakhstan its economic advantage. It is 12th in world crude oil production, 9th in exports, and 11th in proven reserves. It is also 14th in natural gas reserves. The steady stream of oil it provides and distributes through Russia is the backbone of its economy, and its gold and natural minerals like zinc, copper, and potassium make Kazakhstan relatively more attractive to investors. The wealth generated by resources has allowed Kazakhstan to develop its fixed line infrastructure (albeit with low penetration) as well as its mobile connectivity, with 79% of the population online. Similar to Uzbekistan, Kazakhstan has only seen one transition of power: when Nazarbayev stepped down in 2019 for Tokayev.[9] Outside watchdog groups have categorized Tokayev's reforms as more successful in transitioning to a free market economy, although the media is still state run.[10] Kazakhstan is second only to Australia in uranium reserves and was the center of USSR procurement for development of its nuclear program.[11] On top of that, there are known and relatively sizable deposits of thorium in Kazakhstan.[12]

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[9]"Kazakhstan." *CIA World Factbook*, Central Intelligence Agency, 19 Apr. 2021, www.cia.gov/the-world-factbook/countries/kazakhstan/.

[10] "BTI 2020: Post-Soviet Eurasia."

[11]"Uranium 2020: Resources, Production and Demand."

[12] "World Thorium Occurrences, Deposits and Resources." *IAEA*, IAEA, 25 June 2019, www.iaea.org/publications/13550/world-thorium-occurrences-deposits-and-resources.

KYRGYZSTAN, TAJIKISTAN, AND TURKMENISTAN

Kazakhstan and Uzbekistan are the two most productive economies and attractive investment destinations in Central Asia, as well as showing tremendous potential for independent growth. The other three, Tajikistan, Kyrgyzstan, and Turkmenistan, have less optimistic prospects. For example, a quarter of Kyrgyzstan's $8.4 billion GDP is made of remittances from Russia and Kazakhstan, while Tajikistan's GDP is 42% remittance based. Only 38% of Kyrgyzstanis are online, and just half of its country has mobile internet access available.[13] Kyrgyz banking systems are especially outdated and disjointed, and the country remains overwhelmingly impoverished and reliant on agriculture to employ its citizens.[14] In fact, it is estimated that 70% of its economy is entirely informal and cash based agricultural employment.[15] This is despite the gold and iron reserves present and available for exploitation.[16] In Kyrgyzstan's case, outdated infrastructure and communications capabilities have rendered it especially stagnant. Additionally, suspicious elections and underworld kingpins still dictate politics in the nation.[17]

Tajikistan is even worse off, with just 22% of its population online, a GDP of just $2.5 billion, no valuable resources outside of precious metals, and government-owned

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[13] "3G / 4G / 5G Coverage Map." *NPerf*, NPerf, 2021, www.nperf.com/en/map/KZ/-/208218.Beeline-Mobile/signal/?ll=-10.271681232946728&lg=159.53796386718747&zoom=8.

[14] "Kyrgyzstan." *CIA World Factbook*, Central Intelligence Agency, 30 Apr. 2021, www.cia.gov/the-world-factbook/countries/kyrgyzstan.

[15] "Kyrgyz Republic Diagnostic." *EBRD*, European Bank for Reconstruction and Development, May 2019, www.ebrd.com/documents/policy/country-diagnostic-paper-kyrgyz-republic.pdf.

[16] "Central Asia Atlas of Natural Resources." *CAREC Program*, Central Asia Regional Economic Cooperation, 2010, www.carecprogram.org/?feature=central-asia-atlas-natural-resources.

[17]"BTI 2020: Post-Soviet Eurasia."

monopolies in its two main exports, aluminum and cotton. Its fixed line and mobile connectivity is low, with only seven cities covered by 4G.[18]

Finally, Turkmenistan is an interesting case; its eccentric autocratic leader has insulated his society from the world and barely participates in multilateralism. While it has some submarine cable infrastructure, its mobile coverage still lags far behind the rest of the world. However, Turkmenistan has the 5th largest natural gas reserves globally and exports the 10th most natural gas of any nation, despite its relatively small size. This creates a $41 billion dollar economy, yet one that is extremely volatile to fluctuating natural gas prices.[19]

As a whole, Central Asia is blessed with resources but cursed by poor leadership and planning. It is also cursed by its topography and climate. Winters and summers are extreme, and the terrain is full of mountains and deserts (Fig. 2). These natural barriers to development have held back the development of Central Asian physical and digital corridors; road and rail lines, the installation of submarine cables, and the expansion of the electric grid, for example, all require weatherproofing and finding optimal routes that avoid mountain ranges.[20]

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[18] "Tajikistan." *CIA World Factbook*, Central Intelligence Agency, 3 May 2021, www.cia.gov/the-world-factbook/countries/tajikistan.

[19] "Turkmenistan." *CIA World Factbook*, Central Intelligence Agency, 3 May 2021, www.cia.gov/the-world-factbook/countries/turkmenistan.

[20] Russell, Martin. "Connectivity in Central Asia: Reconnecting the Silk Road." *Europarl*, European Parliamentary Research Service, Apr. 2019, www.europarl.europa.eu/RegData/etudes/BRIE/2019/637891/EPRS_BRI(2019)637891_EN.pdf.

Figure 2

(https://cdn.britannica.com/40/7240-050-FEC78BDC/Central-Asia.jpg)
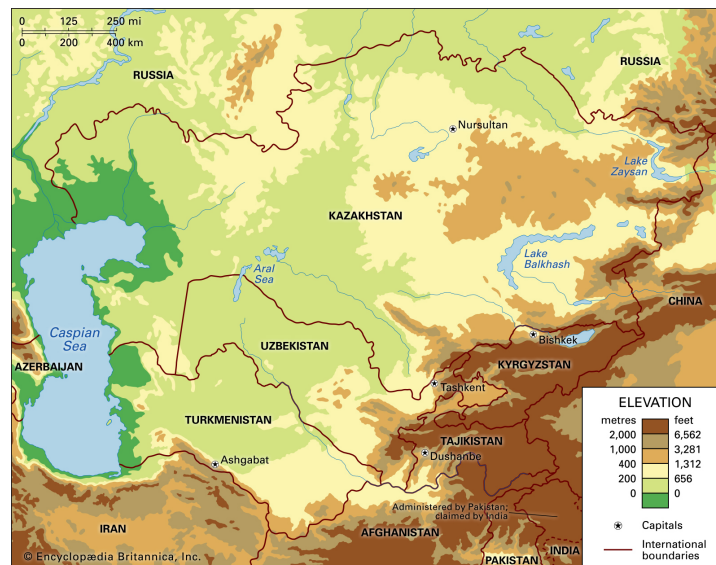
In terms of solving the issues of connectivity, India and China are the two leaders in developing physical infrastructure in and through Central Asia thus far and are best postured to dominate the region moving forward; however, China has a definite advantage in the digital space which strengthens its overall position.

CHINA, BRI, & THE DIGITAL SILK ROAD

China has been aggressive in establishing Central Asia as an ideological ally as well as a strategic partner in its vision of the future of the world. The success of the Belt and Road Initiative (BRI) has made China an extremely powerful force with the ability to dictate international norms of trade and transport; China's trade corridors cover every single continent, and it is a top three (often number one) trade partner of the majority of the Middle East, North and Sub-Saharan Africa, Latin America, North America, Southeast Asia, and Australia (Fig. 3).
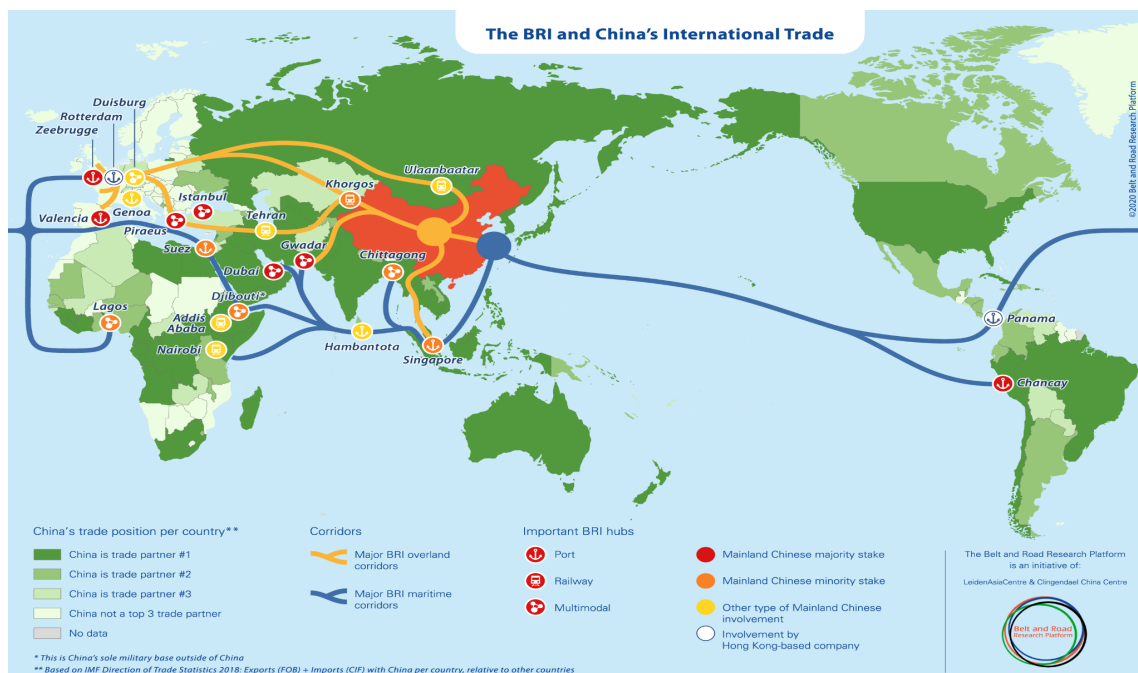
Figure 3

("New Map...")

Establishing that connectivity was expensive and financed by debt, and China's recently aggressive lending practices have been questioned internationally.[21] Two major BRI corridors run through Central Asia: the China-Central Asia-West Asia Economic Corridor and the New Eurasia Land Bridge Economic Corridor. The New Eurasia Land Bridge Economic Corridor runs through Nur-Sultan (Kazakhstan's capital) and spans from Lanzhou in eastern China to Brest in France (Fig. 4). The China-Central Asia-West Asia Economic Corridor connects Xinjiang to Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Iran, Turkmenistan, and Turkey (Fig. 5). The results have benefited China immensely, with trade between Central Asia and China reaching $26 billion in 2016 as opposed to just $1.5 billion in 2001.[22] In the sector of energy, China has had its eyes on Central Asia's wealth of resources for decades, and since starting the BRI, has leveraged its investment to quadruple its gas imports from Central Asia between 2010 and 2017.[23]

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[21] Honig, Steven. "Who Pays? Central Asia and China's Debt Dilemma." *Foreign Brief*, Foreign Brief, 4 June 2020, www.foreignbrief.com/former-soviet-union/who-pays-central-asia-and-chinas-debt-dilemma/.

[22] Wani, Ayjaz. "India and China in Central Asia: Understanding the New Rivalry in the Heart of Eurasia."

[23] Wani, Ayjaz. "India and China in Central Asia: Understanding the New Rivalry in the Heart of Eurasia."

Figure 4

("One Belt")

Figure 5

("One Belt")

A DOMINANT PARTNERSHIP MODEL

Despite the seemingly beneficial effect of the BRI on Central Asia, World Bank data tells a different story. Kazakhstan still ranks 105th in the Ease of Trading Across Borders index, Kyrgyzstan ranks 89th, Uzbekistan 152nd, and Tajikistan 141st.[24] China has created a hegemonic scenario much like Russia; Central Asia still lacks the capacity to conduct business on its own terms, and now has a growing dependence on China to support its economy. Of 237 Chinese projects in Central Asia, only 24 were multilateral (i.e., involving multiple Central Asian states) as opposed to bilateral, meaning China is doing little to improve regional connectivity and internal trade or to contribute to the development of diversified local market economies. China instead has focused on draining resources from Central Asia; for example, 80% of Kazakhstan's exports and 83% of Kyrgyzstan's exports to China were raw materials, while 83% of Turkmenistan's total exports as a nation are entirely natural gas and oil to China.[25] China finances its BRI entirely with long term, Chinese state-owned bank loans with low interest rates ,while construction is done exclusively through Chinese companies. This means China now accounts for an estimated 50-80% of Central Asian total debt.[26] In order to repay its debts, Kazakhstan has given China over 60% of its national shares in hydrocarbons and uranium, with some companies now entirely Chinese owned.[27] This makes sense, given China's ramping up of its nuclear energy program in an attempt to dominate renewable energy as the world transitions from fossil fuels (Fig. 6).

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[24] "Rankings." *Doing Business*, World Bank, 2020, www.doingbusiness.org/en/rankings.

[25] Wani, Ayjaz. "India and China in Central Asia: Understanding the New Rivalry in the Heart of Eurasia."

[26] Honig, Steven. "Who Pays? Central Asia and China's Debt Dilemma."

[27] Wani, Ayjaz. "India and China in Central Asia: Understanding the New Rivalry in the Heart of Eurasia."
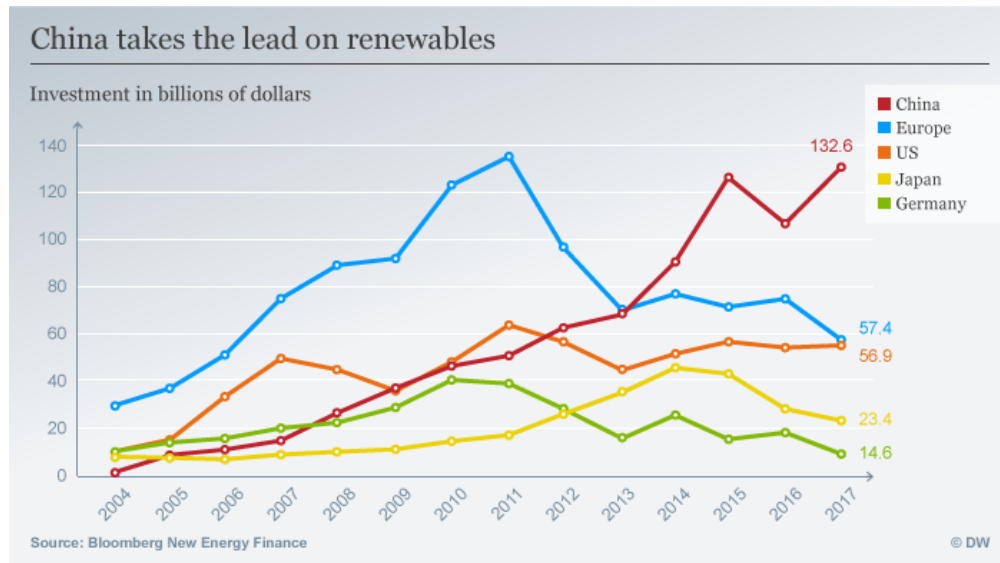
China takes the lead on renewables

Investment in billions of dollars

Source: Bloomberg New Energy Finance   © DW

Figure 6

(Bloomberg)

> "China has created a hegemonic scenario much like Russia; Central Asia still lacks the capacity to conduct business on its own terms, and now has a growing dependence on China to support its economy."

In general, whatever investments China has made in Central Asia serve to benefit China's self-interest and expansionist mindset with a form of economic colonialism and debt-trap diplomacy that keeps Central Asia stagnant. China has been blatant in this desire, even putting clauses that transfer ownership of assets in the case of default in formal BRI agreements.[28] For a country with a miniscule GDP like Tajikistan, losing even one gold mine is a major impediment to organic growth and the pursuit of partnerships with other powerful nations like India.

Self-interest dominates China's Digital Silk Road (DSR) as well; its goal in digital infrastructure investment is control via development and integration. Consider the vision of collaborative information security China has projected through the SCO; the 2011 International Code of Conduct for Information Security shows China's desire to be a norm-builder in data governance.[29] It calls for SCO states to balance sovereignty with freedom, in order to create a 'safer' and more ideologically aligned internet. The doctrine was updated in 2015 to call for "tighter controls over information, cybersecurity and technological independence, and international influence".[30] Also in 2015, China released a document entitled 'Vision and Actions on Jointly Building Silk Road Economic Belt and 21st Century Maritime Silk Road', where it stated its desire to "jointly advance the construction of cross border optical cables and other communications trunk line networks, improve

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[28] Najibullah, Farangis. "Silver Lining? Tajikistan Defends Controversial Decision To Give Mine To China." *RFERL*, RadioFreeEurope/RadioLiberty, 4 Oct. 2019, www.rferl.org/a/silver-lining-tajikistan-defends-controversial-decision-to-give-mine-to-china/30199786.html.

[29] McKune, Sarah. "Analysis of International Code of Conduct." *Citizen Lab*, University of Toronto Munk School, 28 Sept. 2015, citizenlab.ca/2015/09/international-code-of-conduct/.

[30] Segal, Adam. "China's Vision for Cyber Sovereignty and the Global Governance of Cyberspace." *NBR*, The National Bureau of Asian Research, 25 Aug. 2020, www.nbr.org/publication/chinas-vision-for-cyber-sovereignty-and-the-global-governance-of-cyberspace/.

international communications connectivity, and create an Information Silk Road".[31] In 2017, during the Belt and Road Forum for International Cooperation, Xi Jinping urged BRI nations to "pursue innovation-driven development, to intensify cooperation in frontier technological areas such as digital economy, artificial intelligence, nanotechnology and quantum computing, and to advance the development of big data, cloud computing and smart cities so as to turn them into a digital silk road of the 21st Century".[32]

> **"Self-interest dominates China's Digital Silk Road (DSR) as well; its goal in digital infrastructure investment is control via development and integration."**

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[31] "Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road." *NDRC*, National Development and Reform Commission, Ministry of Foreign Affairs, and Ministry of Commerce of the People's Republic of China, with State Council Authorization, 28 Mar. 2015, en.ndrc.gov.cn/newsrelease_8232/201503/t20150330_1193900.html.

[32] Nouwen, Meia. "China's Digital Silk Road: Integration into National IT Infrastructure and Wider Implications for Western Defence Industries." *IISS*, The International Institute for Strategic Studies, Feb. 2021, www.iiss.org/blogs/research-paper/2021/02/china-digital-silk-road-implications-for-defence-industry.

CHINA'S DIGITAL CORRIDORS

In order to understand what this goal entails, it is important to understand China's digital corridor-building capacity in relation to Central Asia's digital connectivity needs. When looking at submarine cable lines globally, there is a noticeable hole in Central Asian connectivity; although major cities are mostly connected internally, cross-border connectivity remains low, and the existing infrastructure is centralized in urban populations.[33] The main components of China's DSR vision of a modern digital infrastructure corridor are fiber optic/submarine cables (FOC), 5G networks, and telecommunications, which in turn enable smart cities, data centers, and security systems.[34] While the United States company Corning is the largest, amongst the top ten FOC companies, Chinese companies are 2nd, 4th, 5th, 6th, and 9th in terms of market share, in total occupying almost half of the total market (Fig. 7).

China is also the world's 5G leader due to early investments and planning in the technology from Huawei, ZTE, and smaller competitors, thus crowding out foreign competition.[35] Therefore, China is postured to be the leader in how information moves around the world and also the emerging leader in peoples' access to that information.

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[33] "A Study of ICT Connectivity for the Belt and Road Initiative (BRI): Enhancing the Collaboration in China-Central Asia Corridor." *UNESCAP*, United Nations ESCAP, Sept. 2017, www.unescap.org/resources/study-ict-connectivity-belt-and-road-initiative-bri-enhancing-collaboration-china-central.

[34]Nouwen, Meia. "China's Digital Silk Road: Integration into National IT Infrastructure and Wider Implications for Western Defence Industries."

[35] Zhao, Shirley, and Yuan Gao. "China Is Poised to Win the 5G Race: Key Steps Extending Global Leadership." *Bloomberg*, Bloomberg, 28 Dec. 2020, www.bloomberg.com/news/articles/2020-12-29/china-s-record-5g-blueprint-for-2021-electrifies-telecom-stocks.

Especially when considering the overbearing role of the government in private enterprise, China will be able to leverage its technological dominance to gain data sovereignty.[36]

Rank*	Company	Return on Net Assets*	Country	Revenue**	Market Share*
1	Corning	20.56%	USA	$10,116M	16.3%
2	YOFC	17.49%	China	$1,550M	12.7%
3	Furukawa Electric	12.05%	Japan	$1,338M	11.1%
4	HTGD	30.60%	China	$1,200M	9.3%
5	Fiberhome	11.94%	China	$2,520M	6.9%
6	Futong	10.77%	China	$273M	7.8%
7	Prysmian	21.97%	Italy	$1,373M	7.9%
8	Sumitomo Electric	9.92%	Japan	$27,500M	7.7%
9	ZTT	15.70%	China	$3,040M	6.3%
10	Fujikura	7.89%	Japan	$6,720M	4.6%

Market Share by Country of Top 10 FOC Companies

USA 18.0%
Italy 8.7%
Japan 25.8%
China 47.5%
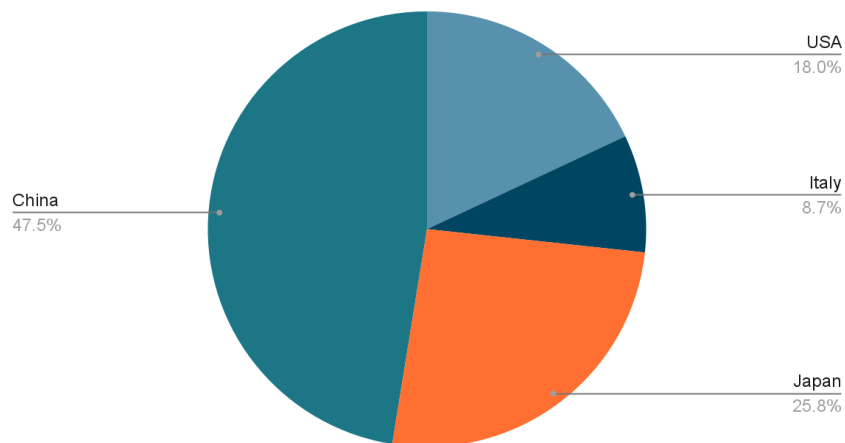
Figure 7

("Top Ten…")

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[36] Ghiasy, Richard, and Rajeshwari Krishnamurthy. "China's Digital Silk Road and the Global Digital Order." *The Diplomat*, Diplomat Media Inc., 13 Apr. 2021, thediplomat.com/2021/04/chinas-digital-silk-road-and-the-global-digital-order/.

SCO MODEL SURVEILLANCE STATES

China's vision of information security involves the unlimited sharing of data and information between SCO states, which would challenge ideals of digital privacy and freedom.[37] Whether or not nations want to participate, when using Chinese infrastructure, the possibility of hidden backdoors and surveillance is always present due to the aforementioned blurred line between private and public in China and the overwhelming desire for control over the spread of information.[38] Regardless, China has chosen its targets carefully; Central Asia has a poor track record of protecting human rights and privacy, as do 71% of nations participating in Huawei's current 'Safe Cities' initiative.[39] A 'Safe City' is a form of a smart city (a city with enhanced data collection and automation capacities) that is focused on surveillance and control of the public.

When considering its stated desires in information security combined with its dominance of digital infrastructure and track record of unilateral decision-making, the desired outcome of the Digital Silk Road can be primarily categorized as an expansionist challenge to western visions of data governance. Although the meeting was not confined to ICT issues, the July 2020 '5+1' format meeting between China and all Central Asian states clarifies this goal of turning Central Asia away from the West. Beijing openly "accused the United States of slander and stoking discord between Central Asia and China," while in the same meeting pledging extra COVID relief assistance and increased investments in a 'green

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[37] McKune, Sarah. "Analysis of International Code of Conduct."

[38] Yan, Yau Tsz. "Smart Cities or Surveillance? Huawei in Central Asia." *The Diplomat*, Diplomat Media Inc., 7 Aug. 2019, thediplomat.com/2019/08/smart-cities-or-surveillance-huawei-in-central-asia/.

[39] Jardine, Bradley. "China's Surveillance State Has Eyes on Central Asia." *Foreign Policy*, The Slate Group, 15 Nov. 2019, foreignpolicy.com/2019/11/15/huawei-xinjiang-kazakhstan-uzbekistan-china-surveillance-state-eyes-central-asia/.

corridor' of agricultural development.[40] The slander in question most likely refers to the United States' media coverage of Uyghur persecution, which has caused tensions with the primarily Muslim population of Central Asia, especially since many Uyghurs are ethnic Kazakhs, Uzbeks, and Turkmens.[41]

Despite the public sentiment of distrust towards China, the autocratic governments of Central Asia seem enamored by the amount of control Chinese technology gives them over their people, going so far as to crack down on anti-Chinese activism for fear of losing Beijing as an ally.[42] Central Asian nations continue to sign deals with United States sanctioned Chinese companies. Uzbekistan, for example, signed a $1 billion deal in 2019 with plans to have all cities adopt Huawei's 'Safe City' initiative by 2023—enabled by Huawei's development of heat-resistant technology—as well as partnering with Huawei in early technical education for children.[43] Furthermore, 90% of Tajikistan's telecommunications infrastructure is built by Huawei.[44] Likewise, Kazakhstani cell providers Kazakhtelecom, Kcell, Beeline, and Tele2 have existing partnerships with Huawei and over 2000 Chinese-made surveillance cameras have been installed in Nur-Sultan due to Tokayev's admiration of China's surveillance state and his implementation of the 'Digital

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[40] Hashimova, Umida. "China Launches 5+1 Format Meetings With Central Asia." *The Diplomat*, Diplomat Media Inc., 20 July 2020, thediplomat.com/2020/07/china-launches-51-format-meetings-with-central-asia/.

[41] Jardine, Bradley. "China's Surveillance State Has Eyes on Central Asia."

[42] ibid.

[43] Sukhankin, Sergey. "Tracking the Digital Component of the BRI in Central Asia, Part One: Exporting 'Safe Cities' to Uzbekistan." *Jamestown*, The Jamestown Foundation, 11 Feb. 2021, jamestown.org/program/tracking-the-digital-component-of-the-bri-in-central-asia-part-one-exporting-safe-cities-to-uzbekistan/.

[44] Jardine, Bradley. "China's Surveillance State Has Eyes on Central Asia."

Kazakhstan' program, which aims to create even more 'Safe Cities'.[45] Interestingly, surveillance and security systems are often provided free of charge.[46]

Continued co-deployment along existing infrastructure in Central Asia will only accelerate these trends and is likely to be dominated by China due to a combination of its advanced technologies, growing Central Asian debt to China, and Central Asian governments' short-sighted desire for Chinese money.[47] China's approach to Central Asia does increase connectivity and state capacity, but at a disproportionate economic and ideological cost; India, on the other hand, offers a weaker but more multilateral approach to investment.

> **"China's vision of information security involves the unlimited sharing of data and information between SCO states, which would challenge ideals of digital privacy and freedom."**

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[45] Sukhankin, Sergey. "Tracking the Digital Component of the BRI in Central Asia, Part Two: Developments in Kazakhstan." *Jamestown*, The Jamestown Foundation, 7 May 2021, jamestown.org/program/tracking-the-digital-component-of-the-bri-in-central-asia-part-two-developments-in-kazakhstan/.

[46] Jardine, Bradley. "China's Surveillance State Has Eyes on Central Asia."

[47] Jaborov, Safovudin. "Chapter 4. Chinese Loans in Central Asia: Development Assistance or 'Predatory Lending'?" *China's Belt and Road Initiative and Its Impact in Central Asia*, edited by Marlène Laruelle, The George Washington University, Central Asia Program, 2018, pp. 34–40.

INDIA, THE INSTC, AND IBM

India has a long history of partnership and connectivity with Central Asia, spanning centuries to the times of the original Silk Road. Now, it is attempting to reconnect with Central Asia in pursuit of its goal of making a push towards becoming a legitimate great power. While Central Asia was struggling in the early 1990s, India provided foreign aid and former Prime Minister Rao made diplomatic visits to all but Turkmenistan.[48] Then, in 2002, Iran, Russia, and India signed a deal to develop the International North-South Transport Corridor (INSTC), a far more efficient route for travel than the standard route from Mumbai to Moscow. The traditional route is thousands of kilometers longer and excludes hubs like Tehran or Baku, instead going by sea through the Suez Canal and around Western Europe to reach Russia (Fig. 8).
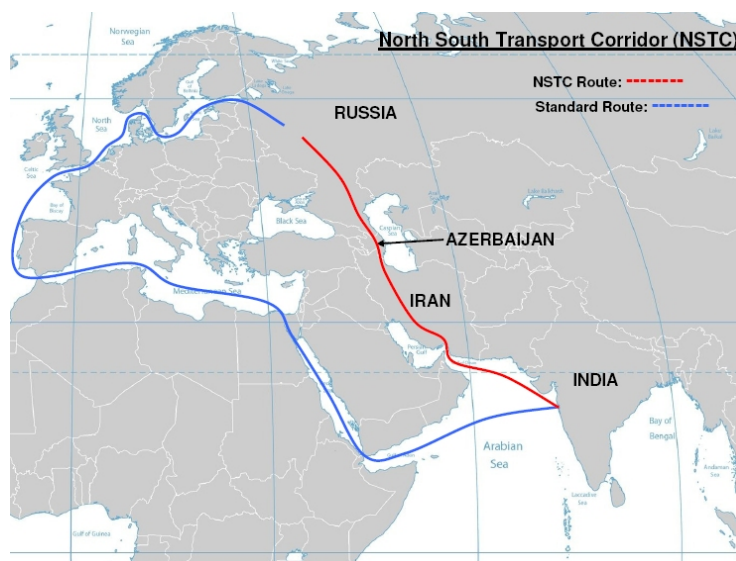
Figure 8

(Wikimedia Commons)

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[48] Rajiv, Sharanya, and Rhea Menon. "Realizing India's Strategic Interests in Central Asia." *Carnegie India*, Carnegie India, 1 Dec. 2019, carnegieindia.org/2019/12/01/realizing-india-s-strategic-interests-in-central-asia-pub-80576.

As opposed to the Belt and Road, which connects east to west, the INSTC connects north to south.[49] This means that, combined, the two projects give Central Asia hypothetical access to markets in all directions. The corridor is made from a combination of roads, rail systems, and boats. Development was initially slow and lacked funding, until, according to Carnegie India, the formation of the BRI prompted India to tap back into the unrealized potential of Central Asian connectivity.[50]

> **"As opposed to the Belt and Road, which connects east to west, the INSTC connects north to south. This means that, combined, the two projects give Central Asia hypothetical access to markets in all directions."**

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[49] Contessi, Nicola P. "In the Shadow of the Belt and Road: Eurasian Corridors on the North—South Axis." *CSIS*, Center for Strategic & International Studies, 3 Mar. 2020, reconnectingasia.csis.org/analysis/entries/shadow-belt-and-road/.

[50] Rajiv, Sharanya, and Rhea Menon. "Realizing India's Strategic Interests in Central Asia."

A MORE COOPERATIVE PARTNERSHIP MODEL

Since 2012 India has taken on a 'Connect Central Asia Policy'. In the words of then External Affairs Minister Ahmad, the policy "is based on pro-active political, economic and people-to-people engagement with Central Asian Countries, both individually and collectively".[51] This shows not only a desire to utilize the region and its resources, but also to develop a strong tie playing off of cultural commonalities and historical relations. Contentious relations with Pakistan have complicated access to Eurasian markets. Central Asia offers India an attractive alternate route to the north and west that can be accessed via Iran.

An integral part of overall connectivity is the Ashgabat agreement, which was founded by Oman, Iran, Turkmenistan, and Uzbekistan. India joined this agreement in 2018, in order to synchronize efforts with its INSTC and gain access to internal trade routes.[52] The development of Iran's Chabahar port, which is currently being underutilized in comparison to the high-traffic Bandar Abbas port, connects the INSTC to the Ashgabat agreement's infrastructure projects, thus enabling Uzbek uranium exports to India, for example.[53] Chabahar, located in the southern tip of the Persian Gulf, would also let India deal with Afghanistan without having to go through Pakistan, while the Kazakhstan-Turkmenistan-Iran railway link, operational since 2014, connects Central Asia to the Persian Gulf.[54] This is an example of how infrastructural investments and

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[51] Wani, Ayjaz. "India and China in Central Asia: Understanding the New Rivalry in the Heart of Eurasia."

[52] Rajiv, Sharanya, and Rhea Menon. "Realizing India's Strategic Interests in Central Asia."

[53] Marjani, Niranjan. "Uzbekistan's Significance in India's Central Asia Policy." *CACIA Analyst*, The Central Asia-Caucasus Institute and Silk Road Studies Program Joint Center, 27 Feb. 2020, www.cacianalyst.org/publications/analytical-articles/item/13603-uzbekistans-significance-in-indias-central-asia-policy.html.

[54] Lillis, Joanna. "Kazakhstan, Turkmenistan and Iran Launch Railroad to Get Trade on Track." *Eurasianet*, Eurasianet, 3 Dec. 2014, eurasianet.org/kazakhstan-turkmenistan-and-iran-launch-railroad-to-get-trade-on-track.

connectivity between local and broader projects for foreign actors' own national interest benefits Central Asia by placing it along trade routes with greater accessibility to major markets without taking on debt; this is a mutually beneficial scenario (Fig. 9).
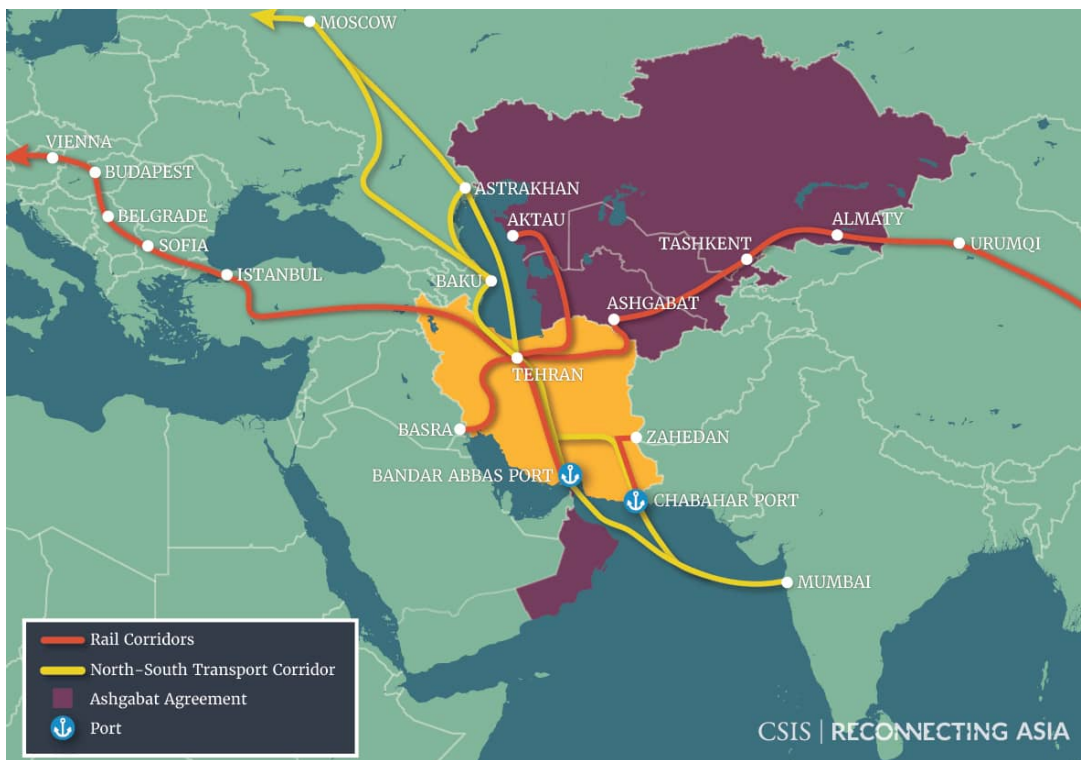

Figure 9

(https://reconasia.csis.org/shadow-belt-and-road/)

India proceeded to follow Central Asian states into the SCO in 2017, showing its dedication to being a participant in regional discourse surrounding Central Asia even if it does not dominate the discourse.[55] The origins and context of the INSTC reveal that India recognizes the potential of Central Asian connectivity. Founding the INSTC and joining the SCO has a secondary effect; by ingratiating itself with Central Asia and cooperating with

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[55] Sajjanhar, Ashok. "SCO Comes to India."

Iran, India is accreting its influence over geopolitically significant regions. However, China's recent 25-year agreement with Iran complicates collaboration with India, especially as India and China continue to have negative relations which have escalated into military disputes.[56] Given the depth and length of the partnership, India will have to find a way to keep Iran as a strategic ally if it wants to continue pursuing Central Asian trade along that route. Additionally, prospects for Indian-led digital connectivity are unclear as of now, as is its desire to participate in establishing corridors; India has not taken the steps China has taken to achieve China's strongly stated desired outcomes.

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[56] "India-China Dispute: The Border Row Explained in 400 Words." *BBC*, British News Services, 25 Jan. 2021, www.bbc.com/news/world-asia-53062484.

IBM AND INDIA'S DIGITAL CORRIDORS

Despite its relative lack of investments in Central Asian digital connectivity, India has shown the capacity to create digital corridors within its borders with the assistance of the private sector. The Delhi-Mumbai Industrial Corridor (DMIC) was introduced in 2006 in collaboration with Japan to connect Delhi to the financial hub of Mumbai (Fig. 10). The project follows the Western Dedicated Freight Corridor and builds off of the trade corridor's backbone in the same co-deployment style mentioned earlier. It is estimated to be completed by 2040, with $90 billion in investment needed to facilitate the development of the desired logistical hubs, smart cities, and transit systems.[57]

Figure 10

(https://dipp.gov.in/japan-plus/delhi-mumbai-industrial-corridor-dmic)

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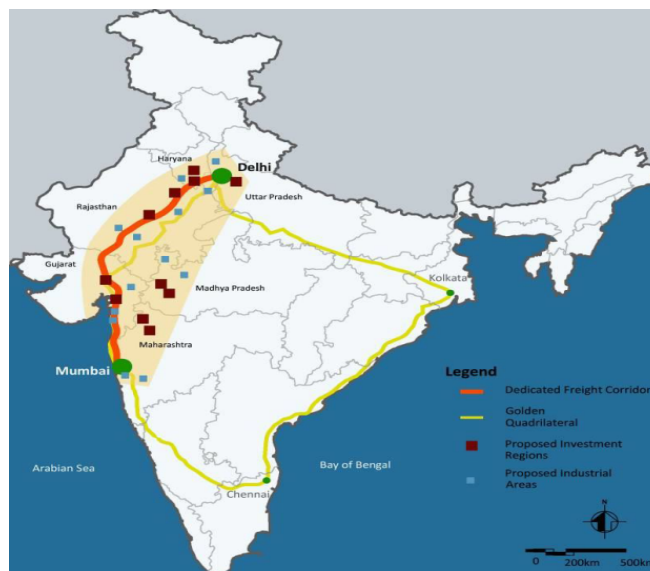
[57] "Make in India: Delhi-Mumbai Industrial Corridor to Invite First Anchor Investors in August." *The Economic Times*, Bennet, Coleman & Co. Ltd., 16 Feb. 2016, economictimes.indiatimes.com/news/economy/infrastructure/make-in-india-delhi-mumbai-industrial-corridor-to-invite-first-anchor-investors-in-august/articleshow/51015748.cms.

The Delhi-Mumbai Industrial Corridor Development Corporation (DMICDC) was established to organize collaboration and development of the project. It partnered with IBM to develop a 'Smart Cities' plan for the corridor, utilizing IBM's smart devices, and IBM has already developed an 'ICT master plan' in pursuit of implementing these technologies.[58] IBM is the pioneer of the 'Smart City' concept, which Huawei built off of to create its 'Safe City' initiative. IBM's consultation and technology are essential and accessible to India, with a major arm of the company operating out of the country.

Viswanath Ramaswamy, VP of Cloud and Cognitive Software and Services for IBM India, expressed IBM's desire to redefine its future "as a hybrid cloud platform and AI company," and emphasizes the gross underutilization of hybrid cloud technologies in India.[59] These technologies are the foundation of smart cities, and IBM has shown a dedication to "enable DMICDC to provide a better environment to attract citizens, new business and investments in the region".[60]

IBM has also shown an interest in spreading its technologies to Central Asia. In 2017, with support from USAID's Central Asia mission, IBM's Corporate Service Corps offered technical consultation and assistance to "national business association Atameken; national export and investment promotion agency KaznexInvest; and a national energy

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[58] Yellupulla, Kiran. "IBM to Help Transform Delhi-Mumbai Industrial Corridor with Creation of Smarter and Sustainable Cities." *IBM Newsroom*, IBM, 19 Sept. 2013, newsroom.ibm.com/2013-09-18-IBM-to-Help-Transform-Delhi-Mumbai-Industrial-Corridor-with-Creation-of-Smarter-and-Sustainable-Cities.

[59] Tejaswi, Mini. "India Key to IBM's Pursuit of a $1 Trillion Hybrid Cloud Opportunity." *The Hindu*, THG PUBLISHING PVT LTD., 28 Nov. 2020, www.thehindu.com/business/Industry/india-is-key-to-ibms-pursuit-of-a1-trillion-hybrid-cloud-opportunity/article33201906.ece.

[60] Yellupulla, Kiran. "IBM to Help Transform Delhi-Mumbai Industrial Corridor with Creation of Smarter and Sustainable Cities."

efficiency audit and consulting company Kazenergoexpertiza" in Kazakhstan.[61] While this was just one corporate service mission of a team of four IBM employees, it shows IBM's desire to be a transformative actor in Central Asian technical development. Fast forwarding to 2018, IBM collaborated with the UN Office on Drugs and Crime to hold a regional training course for law enforcement analysts from Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan using IBM's "i2" intelligence analysis software, which utilizes cloud computing and AI to provide insights for law enforcement.[62] Then, in October of 2020, IBM collaborated directly with formerly state-owned Kazakhstani copper-mining juggernaut KAZ Minerals to develop a disaster recovery site using its hybrid cloud technology. The site was built in just four months and protects a key piece of Kazakhstan's economy.[63] In Uzbekistan, high-level students were trained in AI with IBM's Watson, showing the desire to develop AI in the region from the inside, instead of importing trained talent.[64]

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[61] Gapeka, Tanya. "CEICV Program with IBM CSC in Astana, Kazakhstan." *PYXERA Global*, PYREXA Global, 27 Sept. 2017, www.pyxeraglobal.org/ceicv-program-ibm-csc-astana-kazakhstan/.

[62] Arkhipova, Yevgeniya. "IBM I2 Intelligence Analysis Software: Improving Skills of Law Enforcement Officers in Central Asia." *UNODC*, United Nations Office on Drugs and Crime, 29 June 2018, www.unodc.org/centralasia/en/news/ibm-i2-intelligence-analysis-software_-improving-skills-of-law-enforcement-officers-in-central-asia.html.

[63] "IBM Helps KAZ Minerals Deploy Flexible and Scalable Disaster Recovery Site Using IBM Cloud." *AP NEWS*, Associated Press, 15 Oct. 2020, apnews.com/press-release/pr-newswire/business-technology-asia-disaster-planning-and-response-precious-metals-industry-654fa88659d8bb0622a51216cbe8ba86.

[64] "PIIMA Students Take Part in the 'IBM Skills Network' Course on Artificial Intelligence." Edited by Umarov Anvar Abrardjanovich, *UzDaily*, Daily Media, 5 Dec. 2020, www.uzdaily.com/en/post/62215.

POTENTIAL IMPLICATIONS OF INDIA-IBM COLLABORATION

IBM considers India key to capitalizing on its hybrid cloud technologies and has also shown its willingness and ability to invest in Central Asia. Collaboration between India and IBM in Central Asia following the DMCI's strategy of deployment on the backbone of physical infrastructure would serve both IBM and India's strategic interests in Central Asia, as well as positioning IBM to have an increased role in the governance of data and cloud computing moving forward. This is just a possibility based on common interests and is by no means a present challenge to China's Digital Silk Road. However, India and IBM's increased collaboration in the fields of AI and cloud computing may pose a long-term challenge to China and Huawei's dominance that better serves Central Asian interests, which is a real possibility if Central Asia can pay off enough Chinese debt to pursue other partnerships.

COMPARING PARTNERSHIP MODELS

CHINA	INDIA
- Dominant, hegemonic model of partnership - State control of 'private' sector, domination of connectivity tech - Infrastructure projects financed with Chinese debt, holding Central Asian economies hostage - SCO founder - Belt and Road, Digital Silk Road	- Cooperative, multilateral model of partnership - Willingness to work with foreign, private enterprise (IBM) - Broader ambitions benefit Central Asia without economic toll, but less focused overall - SCO member 'Connect Central Asia' policy

CONCLUSIONS AND RECOMMENDATIONS

China has aggressively pursued its BRI and DSR initiatives in Central Asia, luring national leaders into massive debt traps with cutting edge technologies and the prospect of greater control over their people. India, on the other hand, has pursued organic, multilateral infrastructural development in Central Asia with its 'Connect Central Asia Policy' as a part of its broader INSTC initiative. China's questionable lending practices and willingness to break international norms have helped it take a dominant position in the region and given it the opportunity to take over both traditional and renewable energy resources.[65] This is especially important considering China has ramped up its work with uranium.[66] Additionally, Chinese dominance of digital infrastructural components places it in the position to build norms of data governance.[67] This has broad implications for surveillance, machine learning, and even financial systems; China has recently partnered with SWIFT, which has taken a 55% stake in the project to make China's digital RMB a global currency.[68] If China can capitalize on the 'blank slate' of Central Asia, and continue its BRI and DSR initiatives internationally, we may soon see a world mostly dictated by Chinese norms, as it would be building digital corridors, financial systems, and the regulations that shape those systems.[69] India seems to be less focused on hegemony and is years behind in terms of China's long-brewing plans for a challenge to the West and aggressive

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[65] Wani, Ayjaz. "India and China in Central Asia: Understanding the New Rivalry in the Heart of Eurasia."

[66] Hu, Tracy. "Uranium Gains Momentum as China Recommits to Nuclear Power Development." *SPGlobal*, S&P Global, 21 Mar. 2021, www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/uranium-gains-momentum-as-china-recommits-to-nuclear-power-development-63258723.

[67] Triolo, Paul, and Robert Greene. "Will China Control the Global Internet Via Its Digital Silk Road?" *Carnegie Endowment*, Carnegie Endowment for International Peace, 8 May 2020, carnegieendowment.org/2020/05/08/will-china-control-global-internet-via-its-digital-silk-road-pub-81857.

[68] Huang, Joyce. "China and SWIFT Partner to Take Digital Currency Global." *VOA News*, Voice of America, 12 Feb. 2021, www.voanews.com/east-asia-pacific/voa-news-china/china-and-swift-partner-take-digital-currency-global.

[69] Nurgozhayeva, Roza. "How Is China's Belt and Road Changing Central Asia?" *The Diplomat*, Diplomat Media Inc., 9 July 2020, thediplomat.com/2020/07/how-is-chinas-belt-and-road-changing-central-asia/.

expansionism. In the status quo, Central Asia simply does not have the time to wait for India to catch up; it is already sucked into China's debt trap.

It is in China's best interest to continue its aggressive lending practices and to take advantage of the misguided leadership in Central Asia, as it has also done throughout the world in developing countries. Digital corridor-building will give China access to all data flowing between and through the region, thus accelerating its goal of digital sovereignty over SCO nations. On the other hand, India should pursue collaboration with IBM in Central Asia to challenge Huawei and other Chinese digital giants and co-deploy along the INSTC in the long term if it wants to pursue regional dominance. Finally, if the United States wants to counter Chinese influence and protect its dominant position, it should provide desperately needed debt relief and unconditional foreign aid to Central Asia, regardless of a poor human rights track record regionally. While this undermines the United States' goal of spreading democracy and the western way of life, if Central Asia does not break out of its debt trap, the United States' grasp on the world and ability to dictate global order will be seriously challenged by China, especially when considering the recent 5+1 conference and the sheer breadth of the BRI. It will be difficult to turn Central Asia away from China; a United States president has never even made an official visit to the region. However, warmer relations are absolutely necessary to maintain the promotion of American interests. Jonathan E. Hillman of CSIS goes so far as to propose that the United States answer the DSR directly by lowering loan requirements for infrastructure projects, investing in FOC deployment, and offering higher standard smart cities that are more focused on efficiency than surveillance.[70] However, for the past few years American interest in Central Asia is currently focused on mitigating the effects of the United States' withdrawal from Afghanistan.[71] The United States has tried to foster a security-oriented

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[70] Hillman, Jonathan E, and Maesa McCalpin. "Watching Huawei's 'Safe Cities.'" *CSIS*, Center for Strategic & International Studies, 4 Nov. 2019, www.csis.org/analysis/watching-huaweis-safe-cities.

[71]"United States Strategy for Central Asia 2019-2025: Advancing Sovereignty and Economic Prosperity - United States Department of State." *State.gov*, U.S. Department of State, 5 Feb. 2020, www.state.gov/united-states-strategy-for-central-asia-2019-2025-advancing-sovereignty-and-economic-prosperity/?fbclid=IwAR2YgzeQvlZmav1iTp3TQD-Xx1012Z9UOGs97UVhBqyRhy1ymVp18dbIVAk.

relationship with Central Asian republics in the past, however the region's dependence on Russia is an ever-looming factor that has thwarted plans and led to the shutdown of United States bases in Central Asia in the post-9/11 era of the early 2000s.[72] Although Russia's bond to Central Asia has weakened over the decades, Putin still considers Central Asia as part of Russia's sphere of influence and remains wary of a United States presence so close to Russia.[73] Appeasing Putin is crucial in the United States' security goals, and achieving those security goals would give it a foot in the door to join the struggle for control over development. China is no longer a distant threat; its BRI and transformation of Central Asia places China in a position to change global order and to potentially become the global hegemon. The more the United States waits, the more power it loses to China.

> **"If China can capitalize on the 'blank slate' of Central Asia, and continue its BRI and DSR initiatives internationally, we may soon see a world mostly dictated by Chinese norms, as it would be building digital corridors, financial systems, and the regulations that shape those systems."**

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[72]Mackinnon, Amy. "Central Asia Braces for Fallout of U.S. Pullout From Afghanistan." *ForeignPolicy*, The Slate Group, 16 July 2021, foreignpolicy.com/2021/07/16/central-asia-us-afghanistan-withdrawal-impact/.

[73]Seligman, Lara. "How Putin Could Jam up Biden's Post-Afghanistan Plans." *POLITICO*, POLITICO, 7 July 2021, www.politico.com/news/2021/07/06/putin-biden-post-afghanistan-498311.

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