#01
February 2025

The Gulf Cooperation Council (GCC) Countries' Quest for Economic and Digital Transformation

Dr. Sara Bazoobandi

DIGITAL COOPERATION WITH GLOBAL PARTNERS POLICY STUDY

GIGA
German Institute for Global and Area Studies
Leibniz-Institut für Globale und Regionale Studien

Author

Dr. Sara Bazoobandi is an Associate at the German Institute for Global and Area Studies (GIGA) and a Non-Resident Research Fellow at the Institute for Security Policy of Kiel University. She was previously a Marie Curie Fellow at the GIGA and a Senior Lecturer in international political economy at the Regent's University London. She is also a Non-Resident Fellow at the Arab Gulf States Institute in Washington, and at ISPI in Milan.

About the Digital Transformation Lab (DigiTraL)

GIGA's Digital Transformation Lab (DigiTraL) is funded by the Federal Foreign Office and analyses the political drivers and real-world consequences of the digital transformation taking place around the world. The Global South in particular is an important actor in and shaper of this transformation. In the first phase (2021-2023) of the project, the focus was on digital diplomacy and on analysing the question of what new opportunities, challenges and instruments the digital transformation offers for German foreign policy. The second phase (2024-2025) concentrates on analysing the opportunities that digitalisation offers for Germany's cooperation with global partners. Central questions include: Where do individual countries and regions in the Global South stand with regards to digitalization? Where are the points of contact for (tech) partnerships with Germany? Where are new developments arising (e.g. emerging threats from digital disinformation, related reactions, and interventions in the Global South)? What cooperative relationships exist in the field of digitalization in the Global South, and how can the German government and other actors in Germany best respond to this? The current phase of DigiTraL is headed by Dr. Iris Wieczorek, Senior Research Fellow at the GIGA Institute for Asian Studies. For more information, please have a look here.

GIGA
German Institute for Global and Area Studies
Leibniz-Institut für Globale und Regionale Studien

The Gulf Cooperation Council (GCC) Countries' Quest for Economic and Digital Transformation

Sara Bazoobandi

Abstract

The GCC countries have embarked upon major economic and digital transformation. Regional leaders are determined to redefine the region's economic destiny. This requires creating world-class digital and critical infrastructure. Such a rapid and ambitious development agenda requires the GCC to collaborate with various global technology powerhouses. Economic diversification visions are focused on both future economic stability beyond the hydrocarbon sector and the diversification of strategic partnerships and alliances. With its growing economic and technological power, China particularly has become a key partner in these GCC plans for economic transformation. This paper will explore various aspects of this partnership and seek to highlight cooperation opportunities between the GCC, Germany, and other European economies.

Policy Recommendations

- Beijing's efforts to present an alternative to what is perceived in the Gulf as "Western liberal condescension" has certainly helped reinforce its technological ties with the GCC. Regardless of such perceptions, regional decision makers are seeking to expand international ties beyond China. Therefore, European diplomatic attention should be paid to improving the negative views currently prevailing in the Gulf, as a crucial element of future collaboration.
- Perpetuated by the anti-West discourse occurring across GCC media and its analyst community, there is a widespread perception that European foreign policy is weakened and strategically incoherent. This may lead to the marginalisation of the European powers in the region and further boost viewing China as a more reliable and influential partner. The battle of narratives spreading across the world in the digital realm and media needs serious and urgent attention from Europe. European governments need to push back against the existing narrative and to match it with serious action to regain their global status. Europe and Germany must avoid hypocritical policy approaches and pursue a value-based foreign policy combined with appropriate action.
- Most European economies, including Germany, have been strong pillars of global knowledge development. In recent years, however, they have fallen behind China in certain technological advancements (e.g. digital communication and artificial intelligence). To be able to expand ties with the GCC, European governments need to ramp up investment in the advancement of knowledge in those fields and enhance their outreach strategies to the GCC. Technological collaboration with the GCC is planned and executed by senior government officials. Therefore, perceptions and mutual trust at the senior level can play a significant role in future collaboration with the region.

- Critical digital infrastructure, such as submarine cables, are developing in the GCC. They require high investment, creative solutions to transregional regulatory complexities, resilience, security, and sustainability. Germany, along with other European economies, should actively seek to collaborate with the GCC on these projects by utilising their technical capabilities and expertise in providing much-needed technical solutions (i.e. for development, operation, and security).
- German industries' well-established and reputable position across the Middle East should be harnessed in promoting collaboration between Germany and the GCC. Areas of technological partnership that are not restricted by regulations on the transfer of dual-use and sensitive technologies (e.g. medical and healthcare ones) should be explored. Nearly 20 per cent of current trade between the GCC and Germany is in the field of health and medical care. German technology developers should seek to partner with GCC investors in related fields (e.g. AI in medicine).
- Security collaboration between the European economies and the GCC is mostly transactional, taking the form predominantly of arms sales. Post-7 October 2023, the general public and policymakers alike in the GCC perceive Europe's security ethos to be self-centred and hypocritical. European policymakers should devote more diplomatic capital to changing this perception by seeking to address shared security concerns.

Outline

Introduction

The GCC region finds itself amid a digital transformation. Political leaders in the Gulf are pushing to redefine the region's economic landscape. This is an integral element of their broader vision for economic diversification and requires creating world-class advanced infrastructure. In pursuit of this vision, GCC governments are willing to collaborate with various technology powerhouses globally. The basis for this is not just a focus on branching out from the hydrocarbon sector, as regional leaders are actively seeking to diversify their strategic partnerships and alliances too. Given its increasing economic and technological power, China especially has become an important collaborator in GCC plans for such economic transformation.

Beijing's relations with the GCC countries have evolved over the past few decades. It has gone from being an energy importer from the Gulf region to a strategic partner and trusted broker. In recent years, nearly all the GCC countries have strengthened their ties with China. The latter and the United Arab Emirates upgraded their strategic partnership in 2019 to a comprehensive strategic partnership (Emirates News Agency 2019). In 2022, Saudi Arabia also upgraded its own relations with China to a comprehensive strategic partnership (Hamad 2022). Oman, Qatar (CGTN 2022), and Bahrain (Tharaka 2023) have also been expanding their ties with Beijing. Senior Chinese officials have constantly emphasised their commitment and support for GCC countries maintaining their national sovereignty, independence, security, and stability. Such emphasis has undoubtedly played a positive role in gaining the trust of local partners. Against that backdrop, and in addition to bilateral relations, China has also pursued multilateral ties with the GCC. In 2022 the first China–GCC Summit took place, signalling the Council's collective efforts to strengthen ties with Beijing (Ministry of Foreign Affairs The People's Republic of China 2022).

China–GCC relations are widely perceived to be linked to Beijing's broader competition with the United States globally. The great-power rivalry between the two has spilled over into various fields, including gaining diplomatic clout and technological influence in the GCC countries. The US Secretary of Commerce confirmed such a rivalry and stated that "when it comes to emerging technology, you [the GCC] cannot be both in China's camp and our camp" (Rosenzweig 2024). The US and China have been racing to exert technological influence in the Gulf, where hundreds of billions of dollars are up for grabs. Major investors, including Saudi Arabia and the UAE, are expected to spend heavily in this field. The aim of this report is to explore the GCC's digital vision, review existing areas of collaboration between the Gulf and China, and highlight challenges and opportunities for the European economies and specifically for Germany in entering this field. The study also seeks to capture political and strategic considerations, as well as global events that have played a role in shaping China–GCC technological cooperation.

The data informing the analysis has been obtained from Open Access sources. Data collection for this study also involved the author's observation of public debate across online news platforms as well as social and broadcast media (e.g. X, Instagram, Al Manar, LBCI, The National, Aljazeera, and Al Arabiya). In addition, various aspects have been informed by numerous conversations held virtually or in-person between April and December 2024 with regional and international analysts who work on the GCC. While the content of these private conversations has been extremely informative, no attribution is made to the individuals in question. The data has been fully anonymised to protect identities and affiliations for ethical reasons.

GCC Digital Transformation Agenda

The GCC's digital transformation strategy has three main objectives: economic diversification away from the hydrocarbon sector; ensuring the strategic significance of the GCC countries in a "post-oil era"; and, improving the digitalisation of public services. Fulfilling the first two objectives requires heavy investment in various global technology-production and knowledge-advancement initiatives. These investments are aimed at both generating a return and securing the region's strategic position as the "future producers" of vital global technologies. Regional leaders believe that investing in digital initiatives, while oil and gas revenues are still flowing, will help maintain the region's future geopolitical value. The digitalisation of public services relies on heavy investment in the region; it is also intended to reduce operational costs while improving these services' accessibility, efficiency, and transparency.

The region is home to the largest and fastest-growing information and communications technology sectors in the Middle East and North Africa (MENA). Most of the GCC countries have launched clear pathways for national digital transformation. 5G and 6G rollout and the expansion of subsea cables are defined as major milestones to be marked off in the region's digital-transformation journey in the years ahead. The GCC states aim to house much of the world's growing fifth-generation telecommunication networks by the end of 2025.The sector is expected to grow across the region by 7.8 per cent (compound annual growth) between 2023 and 2028 (Telecom Review 2024), while its market size had already reached US78.5 billion in 2023 (Imarc 2024) – about half of the German sector's estimated USD 126 billion value in the same year (International Trade Administration 2023).

Rapid technological advancement across the GCC countries and government investment in upgrading the region's digital infrastructure have also partly been accelerated by the global COVID-19 pandemic. Lockdowns highlighted the need to advance ICT capacity across GCC states with heightened demand for Internet-related services. Since the pandemic, remote working and distance learning have become a part of a global reality that exists in the GCC as well. The Saudi Telecom Company reportedly increased remote-education bandwidth by 1,000 per cent. Du, a UAE-based telecommunication company, has also doubled bandwidth for distance learning (Deloitte 2022).

The market for data centres has also been steadily growing in the region. These developments are reflected in various government-led initiatives, for example development of cloud systems. Publicly administered cloud services in the Gulf are worth USD 3 billion (Zinser 2020). In 2021, 25 per cent of Saudi Arabian enterprises were using a combination of on-premises and dedicated private cloud systems, public clouds, and legacy platforms (Lago 2021).

The Gulf region perceives itself as a hub due to its geography and access to capital, as well as ability to deploy it swiftly. As such, some regional leaders aspire to advance their technological development agenda rather rapidly. Countries like Saudi Arabia and the UAE have been far ahead of the rest of their GCC peers in pursuing future economic transformation. They have made AI advancement a central element of their national development going forwards. These countries' heavy investment in the field requires consistent strategic development of critical infrastructure to support and accommodate AI-related investment.

Given the ongoing great-power competition over technological collaboration with the GCC, one of the most challenging issues in pushing forwards with the vision of regional leaders will be the need for continuous and delicate efforts to balance relations with both China and the

US. This may indeed create space for other global technology-producing economies, particularly those in Europe, to increase their cooperation with the GCC. The latter's policymakers have occasionally been pushed to choose between the US and China, some examples of which will be reviewed later in this report. With the return of the Donald Trump administration to the White House, US economic competition with China is expected to intensify globally and in the GCC particularly, opening up collaboration opportunities with Europe and Germany.

The GCC's ambitious timetable – that is, within the next decade – for evolving into technologically advanced economies (and societies) requires fast and efficient access to ready-to-deploy infrastructure (e.g. cloud data centres, Internet surveillance, and 5G). Technology producers in the European Union are required to comply with European Parliament and European Council regulations regarding transferring dual-use and sensitive technologies (European Commission 2023). These regulations prohibit European firms from selling various products that are related, for example, to special materials, computers, electronics, telecommunication and information-security equipment, navigation, and avionics(European Union 2021).

China does not impose such restrictions itself. Its technological collaboration with the GCC is in part aimed at advancing Beijing's Digital Silk Road (DSR). The DSR is aimed at promoting Chinese global exports in various fields such as telecommunication networks, AI, cloud computing, e-commerce, and surveillance technologies. Another key aspect of the DSR is to provide capabilities assisting the buyers of Chinese technology to control and moderate their online space, localise their data, and conduct digital surveillance (Council on Foreign Relations 2021). Against that backdrop, Chinese developers have become more appealing to the GCC because of their willingness to share ready-to-deploy sensitive technologies.

Why China?

China has been a key energy trading partner for the GCC. Half of Beijing's crude import is produced in the GCC (excluding Iran). Qatar alone is supplier of 25 per cent of China's liquified natural gas (LNG) imports (Interesse 2022). The GCC have strongly and frequently expressed their commitment to China's energy security. In 2024, the CEO of Saudi Aramco described the company's dedication to the latter as being "set in stone" (Asharq Al Awsat 2024). China maintains a relatively high volume of strategic reserves, equal to 89 days of crude oil import. The flow of energy supplies is of great significance for Beijing, as such (Oil Price 2024). Energy demand has been the backbone of China–GCC ties; reliance on the Gulf is not likely to significantly decline in the coming years.

These ties have provided Chinese businesses with access to regional policymakers beyond just the energy field too, with their cooperation having visibly expanded over the past few years. Beijing has entered various levels of bilateral engagement with different GCC countries, from friendly cooperative partnership at the lowest level to comprehensive strategic partnership at the highest. The GCC countries have offered ample economic and business opportunities across various sector to Chinese companies. Technology has become an integral element to this collaboration.

For China, technological cooperation with the GCC is commercially profitable; nevertheless, it is also linked to the broad global competition with the US. Such collaboration highlights, accordingly, China's expanding global power and occasionally proves useful as a way for Bei-

jing to annoy Washington. For the GCC, cooperation with China serves their ambitious timetable for creating cutting-edge, technologically advanced economies and societies and their need for the immediate procurement of ready-to-deploy infrastructure without restriction.

The main engine behind this rapid evolution has been their access to abandoned sovereign wealth. The Gulf sovereign-wealth management institutions have been increasingly investing in Chinese firms. In 2023, the GCC's top-ten shareholders were from Kuwait and the UAE; they have been investing in telecommunications, digital broadcasting, computer hardware and software production, electric vehicle manufacturing, and medicine (Alfarhan and Alsudeiri 2024). This is not only to diversify their investment universe, but also to boost their returns. Further, such investments are aimed at the transfer of key technologies to their home economies.

Beijing's political narrative has played a significant role in strengthening GCC–China relations. China's 2016 "Arab Policy Paper" outlines the country's overall aim in the Arab world, namely seeking to "achieve win-win cooperation, common development, and a better future" (Xinhua 2016). China's emphasis on the "principle of non-interference" has assured GCC leaders that, from Beijing's point of view, the region is the master of its own destiny. In its diplomatic engagement, for example mediating the normalisation of relations between Iran and Saudi Arabia, China has also been diligently moderating official discourse to avoid portraying its involvement as dictating its own agenda to the region. To what extent this reflects the real intentions behind Beijing's role in brokering a deal between the two countries is unclear. Nevertheless, the official narrative has been persistent. Interestingly, a recent Arab Barometer (2022) survey indicates that Arab public opinion (not limited to the GCC) has turned, with seemingly less desire among the general public for stronger economic relations with China as of now. This is increasingly associated across the Arab world in the eyes of the average person with cheap and low-quality goods, hence weakening the public desire for tighter economic links with China. Some analysts, however, have argued that support for the country has dramatically improved across the region in the wake of the events following 7 October 2023 (Robbins 2024).

GCC leaders have sufficient financial resources at their disposal as well as the ability to rapidly deploy it. They can afford to acquire state-of-the-art, high-end technology. But mediation has not been up for purchase. Given decades of hostility between Iran and the US, China was one of the few world powers able to offer Riyadh a mediation track with Tehran. The case of a Beijing-brokered rapprochement demonstrated not only a new realm of influence for China in the GCC countries but also the Gulf's readiness to diversify strategic alliances. The key message from that initiative was that the GCC is no longer interested in transactional relations vis-à-vis maintaining its security. Mostly because the traditional arrangements with the US have proven to be insufficient, particularly considering the security threat posed by Iranian-backed groups like Yemen's Ansar Allah (Houthis). Instead, they are now seeking strategic cooperation that can link the economy with security, a combination giving them stronger assurances for political stability. China has not entered – nor indicated its intentions to – engagement with the GCC in the fields of military and security cooperation. However, the region seems to be willing to diversify its ties in these realms beyond the traditional alliance thereon with the US.

The quest for diversifying business and strategic partnerships globally is very evident in the GCC, specially through investment initiatives that facilitate access to technology. In 2023, for example, EDGE Group, one of the Emirati companies leading the country's technological-transformation agenda, acquired a majority stake in Estonian company Milrem Robotics. The USD14 million deal (Sambidge 2023) allowed the UAE to be among the owners of a leading

developer of robotics and autonomous systems globally. The transaction became the largest foreign investment in Estonia's defence industry to date (Milrem Robotics 2023). Further, in May 2024, EDGE also announced the acquisition of a 51 per cent stake in a joint venture with Fincantieri, estimated to be worth about EUR 30 billion (Finantieri 2024) – as one of the largest shipbuilding companies in the world. This joint venture gave birth to MAESTRAL, an Abu Dhabi-based shipbuilding company now offering engineering for design and service, sale, and commercial operations (EDGE 2024a). EDGE has also signed collaboration agreements with defence-manufacturing companies in Brazil (EDGE 2024b), Spain (EDGE 2024c), and Indonesia (EDGE 2024d). As reflected in these examples, GCC leaders have been pursuing a fairly aggressive and diversified approach aimed at expanding their partnerships across various technologically advanced sectors globally.

The prevailing assumption in the Gulf, one as such largely accepted by both political leaders and the general public, is that China pursues ties based on respect and free of any preconditions. This may well be caused by the fact that there is, in general, very little knowledge locally on what China does or has available (in terms of Beijing's long-term technological and political planning). Most prominent local analysts tend to simply disseminate the official narrative uncritically.

Shared authoritarian tendencies are also important in driving China–GCC collaboration in the technological field and beyond. Chinese companies that provide the tools for digital security and surveillance have been welcomed in the GCC market. China is known to be among the world's most "extensive and invasive user of surveillance technology and biometric identification data" (Rees 2020). This has inspired the regulatory measures seen thus far in the GCC countries' digital space, too. Indeed, Western counterparts' laws on the protection of user privacy and data do not align herewith; limited cooperation between them in this field has been the consequence.

Table 1 below demonstrates export–import levels between the GCC and Germany (GCC Statistical Center 2024a) as well as China (GCC Statistical Center 2024b). The data is rather difficult to interpret, as some items are described vaguely. Most of the non-hydrocarbon exports from the GCC to Germany and China are likely to be re-trades, but the official statistics report generated by the GCC does elaborate on this issue. Also, items described as "other" are not specified therein. All in all, one of the most striking points about the trade data between the GCC and Germany is that items used in the healthcare and medical sector, alongside vehicles and vehicle parts, form more than 35 per cent of the former's total imports from the latter, while the figure for electrical machinery is only 7 per cent. At the same time, electrical machinery makes up around 35 per cent of GCC imports from China. Although it is hard to interpret this data, it is likely that it is mostly digital technologies involved here.

China seeks to push back against the deemed US perception of it being the "free rider" in regional security. This view stems from China's apathy on engaging in regional security affairs while benefitting from the impact of regional stability on energy markets. China has maintained a base in Djibouti since 2008, described by Chinese officials as a soft military presence and aimed at logistics supports and peacekeeping. China has also held various joint military drills in recent years with the GCC countries, including *Blue Sword* naval drills with Saudi Arabia (The Defense Post 2023) and *Falcon Shield* joint aerial training with the UAE (McFadden 2023), both in 2023. Such engagement is indicative of Beijing's attempts to, first, push back against the above-mentioned US perception and, second, to expand collaboration with the leading GCC powers.

Table1. GCC Exports and Imports

Export China	% of total	Export to Germany	% of total	Import from China	% of total	Import from Germany	% of total
Mineral fuels, oil	88.4	Mineral fuels, oil	45.1	Electrical machinery	34.4	Vehicles/parts	19.4
Plastics	3.2	Chemical products	11.8	Vehicles/ parts	6.7	Machinery & mechanical appliances	18.5
Organic chemicals	2.9	Mechanical appliances	9.8	Iron and Steel	3.5	Pharmaceutical products	11.8
Electrical machinery	1.7	Electrical machinery	5.9	Mechanical appliances	17.2	Electrical machinery	7.1
Mechanical appliances	0.7	Vehicles/ parts	3.9	Plastics	3.1	Medical & optical	5.2
Other	3.1	Other	23.5	Other	35.1	Other	38

Source: GCC-STAT 2024.

Furthermore, China has demonstrated an inclination to sell weapons technology to the GCC. Its firms have actively participated in expos in Saudi Arabia (Helou and Martin 2024) and the UAE, showing off their military capabilities and signalling a willingness to share them (Helou 2024). China's arms sales to Saudi Arabia and the UAE formed respectively 1.3 and 2 per cent of total trade with them in 2023 (SIPRI 2024). Both the UAE and Saudi Arabia have purchased and received CH-4 and Wing Loong II drones from China (Dudley 2018). The proliferation of drones, and aspirations to military and security autonomy across the region, are partly influenced by Iran's own decades-long missile and drone programmes. In addition, China has offered training to GCC buyers of its military technology. The US is, however, still by far the largest arms supplier to the Gulf countries, providing more than half of all the weapons imported by the region. Nevertheless, China has been seeking opportunities to enter the Gulf defence market itself.

All in all, the technological collaboration between the GCC and China is built upon regional political and security dynamics. Beijing's efforts to disseminate an alternative to what is perceived as "Western liberal condescension" has certainly helped reinforced ties with the GCC. At the same time, the region is seeking to expand its international partnerships beyond Beijing. This presents Germany, and other European economies, with future opportunities to collaborate with the GCC in various fields that are related to the region's envisaged technological advancement and not restricted by European legal measures imposing restrictions on the transfer of dual-use and sensitive technologies.

GCC Technological Priorities

The GCC countries are seeking to rapidly advance their digital-transformation agenda. Political leaders in countries like Saudi Arabia and the UAE are pushing firmly to redefine the region's economic landscape and rebrand it in the post-oil era. These ambitions to lead the region towards technology-based economies require developing world-class digital infrastructure and

access to emerging technologies. Various initiatives have been launched in recent years that reflect such a need.

Critical infrastructure: Subsea Cable Network

Subsea cables are vital to the delivery of various services globally. As of early 2025, there are more than 600 active cables carrying all of the world's digital communications (Telegeography 2025) 44 new subsea cables are planned to be launched between 2010 and 2030, in the Middle East and North Africa, nearly half of the number (77) laid in the same period in Western Europe (Burton 2024).

One of the major related projects in which the GCC is taking part is Southeast Asia–Middle East–Western Europe 6 (SE-ME-WE 6). It is a 21,700 kilometre-long subsea cable system connecting Marseille to Singapore, crossing through various parts of the Middle East. The project is a continuation of SE-ME-WE 3, which started in the late 1990s. At the time it was a monumental project, linking 39 cable landing stations in 33 countries across Asia, Australian, Africa and Europe. The Gulf Cooperation Council Interconnection Authority is leading regional investors (including telecommunication companies such as the UAE's Batelco and Saudi Arabia's Mobily) in the global consortium formed to invest in the SE-ME-WE 6 Gulf Extension, known as the Al Khaleej Cable.

The project is of significant value for the GCC countries' future digital connectivity and -transformation. It also showcases the importance of US–China geopolitical tensions in the region. A Chinese supplier, HMN Tech, won the project by offering the lowest bid. HMN is formed of a merger and rebranding of a company that was previously owned by Huawei. The low bid had apparently been enabled by hefty government subsidies extended to HMN. Three state-owned Chinese telecommunication companies (China Telecom, China Mobile Limited, and China Unicom) committed to funding the bid. The US government convinced the investors, on the grounds of concerns about the potential for Chinese spying via the communication cables, to block HMN from the project and to instead award it to an American firm, SubCom (Brock 2023).

Geopolitical competition can thus affect the development of these infrastructures. Moreover, they are extremely vulnerable to acts of sabotage, environmental impacts, or political tensions. In 2024, several subsea cables were cut in the Red Sea by the Houthis (Gambrell 2024); in the Baltic Sea, because of a dragged anchor by a Chinese ship (Marine Insight 2024). Such experiences highlight considerations regarding route planning, physical protection (e.g. armoured barrier, protective sleeves), monitoring and surveillance, damage-prevention measures (e.g. exclusive zone), early-warning systems, and technological enhancements for both existing and future development. Moreover, among the key challenges here, in addition to the need for high levels of capital, is regulatory complexity. A lack of cross-border alignment on related legislation can slow the pace of progress when it comes to such projects. Furthermore, meeting the need to minimise environment impacts is essential to their further development.

Considering the rapid expansion of the digital sector in the GCC, the development of subsea cables is expected to open up new areas of collaboration with the region. As the latter's leaders pursue their vision of economic transformation, there will be higher demand for cooperation with Chinese and/or Western companies who can provide digital-infrastructure solutions. In this fast-evolving field, countries like Germany could expand their research and development on state-of-the-art solutions around subsea cables. European economies, including

Germany, can thus with their technical expertise potentially play a significant role in addressing such challenges as the ones outlined here (e.g. via giving assistance with legal and sustainability issues). Future collaboration in this field should be focused on the tackling of digital choke points by diversification of routes and operators as well as the development of early-warning systems to notify of urgent matters and facilitate timely responses. In addition, European countries and Germany could focus on crafting creative solutions helping promote burden-sharing among sovereign states as regards overseeing the security of critical infrastructure.

Artificial Intelligence

The two most ambitious GCC government-led technological-advancement strategies, those of the UAE and Saudi Arabia respectively, specifically focus on AI. It is predicted that, by 2030, AI-related technologies could contribute to up to 14 per cent of their gross domestic product (PWC 2024). The UAE has already made progress on this front by releasing Falcon, a large-scale language model, in 2023. The latter was developed by a team of 25 computer scientists recruited by the country's Advanced Technology Research Council from around the world (Malin 2024).

In 2024, the Saudi government announced the launch of a USD 100 billion fund, called Project Transcendence, for investment in digital technologies. The fund's activities are aimed at leading Saudi Arabia's sinking of extensive capital into advanced digital technologies and AI (Benito 2024). In line with the country's "Vision 2030," such an initiative is designed to showcase Saudi political leaders' commitment to economic diversification in the post-oil era. Through Project Transcendence, Saudi Arabia will co-invest with major international companies (Public Investment Fund 2024). The country has become one of the top investors in Silicon Valley in recent years (Sinha 2024), and it continues to expand its ambitious financing of AI. Saudi Arabia's Data and Artificial Intelligence Authority (SDAIA), a government body dedicated to leading the country's journey towards becoming a global AI power, launched a related "National Strategy" in 2020 as road map.

In addition to investing in leading global companies in the field, various AI-enabled digitalisation projects have already been implemented in the country. Estishraf, an initiative driven by SDAIA, provides AI-powered data analytics and decision-making services for example to over 100 government organisations across the Kingdom. There is also a nationwide platform, Sawaher, that uses AI to analyse data collected by (more than 15,000) surveillance cameras across the country. Further, optical character recognition, another AI-enabled tool, is being used to restructure the processing of real-estate documents in Saudi Arabia (MSN News 2024).

The UAE has also been an active investor in this field. In 2024, Microsoft announced an investment partnership with an Abu Dhabi-based company, G42. The announcement came after negotiations between the American and Emirati governments, in which G42 agreed to divest from a Chinese company with alleged connections to Huawei, blacklisted by the US for its ties with the Chinese government. The deal allows G42 to use Microsoft's Azure cloud platform and sell Microsoft services using the chips necessary for training and fine-tuning generative AI models. In addition, G42 is also involved in biotechnology and surveillance. Several of its executives have been working with an Emirati cyber intelligence and hacking firm called DarkMatter Group.

G42's chairman is Sheikh Tahnoon bin Zayed, National Security Advisor to the UAE government and younger brother of the country's ruler. It has been a long-standing governance

model in the UAE that royal family members are appointed the heads of government-owned entities. Companies of greater strategic and financial significance are controlled by immediate family members of the Emir. The appointment of Sheikh Tahnoon as G42's top executive is indicative of the importance attributed to the company and AI for the UAE's future strategic and economic planning.

Political leaders in the UAE and Saudi Arabia have thus launched ambitious initiatives in line with their vision of turning the region into a global technology hub. Investment in the field of AI is partly motivated by regional elites' desire for their respective countries to gain strategic knowledge and technology in the realm of cyber intelligence, as a means of maintaining their own national security. The GCC's quest for AI prominence hence presents leading developers in the field, including those in Europe and Germany, with vast potential for collaboration. The GCC's strategies for economic diversification and technological advancement can, accordingly, see closer ties forged with global technology powerhouses beyond China.

Semiconductors

In addition to the regional ambitions for investment and involvement in the field of AI, the GCC economies have signalled their desire to turn the region into a major producer of semiconductors (microchips). In 2024, Taiwan's TSMC and South Korea's Samsung began to explore building a plant complex in the UAE for the production of such chips (Fitch, Ward, and Sohn 2024). At the time of writing, discussions were at an early stage. Mubadala, one of the UAE's well-established sovereign wealth funds, has been mentioned as the investor here. This indicates that chip production is now one of the strategic technological aims of Emirati elites. Such aims, if materialised, would also position the UAE as a key player in the field in the years to come.

The physical production of semiconductors, and monopoly over it, has been an ongoing issue between the US and China. The US has been the leading global power in innovation for semiconductors. In 1947, the first point-contact transistor was designed at Bell Telephone Laboratories in the US (Thompson 2014). In 1959, the latter's invention of bipolar integrated circuits started a new era of digital innovation and led to the establishment of Silicon Valley as the hub for innovators in the field (Morrison 2023). The North American country has maintained a qualitative competitive edge in the industry since. In recent years, high-powered chips have been used in machine-learning algorithms to power AI, self-driving cars, and cryptocurrency mining (Economist 2024). Quantitatively, however, the US is behind other main chip producers such as China (the global power, responsible for more than 20 per cent of total production), Taiwan, Japan, and South Korea (Dent and Rumley 2024). The US has been trying to limit China's access to advanced semiconductors while also hindering the East Asian country's domestic production of them, too. In 2020, the U.S. Department of Commerce issued regulations to block Huawei from using US software or machinery.

The tension caused by these issues prompted the US to support the Gulf countries' investment in the field of semiconductor production. Those like the UAE and Saudi Arabia focusing on AI as a key element of their digital transformation are expected, as outlined, to increase their sinking of capital into such technologies even further. Europe is home to 470 companies that produce semiconductors. Some 18 European countries have at least one semiconductor-manufacturing company. The highest number hereof (358) are based in Germany (Lindák 2021). This existing experience and expertise can be utilised to build cooperation with GCC investors.

Port Development and Shipbuilding

A combination of the GCC's tradition of trading between East and West with political leaders' vision for turning the region into a strategic global hub beyond energy markets has played a significant role in the drive for developing relevant infrastructure. Various port development and energy-terminal projects have been carried out over the past couple of decades. Chinese firms have often been involved herein. These projects typically include contracting services and trade. Chinese bidders have regularly won the tender to develop ports in the GCC countries. In addition, hydrocarbon-related activities such as the development of refineries, storage facilities, and transport infrastructure have seen extensive China–GCC technological collaboration in this field. New energy products such as green steel and critical minerals for EV production have also been added to these areas of collaboration. Chinese investment and construction companies have been working in ports across the region, including Jebel Ali in the UAE, Duqm and Salalah in Oman, as well as Jeddah and Ras Al-Khair in Saudi Arabia (Hammond 2024). Chinese companies have also been involved in investment in economic and industrial zones across the region. For example, Baoshan Iron and Steel Company has sunk USD 4 billion into the Ras Al-Khair economic zone to manufacture steel plates (Arab News 2023). In Oman, likewise, Wanfang has committed to a total investment of USD 3.7 billion over 30 years (Aguinaldo 2017). In the UAE, the development of a new terminal at Ras Al Khaimah Port was awarded to China Harbour Engineering (MEED 2008). The project includes deep water capsize berths at Saqr Port with 95 million tons per year capacity. (Iqbal 2024).

In addition to port-development projects, China has also been involved in shipbuilding ones commissioned by the GCC. In 2021, the logistics arm of Abu Dhabi National Oil Company signed a shipbuilding contract for construction of LNG vessels at Jiangnan Shipyard in China (Joseph 2022). The latter's shipbuilding strategy, a key pillar of its "Made In China 2025" initiative, is aimed at fulfilling the East Asian country's strategic objectives to gain economic dominance in an industry worth about USD 150 billion per year globally (Sky Quest 2024). Chinese shipyards have reportedly been seeking to flood the market with cheap products to drive foreign competitors out of business and assume global dominance (Shalal 2025). The Chinese government has heavily backed the country's shipbuilding industry through hefty financial subsidies – namely, of up to 20 per cent of the construction cost of a typical vessel (Kalouptsidi 2019) – and low-interest credit being extended by state-owned banks (Jude Blanchette et al. 2020).

China has also been building the technological capacity to tracks cargo shipments globally. China's LOGNIK software is being used in many of the world's busiest ports, including Hamburg, Germany, and Jebel Ali and Maqta, UAE. Access to foreign port community systems can increases LOGNIK's data haul (Collins and Bianchi 2023) and exposes the involved countries to the risk of misuse. Global shipping firms, including those in the GCC, are expected to continue buying Chinese vessels. European countries that were historically leading global maritime powers have clearly fallen behind China in this field. Potential future tensions with the latter may prompt Europe to rebuild its self-reliance here, opening up future collaboration opportunities with the GCC too.

Industrial Internet

Another emerging realm of collaboration between China and the GCC is so-called Industrial Internet. This denotes the conjunction of industrial systems with computing and cyber-enabled connectivity. In contrast to user-based Internet applications (e.g. e-commerce, ride-hailing), it

is only used in factories, warehouses, ports, and similar. Its aim is to boost efficiency and productivity.

Various countries have initiated plans for expanding their digital industrial capacity. Germany has been a frontrunner in this field. Its "Industrie 4.0" initiative was launched in 2011 and adopted in 2013. Inspired by Germany, China's aforementioned Made in China 2025 followed in 2015 (Kennedy 2015). For Germany, the focus has been on connecting small and medium-sized companies through the Internet of Things to increase efficiency vis-à-vis global production and innovation networks. Further, it aims at facilitating mass production and ease of customisation. Made in China 2025 takes a different approach. It has specific target sectors including electrical equipment, energy-saving, IT, aerospace, railway, and medical devices, among other things. These are all emerging sectors in the GCC and play a significant role in political leaders' vision for economic and social transformation in the Gulf region (Cyrill 2018). With growing aspirations to advance space programmes on the part of both Saudi Arabia and the UAE in recent years, China and the GCC have also expressed an interest in establishing a joint centre for lunar and deep-space exploration.

Industrial Internet is an emerging reality globally, and indeed of mutual interest for both China and the GCC. German industry has enjoyed a well-established and reputable position across the Middle East until now. Generations of business-community leaders and ordinary citizens have praised German products across the region. Digital industrialisation offers the potential for continued collaboration between Germany and the GCC, specially as the demand and aspiration for the field's further development is on the rise regionally (and markedly fast in Saudi Arabia and the UAE).

Digitalisation and the GCC Perception of Security Vulnerability

The region's political leaders are determined to fulfil their technological vision rapidly. This is reflected in their aggressive investment and partnership strategies. The case of Huawei is a great example of such determination. Huawei has been active in the GCC for over two decades now. Despite the ongoing crisis between the company and the US government, the Gulf region's companies have continued to collaborate with Huawei. US officials have raised concerns over security here due to the company's connections with the Chinese government and accused Huawei of using market distortion and preferential pricing in pursuit of global domination (Swan et al. 2018). The company has dominated the mobile-infrastructure market, outselling rivals like Ericsson and Nokia by offering cheaper alternatives (Mak 2020).

China has been also reportedly stealing technology from Western companies to build its own capacity. An example of such activities is the hacking attack on Nortel Networks Corp. In 2004, the company was the market leader for fibre-optic data transmission systems. Some 70 per cent of all Internet traffic was run on Nortel technology. An internal investigation revealed that a cyberattack conducted by Shanghai-based hackers extracted all sensitive company data, forcing it to file for bankruptcy in 2009. Nortel Networks invented the technology that laid the groundwork for the next generations of wireless networks, to be known as 4G and 5G (Pearson 2020). Such examples have prompted the US government to take various measures to restrict the access of China's leading companies in the field to American technology (e.g. blocking Huawei's access to Google Marketing Services, Google Play Store, YouTube, and

Google Maps). However, the US has not been successful in convincing the GCC states to avoid using Chinese technologies and those developed by Huawei specifically.

Technological collaboration with the GCC is part of China's broader global strategy hereon that is pursued through the earlier-mentioned DSR. Initially launched as a White Paper in 2015, the DSR would become an extension of China's expansive Belt and Road Initiative. Over time, it has evolved into the state strategy for data and telecommunication endeavours abroad (Greene and Triolo 2020). Regarding the US's failure to convince the GCC countries to refrain from use of Chinese technology, it is worth revising the main pillars of the DSR: infrastructure; trade; finance; and, winning over public opinion (Dekker, Okano-Heijmans, and Zhang 2020). How partner countries, and therein both the general public and government officials alike, view China thus plays an important role in advancing the DSR. In the GCC, the "winning over public opinion" element seems to have been efficiently capitalised on. Unlike in neighbouring Iran, where end users are suspicious of Chinese technology and dissatisfied with its poor quality, in the GCC both policymakers and the average person seem content with Chinese technological services and products.(Bazoobandi 2024)

China, as the technology provider to the GCC, holds a powerful position in the region in terms of maintaining supply of goods and services, access to data, and understanding cyber-security structures. Concerns over cooperation with China is perceived by GCC leaders as "one more vulnerability" that is not far from the sense of frailty that was exposed, for example, after the scandal involving Edward Snowden (former contractor of the US National Security Agency). Western liberal condensation and hypocrisy are combined perceptions that have led to the decline of trust therein among Gulf policymakers and domestic populations alike. Indeed, in an ideal world GCC leaders would have favoured a "global wholesale provider" offering a full package of security, business, technology, diplomatic capital, as well as international recognition and prestige. But in the real one, they have sought to diversify their cohort of partners globally, picking and choosing as well as hedging their bets on all those fronts. Ultimately, though, what matters most for the GCC is both to have access to the "best in class" that they can afford and to demonstrate autonomy in selecting partners.

Post-7 October 2023 and the Battle of Narratives

Data collected for this study signals a deep sense of resentment in the GCC regarding Europe's position on Gaza. In one conversation with senior regional analysts, it was mentioned that "the Europeans wanted us [the GCC countries] to care about Ukraine when Russia started the war. But they are happy to turn a blind eye to Israel's aggression in Gaza." Interestingly, some of the public-opinion studies that were conducted in relation to the war in Ukraine indicate negative perceptions towards the US's and the EU's role across the MENA region. A study by the Friedrich Ebert Foundation from 2023 (Schneider, Gürsel, and Starke 2023) shows that in some of the GCC countries (the study only includes Qatar, Saudi Arabia, and the UAE), Russia and the US are perceived to be almost equally responsible for the war in Ukraine. At the same time, the US is seen by the people of the region to be most at fault for the conflict's continuation, while the EU is also perceived to be responsible here. In Saudi Arabia, for example, home to the largest domestic population among the GCC countries, the US is perceived to be more responsible for continuing the conflict than Russia, while the EU is also considered to share

responsibility for that. The crisis that unfolded in the Middle East after the events of 7 October 2023 has certainly made such evaluations even worse in time.

The ongoing regional crisis has also highlighted the security threats facing the GCC countries themselves. They continue to rely on the US for security. At the same time, their political leaders have been accelerating efforts regarding the normalisation and consolidation of ties with the US's main regional rival: Iran. The latter's direct attacks on Israel have induced a Gulf rapprochement with Iran. A clear example of such developments is the high-level engagement between Iranian and Saudi diplomatic and defence officials in late 2024. Moreover, there is a visible sense of popular frustration across the GCC countries towards the West. This has been particularly magnified with respect to European policies and discourse in the context of the latest Gaza War.

The Chinese government from soon after the crisis began would refrain from any form of engagement with either side. In July 2024, China hosted leaders of the Palestinian Hamas and Fatah groups so as to facilitate their signing of an agreement that would end their division (McCarthy, Yee, and Salman 2024). Nearly a year after the beginning of the war, China called on the United Nations Security Council to take action to de-escalate the situation (Reuters 2024). Apart from that, Beijing has remained relatively silent on the issue. It is also worth mentioning that China has a comprehensive technological agreement with Israel (Berman 2022) that does not seem to cause major concern or public resentment in the Gulf region. Given the overall Chinese strategy in the region, and its ties with Israel and Iran, Beijing's visibly silent position in the current crisis is not surprising (Wong 2023). But the general public in the broader MENA region, or the GCC countries for that matter, does not seem to be critical of China's inaction – unlike they are of Europe's.

The GCC has become a nucleus for great-power struggle. The region has been for decades presented with two narratives: the American one that ties security with military capacity and collaboration and the Chinese alternative that links security with economic development, what the latter's officials refer to as "win-win collaboration." Post- 7 October, the second narrative may be seen differently by GCC leaders. In some personal exchanges with regional analysts, it was pointed out that "Israel has been paying Gazan leaders for development and economic collaborations for many years, but that did not stop Hamas from conducting atrocious terrorist attacks on Israelis." Therefore, the Chinese view that security risks can be mitigated through increased business ties is no longer convincing for regional elites. For that reason, they are motivated to demand more concrete security commitments, at various levels, from all sides (i.e. US, China, and Iran).

Yet as the risk of instability rises rapidly and crisis spreads across the region, the American narrative does not resonate with the regional leaders anymore either. The US is perceived to be overstretched between the Indo-Pacific, Ukraine, and its own domestic challenges. Therefore, the region has become more inclined to broaden its partnerships than ever before. Having said that, in the short-term – namely, following Trump's return to the White House – the GCC countries may choose to stand closer to the US for security reasons, and particularly if the tide carries on turning against Iran and its regional proxies. This is likely to see China's regional focus shift towards less endowed MENA countries like Algeria, Egypt, and Morocco.

Minilateral cooperation schemes allowing the network of global partners to expand are now favoured more than even before. This applies to all aspects of the regional political and economic agendas, including but not limited to the field of technological cooperation. Asian countries like Japan (e.g. on nuclear energy) and South Korea (e.g. on post-hydrocarbon economic transition) are now actively engaged in the Gulf. With its citizens making up the largest expatriate population

in the Middle East, and given the cultural, religious, historical, and trade links with India especially, the Subcontinent has also been seeking to expand ties with the Gulf (e.g. via the US-facilitated I2U2 and the India–Middle East–Europe Corridor). China may soon be forced to compete with various other Asian economic powers here. The reputational damage and sense of distrust in the region towards Europe post-7 October is indeed a challenge. To overcome this, proactive diplomatic engagement and renewed narratives, followed by real impactful action, will be essential.

Conclusion

China has engaged with the GCC countries in accordance with its own strategic and economic objectives. These core aims have at times raised concerns in the US, particularly in relation to the East Asian country's technological influence. In such an environment, European technology developers – who are required to comply with regulations on the transfer of dual-use and sensitive technologies – have been less active in the GCC market comparatively speaking.

The GCC's quest for technological advancement is closely linked with the region's efforts to diversify economically and strategically. This is reflected in the numerous investment initiatives taking place in the field beyond just with China. GCC leaders' zealous efforts at the diversification of political and economic partnerships opens up new opportunities for collaboration with Europe.

Security concerns are a key component of strategic and economic calculi across the Gulf. In recent decades, elites have been concerned by the US's willingness and capability to maintain its traditional role as the region's security guarantor. Although Washington has continued to maintain bilateral security partnerships throughout the Gulf, increasing regional security threats have prompted GCC policymakers to seek alternatives of late. European countries' own diplomatic and security capabilities are overstretched in protecting the EU's and individual members' national interests meanwhile. Therefore, apart from increasing arms sales, there does not appear to be much that Europe can offer the GCC in response to its growing security concerns. According to SIPRI (2024b), since 2019 countries like France, Italy, and Spain have increased their arms exports to the GCC while Germany's have significantly declined.

China, through initiatives like the DSR, has focused on influencing public opinion in all domains of collaboration in the Gulf. As such, the perception prevails among people there that "China pursues ties based on no preconditions, but with respect." This is due to a combination of a) a lack of expertise among regional thinkers on China's actual global strategic calculus and b) a deep sense of resentment towards Western liberal condescension, as worsening since 7 October in the form of a visible dislike towards what is perceived as "European hypocrisy."

Technological collaboration between China and the GCC has expanded to a number of fields, some of which are deemed troublesome by the US. This has magnified the great-power competition between Beijing and Washington in the Gulf. GCC political leaders may enjoy the leverage that their ties with the US and China provide them with in general. Nevertheless, they have come to pursue in recent years a long-term economic vision necessitating strong, diversified, and steady strategic and commercial partnerships outside the binary of Beijing and Washington. This opens up further opportunities for European partners, including Germany. Indeed, GCC political leaders' perceptions matter most in the choosing of global partners. As such, strategic political communication and favourable public opinion regarding Europe would help facilitate partnership with the GCC.

Bibliography

Aguinaldo, Jennifer. 2017. 'Chinese Investor Mobilises for Duqm Project'. Middle East Economic Digest. 2017. https://www.meed.com/chinese-investor-mobilises-for-duqm-project/.

Alfarhan, Mai, and Mohammed Alsudeiri. 2024. 'The Past, Present, and Future of Gulf Sovereign Wealth Fund Investments in China'. *Middle East Policy* 31 (1): 66–87.

Arab News. 2023. 'China's Baoshan Iron and Steel Co. Invests $4bn in Ras Al-Khair Economic Zone'. Arab News. 2023. https://www.arabnews.com/node/2312891/business-economy.

Asharq Al Awsat. 2024. 'Nasser: Aramco's Commitment to China's Energy Security "Is Set in Stone"'. Asharq Al Awsat. 2024. https://english.aawsat.com/business/4930836-nasser-aramco's-commitment-china's-energy-security-'-set-stone'.

Bazoobandi, Sara. 2024. 'Iran's Strategies in Response To Changes in US-China Relations'. *Middle East Policy* 31:120–32. https://doi.org/10.1111/mepo.12727.

Benito, Andrea. 2024. 'Saudi Arabia Launches $100 Billion AI Initiative to Lead in Global Tech'. CIO. 2024. https://www.cio.com/article/3602900/saudi-arabia-launches-100-billion-ai-initiative-to-lead-in-global-tech.html#:~:text=Saudi%20Arabia%20has%20announced%20a%20100%20billion%20USD,in%20artificial%20intelligence%2C%20data%20analytics%2C%20an d%20advanced%20technology.

Berman, Lazar. 2022. 'Israel, China Convene Joint Committee on Innovation for First Time since 2018'. Times of Israel. 2022. https://www.timesofisrael.com/liveblog_entry/israel-china-convene-joint-committee-on-innovation-for-first-time-since-2018/.

Brock, Joe. 2023. 'U.S. and China Wage War beneath the Waves – over Internet Cables'. Reuters. 2023. https://www.reuters.com/investigates/special-report/us-china-tech-cables/.

Burton, Stephen. 2024. 'Submarine Cable Launch Numbers Have Surged since 2020 and Another 68 Cables Are Expected by 2027'. Analysys Mason. 2024. https://www.analysysmason.com/research/content/articles/submarine-cable-launches-rma22-rdfi0/#:~:text=Developed%20and%20emerging%20Asia–Pacific%20are%20the%20regions%20with,the%20pursu it%20of%20digital%20economic%20and%20social%20development.

CGTN. 2022. 'China, Qatar to Build Higher Level of Bilateral Strategic Partnership'. CGTN. 2022. https://news.cgtn.com/news/2022-02-05/Chinese-President-Xi-Jinping-meets-with-Qatari-emir-in-Beijing-17pqUFhplew/index.html.

Collins, Gabriel, and Jack Bianchi. 2023. 'China's LOGINK Logistics Platform and Its Strategic Potential for Economic, Political, and Military Power Projection'. Baker Institute. 2023. https://www.bakerinstitute.org/research/chinas-logink-logistics-platform-and-its-strategic-potential-economic-political-and.

Council on Foreign Relations. 2021. 'Assessing China's Digital Silk Road Initiative'. Council on Foreign Relations. 2021. https://www.cfr.org/china-digital-silk-road/.

Cyrill, Melissa. 2018. 'What Is Made in China 2025 and Why Has It Made the World So Nervous?' China Briefing. 2018. https://www.china-briefing.com/news/made-in-china-2025-explained/.

Dekker, Brigitte, Maaike Okano-Heijmans, and Eric Siyi Zhang. 2020. 'Unpacking China's Digital Silk Road'. Clingendael. 2020. https://www.clingendael.org/sites/default/files/2020-07/Report_Digital_Silk_Road_July_2020.pdf.

Deloitte. 2022. 'TMT Middle East Covid-19 Response'. Deliotte. 2022. COVID-19 POV-article-2.pdf (deloitte.com).

Demarais, Agathe. 2024. 'Forget About Chips—China Is Coming for Ships'. Foreign Policy. 2024. https://foreignpolicy.com/2024/04/19/china-ships-shipbuilding-shipping-shipyards-unfair-competition/.

Dent, Elizabeth, and Grant Rumley. 2024. 'Semiconductors, AI, and the Gulf Policy Considerations for the United States'. The Washington Institute for Near East Policy. 2024. https://www.washingtoninstitute.org/sites/default/files/pdf/PolicyNote153DentRumley.pdf.

Dudley, Dominic. 2018. 'How China Is Fueling The Arms Race In Drones In The Middle East'. Forbes. 2018. https://www.forbes.com/sites/dominicdudley/2018/12/17/china-fueling-drones-arms-race-middle-east/?sh=439db4e54bb4.

Economist. 2024. 'Why Do Nvidia's Chips Dominate the AI Market?' Economist. 2024. https://www.economist.com/the-economist-explains/2024/02/27/why-do-nvidias-chips-dominate-the-ai-market.

EDGE. 2024a. 'EDGE Group and Fincantieri Formalise Shipbuilding Joint Venture, MAESTRAL, and Announce 400 Million Euro Order for 10 Naval Vessels'. EDGE Group. 2024. https://edgegroup.ae/news/edge-group-and-fincantieri-formalise-shipbuilding-joint-venture-maestral-and-announce-400.

———. 2024b. 'EDGE Group and the São Paulo State Government Sign Comprehensive Partnership Agreement'. EDGE Group. 2024. https://edgegroup.ae/news/edge-group-and-sao-paulo-state-government-sign-comprehensive-partnership-agreement.

———. 2024c. 'EDGE Group Leaps into the Global Advanced Radar Domain Through Major Joint Venture with Spain's Technology Leader Indra'. EDGE Group. 2024. https://edge-group.ae/news/edge-group-leaps-global-advanced-radar-domain-through-major-joint-venture-spains-technology.

———. 2024d. 'EDGE Signs Agreement with PT Pindad for Ammunition Production Line'. EDGE Group. 2024. https://edgegroup.ae/news/edge-signs-agreement-pt-pindad-ammunition-production-line.

Emirates News Agency. 2019. 'UAE, China Issue Joint Statement on Strengthening Comprehensive Strategic Partnership'. Emirates News Agency. 2019. https://www.wam.ae/en/article/hszr8wkg-uae-china-issue-joint-statement-strengthening.

European Commission. 2023. 'Commission Updates EU Control List of Dual-Use Items'. European Commission. 2023. https://policy.trade.ec.europa.eu/news/commission-updates-eu-control-list-dual-use-items-2023-01-11_en.

European Union. 2021. 'Document 32021R0821 Regulation (EU) 2021/821 of the European Parliament and of the Council of 20 May 2021 Setting up a Union Regime for the Control of Exports, Brokering, Technical Assistance, Transit and Transfer of Dual-Use Items (Recast)'. European Union. https://eur-lex.europa.eu/eli/reg/2021/821/oj.

Finantieri. 2024. 'EDGE Group and Shipbuilding Giant Fincantieri Launch Multi-Billion Euro Joint Venture'. Finantieri Group. 2024. https://www.fincantieri.com/en/media/press-releases/2024/ edge-group-and-shipbuilding-giant-fincantieri-launch-multi-billion-euro-joint-venture/.

Fitch, Asa, Alexander Ward, and Jiyoung Sohn. 2024. 'Chip Giants TSMC and Samsung Discuss Building Middle Eastern Megafactories'. The Wall Street Journal. 2024. https://www.wsj.com/ tech/ai/chip-giants-tsmc-and-samsung-discuss-building-middle-eastern-megafactories-65a dc854?mod=hp_lead_pos3.

Gambrell, Jon. 2024. '3 Red Sea Data Cables Cut as Houthis Launch More Attacks in the Vital Waterway'. Associated Press. 2024. https://apnews.com/article/red-sea-undersea-cables-yemen-houthi-rebels-attacks-b53051f61a41bd6b357860bbf0b0860a.

GCC Statistical Center. 2024a. 'Trade Exchange between GCC and Federal Germany'. GCC-STAT. 2024. https://gccstat.org/en/statistic/publications/trade-exchange-between-gcc-and-federal-germany.

———. 2024b. 'Trade Exchange between GCC and Republic of China'. GCC-STAT. 2024. https://gccstat.org/en/statistic/publications/trade-exchange-between-gcc-and-china.

Greene, Robert, and Paul Triolo. 2020. 'Will China Control the Global Internet Via Its Digital Silk Road?' Carnagie Endowment for International Peace. 2020. https://carnegieendowment.org/posts/2020/05/will-china-control-the-global-internet-via-its-digital-silk-road?lang=en.

Hamad, Amani. 2022. 'Saudi Arabia, China Sign Comprehensive Strategic Partnership Agreement'. Al Arabiya. 2022. https://english.alarabiya.net/News/saudi-arabia/2022/12/08/Saudi-Arabia-China-sign-comprehensive-strategic-partnership-agreement.

Hammond, Andrew. 2024. 'Expansion of Jeddah Islamic Port Complete'. Arabian Gulf Business Insight. 2024. https://www.agbi.com/logistics/2024/02/expansion-of-jeddah-islamic-port-complete/#:~:text=The%20project%20to%20deepen%20and,11%20platforms%2C%20a%20 statement%20said.

Helou, Agnes. 2024. 'Outdoing US, China Makes a Splash at Emirati Unmanned Defense Tech Show'. Breaking Defense. 2024. https://breakingdefense.com/2024/01/outdoing-us-china-makes-a-splash-at-emirati-unmanned-defense-tech-show/.

Helou, Agnes, and Tim Martin. 2024. 'China Makes Presence Felt at Saudi Arabian Defense Show, Outpacing US, Russia'. Breaking Defense. 2024. https://breakingdefense.com/2024/02/ china-makes-presence-felt-at-saudi-arabian-defense-show-outpacing-us-russia/.

Imarc. 2024. 'GCC Telecommunication Market Size, Share, Trends and Forecast by Components, Industry, and Country, 2025-2033'. Imarc Group. 2024. https://www.imarcgroup.com/gcc-telecommunication-market.

Interesse, Giulia. 2022. 'China and the GCC: Bilateral Trade and Economic Engagement'. China Briefing. 2022. https://www.china-briefing.com/news/china-and-the-gcc-bilateral-trade-and-economic-engagement/.

International Trade Administration. 2023. 'Information and Communications Technology (ICT)'. International Trade Administration. 2023. https://www.trade.gov/country-commercial-guides/germany-information-and-communications-technology-ict.

Iqbal, Yasir. 2024. 'Chinese Contractor Wins Ras Al Khaimah Port Upgrade'. Middle East Economic Digest. 2024. https://www.meed.com/contractor-wins-ras-al-khaimah-port-upgrade-project.

Joseph, Shilpa Annie. 2022. 'ADNOC L&S Inks Ship Building Contract with China's Jiangnan Shipyard'. GCC Business News. 2022. https://www.gccbusinessnews.com/adnoc-ls-inks-ship-building-contract-with-chinas-jiangnan-shipyard/.

Jude Blanchette, onathan E. Hillman, Mingda Qiu, and Maesea McCalpin. 2020. 'Hidden Harbors: China's State-Backed Shipping Industry'. Center for Strategic and International Studies. 2020. https://www.csis.org/analysis/hidden-harbors-chinas-state-backed-shipping-industry.

Kalouptsidi, Myrto. 2019. 'China's Shipbuilding Industry: Measuring the Effect of Industrial Policy'. LSE Blog. 2019. https://blogs.lse.ac.uk/businessreview/2019/04/15/chinas-shipbuilding-industry-measuring-the-effect-of-industrial-policy/.

Kennedy, Scott. 2015. 'Made in China 2025'. Center for Strategic and International Studies. 2015. https://www.csis.org/analysis/made-china-2025.

Lago, Cristina. 2021. 'Cloud Computing in the Middle East: The next Big Tech Market?' CIO. 2021. https://www.cio.com/article/220361/cloud-computing-in-the-middle-east-the-next-big-tech-market.html.

Lindák, Martin. 2021. 'Overview of the European Semiconductors Industry'. Hit Horizons. 2021. https://www.hithorizons.com/eu/insights/overview-of-the-european-semiconductors-industr y#:~:text=Europe%20has%20470%20companies%20producing%20semiconductors%20% 28excluding%20branches,countries%20have%20at%20least%20one%20producer%20of% 20semiconductors.

Mak, Robyn. 2020. 'Breakingviews - China's Huawei Holds a 5G Trump Card'. Reuters. 2020. https://www.reuters.com/article/us-huawei-tech-5g-security-breakingviews-idUSKCN24S09 Y/.

Malin, Carrington. 2024. 'Abu Dhabi Forms AI and Advanced Technology Council'. Middle East AI News. 2024. https://www.middleeastainews.com/p/abu-dhabi-forms-ai-advanced-technology-council.

Marine Insight. 2024. 'Chinese Ship Crew Intentionally Dragged Anchor & Damaged 2 Undersea Cables In Baltic Sea'. Marine Insight. 2024. https://www.marineinsight.com/shipping-news/ chinese-ship-crew-intentionally-dragged-anchor-damaged-2-undersea-cables-in-baltic-sea/#:~:text=A%20Chinese%20cargo%20ship%2C%20Yi%20Peng%203% 2C%20is,between%20China%2C%20Europe%20and%20Russia%2C%20about%20possible%20sabotage.

McCarthy, Simone, Isaac Yee, and Abeer Salman. 2024. 'Hamas and Fatah Sign Agreement in Beijing "Ending" Their Division, China Says'. CNN. 2024. https://edition.cnn.com/2024/07/23/china/hamas-fatah-palestinian-factions-beijing-intl-hnk/index.html.

McFadden, Christopher. 2023. 'First Joint China-UAE Military Drill to Take Place in August'. Interesting Engineering. 2023. https://interestingengineering.com/innovation/china-uae-air-joint-training.

MEED. 2008. 'China Harbour Wins Ras Al-Khaimah Contract'. Middle East Economic Digest. 2008. https://www.meed.com/china-harbour-wins-ras-al-khaimah-contract/.

Milrem Robotics. 2023. 'EDGE Acquires Majority Stake in Milrem Robotics, Europe's Leading Developer of Robotics and Autonomous Systems'. Milrem Robotics. 2023. https://milremrobotics.com/edge-acquires-majority-stake-in-milrem-robotics-europes-leading-developer-of-robotics-and-autonomous-systems/.

Ministry of Foreign Affairs The People's Republic of China. 2022. 'President Xi Jinping Attends First China-GCC Summit and Delivers Keynote Speech'. Ministry of Foreign Affairs The People's Republic of China. 2022. https://www.mfa.gov.cn/eng/zy/jj/2022/xjpcxfh/202212/t202212 10_10988406.html.

Morrison, Simon. 2023. 'The Story of Silicon Valley – How It Began, How It Boomed, and Where It's Headed'. Power-and-Beyond. 2023. https://www.power-and-beyond.com/the-story-of-silicon-valley-how-it-began-how-it-boomed-and-where-its-headed-a-9836fd8f0adf6d35358 10e709d99fec3/.

MSN News. 2024. 'AI to Contribute 12% to Saudi Arabian GDP by 2030: SDAIA'. MSN. 2024. https://www.msn.com/en-us/news/technology/ai-to-contribute-12-to-saudi-arabian-gdp-by-2030-sdaia/arAA1qeCl4#:~:text=Workforce%20and%20Eduction%20The%20AI%20workforce%20in%20Saudi,grown%20nearly%2054%25%20annually%20from%202018%20to%202022.

Oil Price. 2024. 'China to Refill Oil Reserves Following 2023 Drawdown'. Oilprice.Com. 2024. https://oilprice.com/Energy/Crude-Oil/China-to-Refill-Oil-Reserves-Following-2023-Drawdown.html.

Pearson, Natalie Obiko. 2020. 'Did a Chinese Hack Kill Canada's Greatest Tech Company?' Bloomberg. 2020. https://www.bloomberg.com/news/features/2020-07-01/did-china-steal-canada-s-edge-in-5g-from-nortel.

Public Investment Fund. 2024. 'PIF and Google Cloud to Create Advanced AI Hub in Saudi Arabia'. PIF. 2024. https://www.pif.gov.sa/en/news-and-insights/press-releases/2024/pif-and-google-cloud-to-create-advanced-ai-hub-in-saudi-arabia/.

PWC. 2024. 'US$320 Billion by 2030? The Potential Impact of Artificial Intelligence in the Middle East'. Pwc.Com. 2024. https://www.pwc.com/m1/en/publications/potential-impact-artificial-intelligence-middle-east.html.

Rees, Sebastian. 2020. 'Chinese Surveillance and Security Tech Is Appearing in the GCC'. Al Bawaba. 2020. https://www.albawaba.com/news/chinese-surveillance-technology-appearing-gcc-1335151.

Reuters. 2024. 'China Urges UN Security Council to De-Escalate Middle East Crisis'. Reuters. 2024. https://www.reuters.com/world/china-urges-un-security-council-de-escalate-middle-east-crisis-2024-10-03/.

Robbins, Michael. 2024. 'The Enemy of My Enemy Is My Friend'. Middle East Council on Global Affairs. 2024. https://mecouncil.org/blog_posts/public-opinion-under-pressure/.

Rosenzweig, Paul. 2024. 'Know Your Customer - as Long as It's Not China'. Federal Times. 2024. https://www.federaltimes.com/opinions/2024/04/18/know-your-customer-as-long-as-its-not-china/.

Sambidge, Andy. 2023. 'UAE Defence Giant Buys Stake in Estonian Robotics Firm'. Arabian Gulf Business Insight. 2023. https://www.agbi.com/tech/2023/02/uae-defence-giant-buys-stake-in-estonian-robotics-firm/#:~:text=The%20%2414%20million%20investment%20creates%20a%20partnership%20that,opportunities%20in%20both%20the%20military%20and%20civilian%20domains.

Schneider, Marcus, Dilek Gürsel, and Clemens Starke. 2023. 'Multipolarity and the Middle East: Exploring Regional Attitude towards the Russia-Ukraine War'. Friedrich-Ebert-Stiftung. 2023. https://library.fes.de/pdf-files/bueros/zypern/20267-20230530.pdf.

Shalal, Andrea. 2025. 'US Probe Finds China Unfairly Dominates Shipbuilding, Paving Way for Penalties, Sources Say'. Reuters. 2025. https://www.reuters.com/world/us-probe-finds-china-unfairly-dominates-shipbuilding-paving-way-penalties-2025-01-13/.

Sinha, Shreyas. 2024. 'Riding the A.I. Wave, Saudi Arabia's Sovereign Fund Continues Its Ambition in Silicon Valley'. Observer. 2024. https://observer.com/2024/07/saudi-arabia-sovereign-wealth-fund-pif-silicon-valley/.

SIPRI. 2024. 'SIPRI Arms Transfers Database'. SIPRI. 2024. https://www.sipri.org/databases/armstransfers.

Sky Quest. 2024. 'Shipbuilding Market Insights'. SKy Quest. 2024. https://www.skyquestt.com/report/shipbuilding-market#:~:text=Global%20Shipbuilding%20Market%20size%20was, period%20(2024%2D2031).

Swan, Jonathan, David McCabe, Ina Fried, and Kim Hart. 2018. 'Scoop: Trump Team Considers Nationalizing 5G Network'. Axios. 2018. https://www.axios.com/2018/01/28/trump-team-debates-nationalizing-5g-network.

Telecom Review. 2024. 'Growth Trends in the GCC Telecommunication Market'. Telecom Review. 2024. https://www.telecomreview.com/articles/reports-and-coverage/7840-growth-trends-in-the-gcc-telecommunication-market/.

Telegeography. 2025. 'Submarine Cable Frequently Asked Questions'. Telegeography. 2025. https://www2.telegeography.com/submarine-cable-faqs-frequently-asked-questions#:~:text=How%20many%20cables%20are%20there,and%20oder%20cables%20are%20decomm issioned.

Tharaka, Ashen. 2023. 'China, Bahrain to Enter NEw Stage of Cooperation Next Year: Ni Ruchi'. News of Bahrain. 2023. https://www.newsofbahrain.com/bahrain/93072.html#google_vignette.

The Defense Post. 2023. 'China, Saudi Arabia to Hold Joint Naval Drills Next Month: Beijing'. The Defense Post. 2023. https://thedefensepost.com/2023/09/28/china-saudi-arabia-naval-drills/.

Thompson, Marc. 2014. 'Bipolar Transistor Models'. Science Direct. 2014. https://www.sciencedirect.com/topics/engineering/point-contact-transistor.

Wong, Tessa. 2023. 'What China Wants from Israel-Hamas War'. BBC. 2023. https://www.bbc.com/news/world-asia-china-67237146.

Xinhua. 2016. 'China's Arab Policy Paper'. China.Org.Cn. 2016. http://www.china.org.cn/world/2016-01/14/content_37573547.htm.

Zinser, Sophie. 2020. 'China's Digital Silk Road Grows With 5G in the Middle East'. 2020. https:// thediplomat.com/2020/12/chinas-digital-silk-road-grows-with-5g-in-the-middle-east/.

Imprint

 The GIGA is thankful for the institutional support provided by the Free and Hanseatic City of Hamburg (Ministry of Science, Research, Equalities and Districts) and the Federal Republic of Germany (Federal Foreign Offce).

Editor DigiTraL Policy Study: Dr. Iris Wieczorek
Editorial Department: Petra Brandt, Dr. James Powell

GIGA | Neuer Jungfernstieg 21
20354 Hamburg
Germany

GIGA
German Institute for Global and Area Studies
Leibniz-Institut für Globale und Regionale Studien