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CHINA'S BELT AND ROAD INITIATIVE AND ITS ENERGY-SECURITY DIMENSIONS

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Abstract

China's Belt and Road Initiative (BRI) is officially neither a Chinese "Marshall Plan" nor a geopolitical master strategy. At present, it involves 84 countries, rising from 65 countries in 2015, and 15 Chinese provinces. Over the last year, the number of countries being concerned or ambivalent about China's motivations and strategic objectives behind the BRI have increased. Despite officially supporting China's BRI, the International Monetary Fund (IMF) also warned last April, that China is supporting unneeded and unsustainable projects in many countries, leading to heavy and unpayable debt burdens. In ASEAN, Chinese investments are welcomed but there are also misgivings about the BRI's strategic objectives which may constrain ASEAN's policy options. As China is presently and will remain the single most influential country in global energy markets in the next decades, it is not surprising that its infrastructure plans of building railways, highways and ports are often interlinked with China's energy and raw materials projects abroad and its domestic energy policies. This paper analyses the energy dimensions of the BRI and its strategic implications for its wider economic, foreign and security policies in Southeast Asia, South Asia, Central Asia and the Middle East.

Introduction

In May 2017, many governments and organisations from around the world attended the Belt and Road Forum in Beijing where China showed off the country's largest project on the global stage. Several countries around the world remain ambivalent about China's motivations behind the Belt and Road Initiative (BRI).[1] In ASEAN, the Chinese investments are welcomed but there are also misgivings about the BRI's strategic objectives which may constrain ASEAN's policy options.[2]

Previously called "One Belt, One Road (OBOR)", the BRI has been designed by China as its new guiding economic and foreign policy framework with a focus on its direct neighbourhood at its southern and western borders, but reaching out to the Persian Gulf, Africa and Europe. Officially, it is neither a Chinese "Marshall Plan" nor a geopolitical master strategy.[3] Even before 2013, China has already been accused of being the "new colonial power" in some African countries.[4]

Meanwhile, the BRI involves 84 countries (rising from 65 countries in 2015) and 15 Chinese provinces.[5] As centuries ago during the times of Marco Polo, China views itself as the "Middle Kingdom" geographically and geopolitically and, therewith, as the global centre of world trade. The BRI is not just a strategy to enhance China's commercial, trade and other economic interests. According to official Chinese declarations, through its designation as "the project of the century" by China's President Xi Jinping[6], it is considered a vehicle to open markets, expand export overcapacities, generate employment, reduce regional inequalities, promote political stability and security through development as well as prosperity and to restore Chinese spheres of influence in the Eurasian landmass and beyond.[7] It is conceived in China's historical roots, designed as a multipurpose umbrella for its comprehensive economic, domestic and foreign policy development in order to increase its geo-economic and geopolitical influence. Ultimately, it is viewed as a renewed form of China's traditional hegemony over its neighbours and rivals as centuries ago but adapted for the 21st century.[8]

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[1] See F. Umbach/Ka-ho Yu, "China's Expanding Overseas Coal Power Industry – New Strategic Opportunities, Commercial Risks and Geopolitical Implications", EUCERS-Strategy Paper No. 11, September 2016, pp. 50 ff. and F. Umbach/Slawomir Raszewski, "Strategic Perspectives for Bilateral Energy Cooperation between the EU and Kazakhstan - Geo-economic and Geopolitical Dimensions in Competition with Russia and China's Central Asia Policies", KAS/EUCERS, Berlin-Astana, EUCERS-Strategy Paper No. 8, February 2016, pp. 32 ff.

[2] See Huang Jing, "What Type of East Asian Order Will China Accept?", East Asia Forum, 28 August 2017.

[3] See Gu Bin, "The Belt and Road Initiative Is not China's Marshall Plan", Financial Times, 8 August 2018; Jamil Anderlini, "Interview: 'We Say, if You Want to Get Rich, Build Roads at First'", Financial Times, 25 September 2018, and Tom Mitchell, "Beijing Insists BRI is no Marshall Plan", Financial Times, 25 September 2018.

[4] See Jamil Anderlini, "China at Risk of Becoming a Colonialist Power", Financial Times, 19 September 2018.

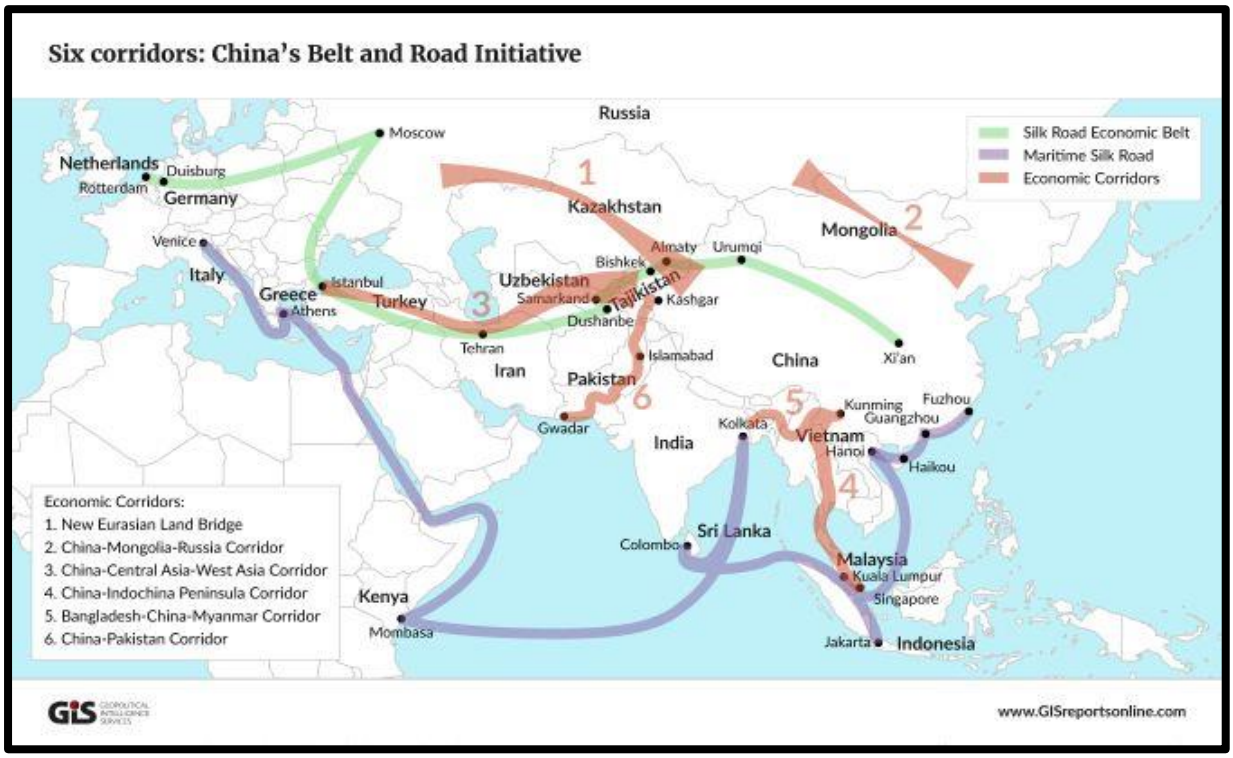
[5] See James Kynge, "A Tale of Two Harbours Tells Best and Worst of China's 'Belt and Road'", Financial Times, 25 September 2018.

[6] See Henry Sender/Kiran Stacey, "China Takes 'Project of the Century' to Pakistan", Financial Times, 17 May 2017.

[7] See also F. Umbach/Ka-ho Yu, "China's Expanding Overseas Coal Power Industry", pp. 50 ff.

[8] See also Henrique Schneider, "The BRI: China's Road to Hegemony", Geopolitical Intelligence Services, 1 September 2017; Michael Kovrig, "The Twists and Turns along China's Belt and Road", International Crisis

Figure 1: The Six Economic Corridors of the BRI



Source: Geopolitical Intelligence Service 2017.

The BRI was launched by Xi Jinping at the OBOR in a speech at the Nazarbayev University in Astana (Kazakhstan), in September 2013. With subsequent refinements, the framework combines the previous programmes of China's Silk Road Economic Belt and 21st Century Maritime Silk Road Strategy. It aims on the country's regional neighbourhood – both on the continent and the seas – with a strategic priority in China's economic, foreign and security policies along six economic corridors (see figure 1).[9]

Should China successfully implement its BRI and ideas of regional, as well as global order, the Eurasian map might be newly defined and the geopolitical influence of the US, the European Union (EU) as well as Russia, might be marginalised. But as big as China's geopolitical ambitions are, there are huge economic and security challenges for the BRI.

China's economic interests in the frameworks of the BRI are closely related with its military and wider security interests as China's 2015 Defence White Paper highlighted: "[The] security of overseas interests concerning energy, and resources, strategies and sea lines of communications (SLOCs), as well as institutions, personnel and assets abroad, has become an imminent issue". The White Paper referred to the task and mission of the PLA: "to safeguard the security of China's overseas interests",

Group Commentary, 2 October 2017, and Charles Parton, "Belt and Road Is Globalisation with Chinese Characteristics", Financial Times, 3 October 2018.

[9] See F. Umbach/Ka-ho Yu, "China's Expanding Overseas Coal Power Industry", and F. Umbach/Slawomir Raszewski, "Strategic Perspectives for Bilateral Energy Cooperation between the EU and Kazakhstan", pp. 32 ff.

from “offshore waters defence” to the combination of “offshore waters defence” with “open seas protection”.[10]

With the BRI, China envisages spurring regional cooperation by leveraging China’s huge economic and financial potential. Up to US$1 trillion (tr) for regional investments and trade have been bandied around. It will not only link China’s economy with those of Southeast, South and Central Asia but also with the Middle East (i.e., Gulf region), Africa and Europe. China is already the world’s largest economy (based on GDP and the World Bank’s purchasing power parity calculations). It is the world’s biggest energy and coal producer, exporter and consumer. By 2020, China could become the world’s largest overseas investor. Its offshore assets might triple from US$6.4tr to almost US$20tr.[11]

China’s geoeconomic strategy is to create an integrated network of supply and value chains, especially in the production, transport and energy sectors. It demands massive investments in ports, airports, transnational railways, highways, container trade and fiber optic cables as well as energy projects such as the development of onshore and offshore oil and gas fields, coal mines and coal-fired power plants, grid networks, other energy infrastructures and the expansion of renewable energy sources (RES).

Although Asia’s infrastructure spending was the world’s largest, with 552 projects worth a record US$131 billion (bn) in 2016, Asia must expand its spending up to US$26tr on infrastructure by 2030 to maintain economic growth and cope with climate change mitigation obligations.[12] This could also transform dramatically the way commerce is conducted globally, increasing the share of the European-Asian trade over land routes. Currently, 90 per cent of global container trade is conducted via vulnerable SLOCs safeguarded and controlled by the US Navy, an aspect which China distrusts and seeks to counter by building its own blue-water navy.[13]

China’s infrastructure plans for building railways, highways and ports are often interlinked with China’s energy and raw materials projects abroad and its domestic energy policies. Since 2009, China has invested US$27.1bn in natural gas and LNG projects in BRI countries.[14] Chinese companies have also announced to invest some US$102bn in building or acquiring power transmission infrastructure in 84 BRI countries around the world. In addition, another US$21bn of loans has been granted for overseas power grid investments.[15] The BRI strategy to build those infrastructures abroad might also boost China’s steel demand by an additional 150 million tons (mt) by doubling its growth rate. It is keeping its steel mills running with much fewer profits and job losses at a time of lower demand at

[10] The State Council Information Office of the People's Republic of China, “China Military Strategy” (Defence White Paper, Beijing 2015.
[11] See Jamil Anderlini, “China to Become World’s Biggest Overseas Investor by 2020”, FT, 25 June 2015.
[12] See Matthew P. Goodman/Jonathan E. Hillman, “Is China Winning the Scramble for Eurasia?”, The National Interest, September-October 2017, p. 2.
[13] See also Andrew S. Erickson, “China’s Blueprint for Sea Power”, China Brief, Vol. 16, 6 July 2016.
[14] See Colin Shek, “Risks in View as China’s Belt and Road Rolls on”, www.interfaxenergy.com, Natural Gas Daily (NGD), 2 July 2018, p. 5.
[15] See James Kynge/Lucy Hornby, “China Eyes Role as World’s Power Supplier”, Financial Times, 7 June 2018.

home.[16] But keeping its steel mills operating demands energy resources and raw materials, which to a larger extent need to be imported.

China is presently and will remain the single most influential country in global energy markets in the next decades. China alone will account for around 40 per cent of the world energy demand rise from 2011 to 2025 and for some 31 per cent between 2011 and 2035. China's electricity demand may even double between 2012 and 2040. Although this growth in demand is expected to decline in the future, Beijing needs to duplicate the entire US electricity system between now and 2030.[17]

Traditionally, China has interpreted energy import dependencies as vulnerabilities and, therefore, has opted for "energy independence" and self-sufficiency.[18] On the side of its BRI partners, including ASEAN and the EU, China's overseas energy projects as part of the BRI need to be analysed more in detail as they offer both opportunities and strategic risks for international energy cooperation and global climate mitigation policies. These overseas (energy) investments in the framework of BRI have become ever more controversial in light of the following strategic developments:

Increasing Debt Burden and Pushback

(1) Despite officially supporting China's BRI, the International Monetary Fund (IMF) has warned last April that China is supporting unneeded and unsustainable projects in many countries, leading to heavy and unpayable debt burdens.[19] According to a report of a US think tank, eight countries are already struggling with their serving debt too expensive and often overpriced projects and Chinese credits. 23 countries are facing increasing financial management risks due to high levels of BRI borrowing. Another study concluded that 32 per cent of all BRI projects (worth US$419bn) since 2013, are facing delays, cancellations, public opposition, mismanagement, misjudgements of the markets, corruption and critical national security debates.[20]

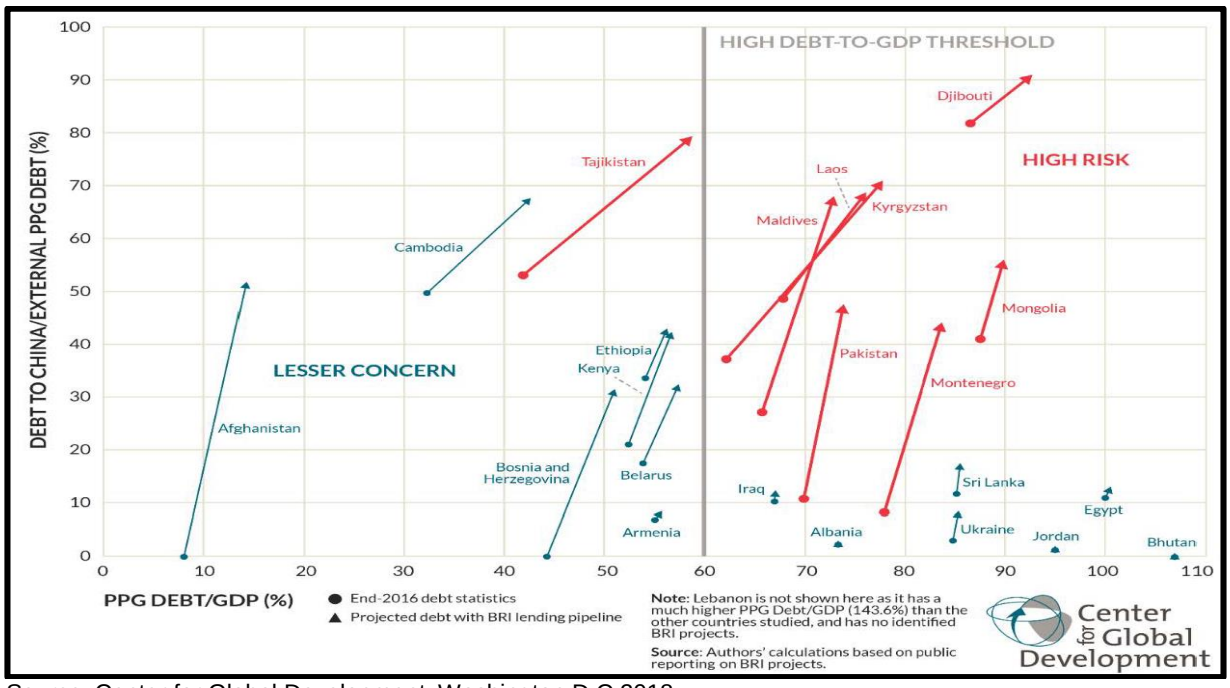
Many BRI countries are coping with projects delays, sovereignty concerns, rising environmental problems and a lack of participation of local workers, questioning an overall sustainable impact on their economies with China's multi-billion investment and infrastructure projects.[21] Most

[16] See also Henry Sanderson, "Miners Upbeat as China's One Belt, One Road Plan Set to Boost Steel Demand", Financial Times, 27 September 2017.
[17] See IEA, "World Energy Outlook (WEO) 2014" (Paris: OECD/IEA, 2014), p. 206.
[18] See also F. Umbach, "Competing for Caspian Energy Resources: Russia" and China's Energy (Foreign) Policies and the Implications for the EU's Energy Security', in: M. Amineh/Y. Guang (Eds.), "Secure Oil and Alternative Energy. The Geopolitics of Energy Paths of China and the European Union", Volume II (Koninklijke Brill NV: Leiden-Boston 2012), pp. 75-114.
[19] See Charles Glover, "IMF's Lagarde Warns China on Belt and Road Debt", Financial Times, 12 April 2018.
[20] See "China's Belt and Road Initiative Is Falling Short", Financial Times, 29 July 2018; Yu Jie, "China's Belt and Road Plan Hobbled by Ironies and Mismatches", Financial Times, 8 August 2018; Alvin A. Camba, "China's Belt and Road Initiative Paved with Risk and Red Herrings", East Asia Forum, 26 June 2018, and David. G. Landry, "The Belt and Road Bubble Is Starting to Burst", Foreign Policy, 27 June 2018.
[21] See John Hurley/Scott Morris/Gailyn Portelance, "Examining the Debt Implications of the Belt and Road Initiative from a Policy Perspective", Center for Global Development, Washington D.C., CGD Policy Paper

prominent has been the example of Sri Lanka: China has become the largest lender to the South Asian country, holding 10 per cent of the island's total accumulated foreign debt estimated at US$55bn. After falling in the Chinese "debt trap design", US$1.1bn on debt was written off in exchange for a 99-year long-term lease on Sri Lanka's deep-water port of Hambantota after building it by a Chinese state-owned company.[22]

Meanwhile, even countries with traditionally close bilateral economic and political ties with China such as Malaysia and Pakistan have announced to review, re-negotiate or cancel previously agreed investment contracts and loan agreements. Those difficulties and problems of the BRI 'are proliferating across the world'.[23]

Figure 2: Immediate Marginal Impact of BRI Lending Pipeline



Source: Center for Global Development, Washington D.C 2018.

121, March 2018. See also Go Yamada/Stefania Palma, "Is China's Belt and Road Working? A Progress Report from Eight Countries", Financial Times, 28 March 2018 and James Kynge, "China's Belt and Road Projects Drive Overseas Debt Fears", Financial Times, 8 August 2018.

[22] See Marwaan Macan-Markar, "Sri Lanka Sinks Deeper into China's Grasp as Debt Woes Spiral", Nikkei Asian Review, 29 August 2018.

[23] James Kynge, "China's Belt and Road Difficulties Are Proliferating Across the World", Financial Times, 9 July 2018. See Jamil Anderlini, "Pakistan Rethinks its Role in Xi's Belt and Road Plan", Financial Times; 9 September 2018; Kiran Stacey, "Pakistan's Pivot to Coal to Boost Energy Gets Critics Fired up", FT, 31 July 2018; Stefania Palma, "Malaysia Cancels China-Backed Pipeline Projects", Financial Times, 9 September 2018; Stefania Palma, "Malaysia Suspends US$22bn China-Backed Projects", Financial Times, 4 July 2018, and Hanna Beech, "'We Cannot Afford This': Malaysia Pushes Back against China's Vision", New York Times, 20 August 2018.

Creating Divisions among EU Countries

(2) Initially, the European Commission in Brussels overlooked China's OBOR initiative. Instead, some EU countries have reacted on a bilateral basis without involvement from Brussels. Through its "16+1"-regional cooperation framework, Beijing has been able to play the individual EU countries against each other. China's recent strategic investments in critical infrastructures in Europe include buying ports (like the Greek harbour of Piraeus[24]) and critical high-tech companies such as the German industrial robotics company Kuka. This has led to new review processes in Germany and the European Commission, leading to new accusations of protectionist tendencies in Europe against "third countries". But the rising economic-political dependencies on China have wider implications as China spent Euro75bn on European acquisitions and investments in 2015 — equivalent to its total European investments during the previous 10 years.[25]

With these rising economic-political dependencies, particularly of smaller European countries on China's investments, companies and trade have undermined a common EU foreign policy towards China. Beijing has used its newly-gained leverage, particularly in smaller European countries. Portugal, Malta, Greece and the Czech Republic have watered down the wording of a recent declaration of an EU review process of "third countries" investment in strategic sectors. In July 2016, Greece, Slovenia, Croatia and Hungary prevented a harsher critical EU statement on China's assertive policies in the South China Sea.[26]

China's perceived objective is no longer just transferring or acquiring strategic technologies by taking over European high-tech companies or banks, but ultimately seeking to gain political leverage and control over the EU's decision-making processes by adopting a tactic of "divide-and-rule".[27] Mistrust is also growing as many Chinese companies lack transparency about their ownership and business plans.[28] Furthermore, China's expanded naval activities recently even extended to a joint naval exercise with the Russian navy in the Baltic Sea.[29]

[24] China is controlling the port after buying a 67% majority stake at the port through its state-backed shipping conglomerate COSCO.

[25] See F. Umbach, "Chinas Seidenstraßen-Strategie in Südosteuropa" ('China's Silk-Road Strategy in Southeastern Europe')', Europäische Sicherheit & Technologie (ES&T), October 2018, pp. 41-45.

[26] See Laurens Cerulus/Jakob Hanke, "Enter the Dragon", Politico, 4 October 2017 and Sibren de Jong et.al., "A Road to Riches or a Road to Ruin? The Geo-economic Implications of China's New Silk Road", Hague Centre for Strategic Studies, The Hague 2017.

[27] See ibid. and Jason Horowitz/Liz Alderman, "Chastised by E.U., A Resentful Greece Embraces China's Cash and Interests", New York Times, 26 August 2017; Michael Makocki/Zoran Nechev, "Balkan Corruption: The China Connection", EUISS-Issue Alert, No. 22, July 2017, and F. Umbach, "Chinas Seidenstraßen-Strategie in Südosteuropa".

[28] One of those examples is the Shanghai-based CEFC China Energy, which has ties to retired military intelligence officers and does business with China's rising military elite - see Lucy Hornby, "Opaque Chinese Oil Group Makes Clear Gains in former Soviet Bloc", Financial Times, 1 September 2017.

[29] See Richard Weitz, "Assessing the Sino-Russian Baltic Sea Drill", China Brief, 20 September 2017.

China has proclaimed a “digital silk road” and investments in overseas fibre-optic cables, telecommunication and internet infrastructures, data and cloud computing services, global positioning and wireless communications, and smart city sensors. This has attracted the EU’s attention and concern. Beijing is suspected of being willing to export its internet censorship and political control of data collection and traffic. It raises basic questions in regard to human rights by undermining personal freedom, privacy as well as anonymity as granted by liberalised Western democracies and their constitutions.[30]

In September 2018, the European Commission published its long-expected “sustainable, comprehensive and rules-based connectivity” strategy. It has defined “connectivity” “to be economically, fiscally, environmentally and socially sustainable in the long-term”.[31] But contrary to widespread expectations, the newly-declared EU strategy does not review China’s BRI. The BRI was not named at all.

(3) According to Western estimates, energy projects and stakes combined have accounted for not less than two-fifths of China’s total US$630bn overseas investments during the last decade. China has already increased its investments in foreign RES projects, reaching US$32bn in 2016 (+60% increase over 2015). It has become the world’s largest investor in RES in domestic and foreign energy markets.[32] China is home to five of the world’s six largest solar panel manufacturers and 50 per cent of the top 10 wind turbine producers.[33]

Building Coal-fired Power Plants

China is also the largest global provider of public financing for foreign coal-fired power plants. In 2013, China’s public financing for coal-fired power plants amounted to 40 per cent of the global total.[34] But those policies for expanding coal production and consumption stand in opposition to global efforts for mitigation of climate change below the 2°C target and the policy of the Organisation for Economic Cooperation and Development (OECD). Such policies were concluded prior to the global climate summit in Paris in November 2015, to limit any state funding for new coal power overseas to the most efficient (“ultra-supercritical”) coal power plants. Some OECD countries have stopped all public funding of foreign coal-fired power plants

[30] See also Stewart M. Patrick, “Belt and Router: China Arms for Tighter Internet Control with Digital Silk Road”, Council of Foreign Relations, 2 July 2018 and Kenny Liew, “Belt & Road Bolsters China’s Technological Clout”, CSIS-Reconnecting Asia Project, 24 September 2018.

[31] European Commission/High Representative of the Union for Foreign Affairs and Security Policies, “Connecting Europe and Asia – Building Blocks for an EU Strategy”. Joint Communication to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, Brussels, 19 September 2018 JOIN (2018) 31 final.

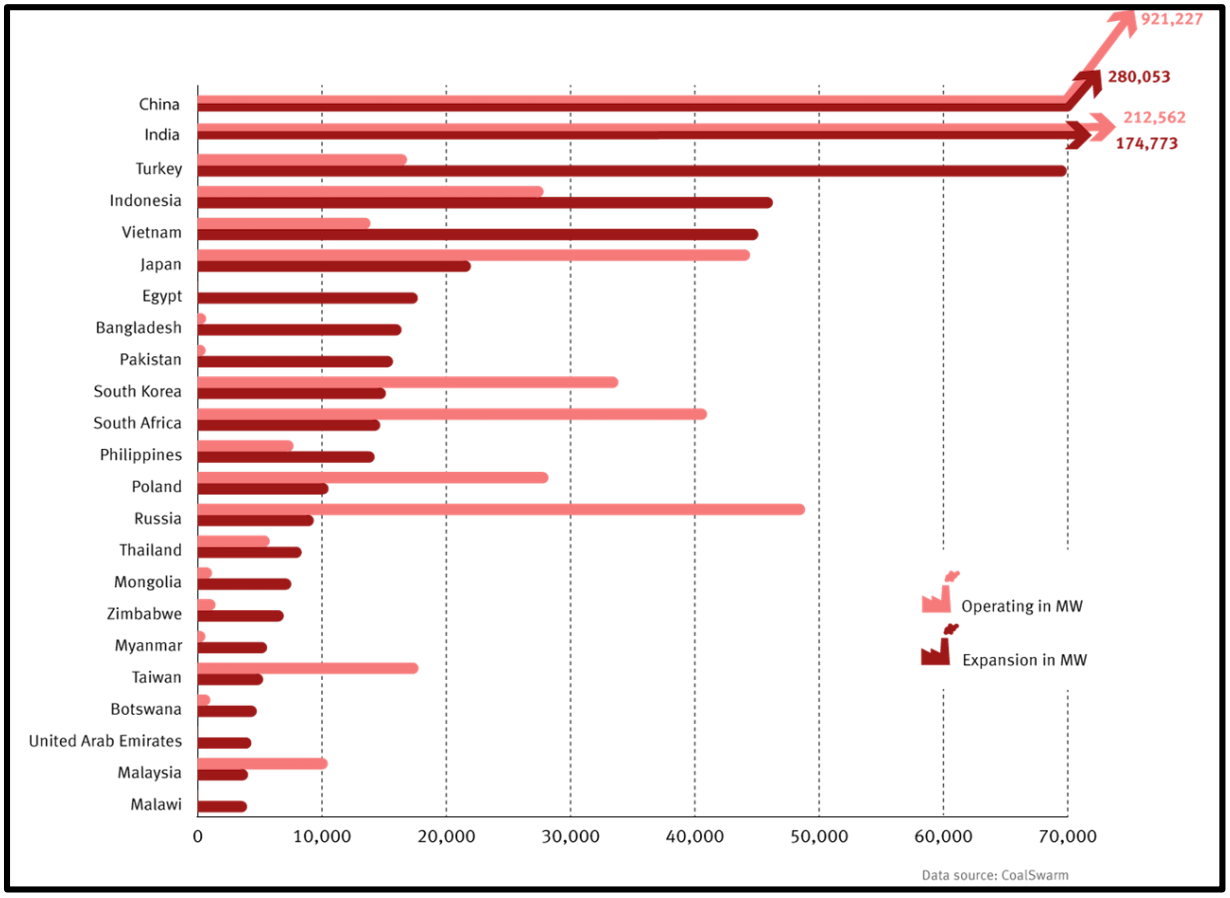
[32] See also Jonathan Kaiman, “China is Getting Serious about Fighting Climate Change at Home, Abroad, Its Investments Tell a Different Story”, Los Angeles Times, 1 June 2017, and John Mathews/Xin Huang Leave, “China’s Belt and Road as a Conduit for Clean Power Projects”, Energy Post, 3 October 2018.

[33] See also “Red China Goes Green”, Stratfor.com, 17 March 2017 and Andrew Ward, “Wave of Spending Tightens China’s Grip on Renewable Energy”, Financial Times, 5 January 2017.

[34] See F. Umbach/Ka-ho Yu, “China’s Expanding Overseas Coal Power Industry”.

except when no RES projects can be implemented in developing countries. Moreover, "ultra-supercritical" coal power plants are only allowed when they can be equipped with Carbon Capture and Storage (CCS) technology.[35]

Figure 3: Proposed Coal Plants in 25 Largest Coal Expanding Countries (2017)



Source: Urgewald 2017 (https://coalexit.org/)

As China appears still to support the building of coal-fired power plants and opening new coal mines by financing, building and exploring them by Chinese energy and mining companies either exclusively or in joint ventures, the question has become even more important what are the drivers of these energy policies abroad in context of the BRI, and whether they do not contradict China's officially declared climate change mitigation policies as the world's largest energy and coal-consuming country as well as largest emitter of Green House Gas Emissions (GHGE).[36] In addition, many BRI projects are criticised of being not committed to any

[35] See F. Umbach, "The Future Role of Coal: International Market Realities vs. Climate Protection?", EUCERS-Strategy Paper Six, King's College, London, May 2015.

[36] See also F. Umbach, "Energy, Climate Change and Asian Geopolitics", RSIS-Commentary No. 118/2017, Singapore, 14 June 2017; idem, "China Won't Save Climate Protection Policies", Geopolitical Intelligence Service, 21 March 2017, and Kelly Sims Gallagher, "China's Belt and Road Is Conduit for Polluting Investments", Financial Times, 9 August 2018.

"sustainable development" and environmental conditions, thus becoming "environmentally unsustainable dumping grounds".[37]

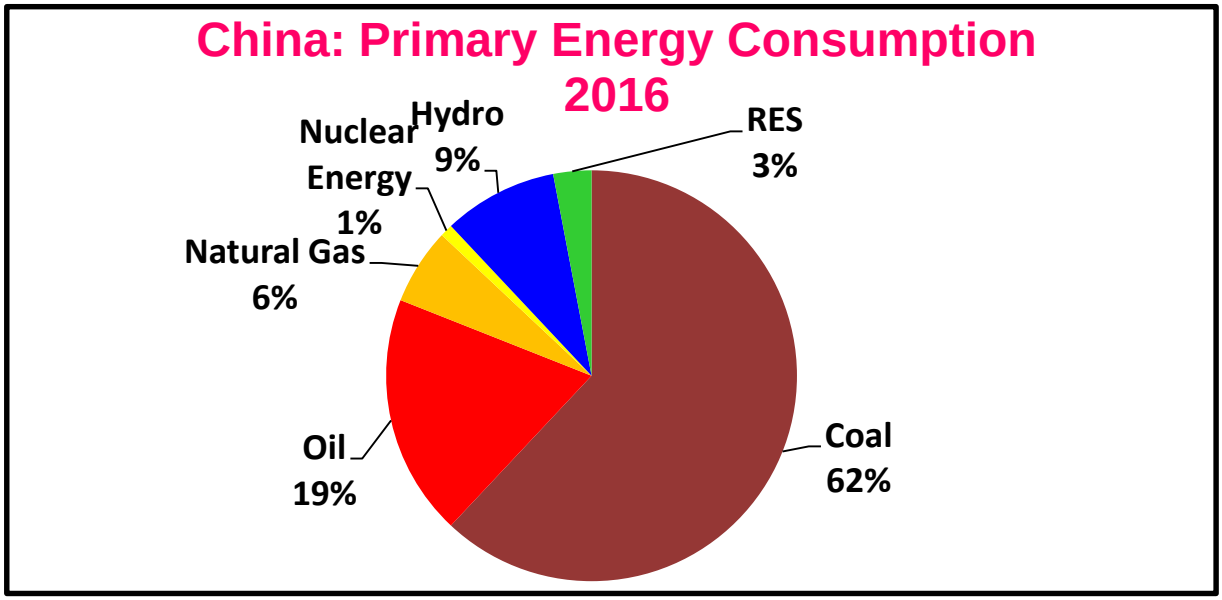
This paper will analyse the energy dimensions of the BRI and its strategic implications, including the questions:

(1) How is China's energy demand a driver of the strategy of the BRI?
(2) To what extent is the energy potential and policies in the South China Sea an important factor in China's BRI strategy?
(3) What are the implications of the BRI on China's national and Asia's regional energy security?

Domestic Drivers of China's Energy Interests Abroad

As part of its 13th "Five Year Plan for Power Sector Development" (2016-2020), China has significantly revised its previous energy plans by decreasing investment and plans in light of a much lower increase in its energy demand as the result of a lower annually projected GDP growth of 6-7 per cent (declining by some 40%), an overall economic restructuring from a once low-tech factory of the world into a global high-tech power and an impressive decline of energy intensity.[38]

Figure 4: Primary Energy Consumption (PEC) 2016

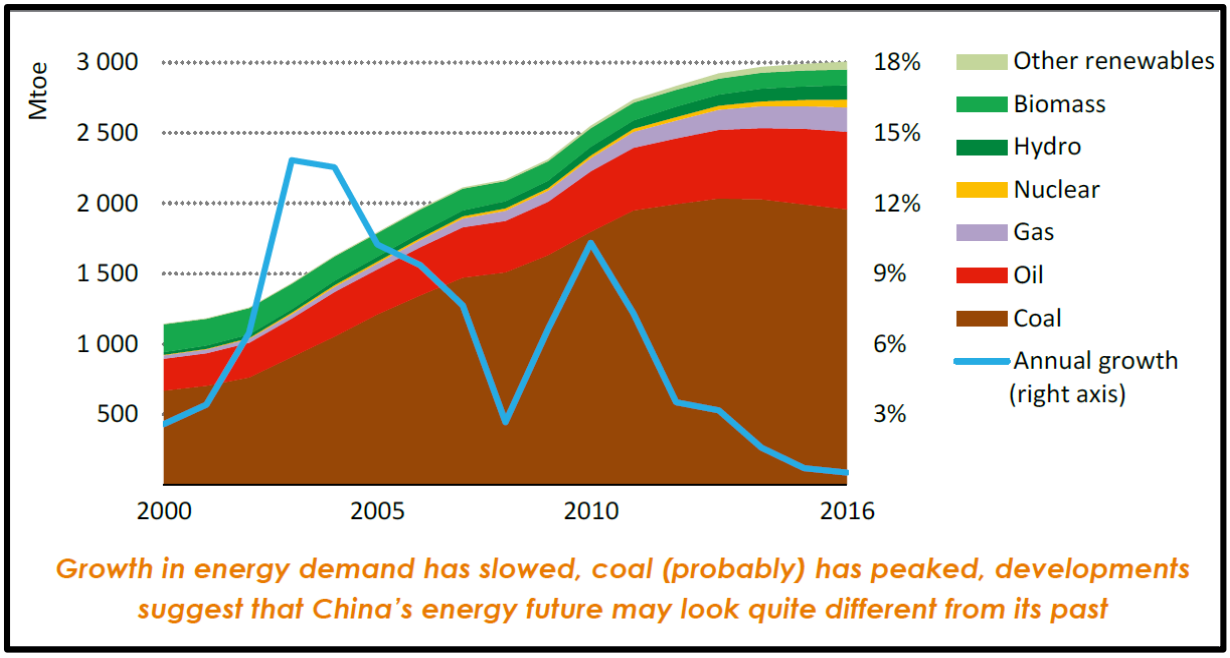


Source: Dr F. Umbach based upon BP, "Statistical Review of World Energy", 66th Edition, June 2017.

[37] See Dokku Nagamalleswara Rao/Atmaja Gohain Baruah, "Is China Going Green by Dumping Brown on its BRI Partners?", East Asia Forum, 25 September 2018.
[38] See Olivia Boyd, "Dialling Down the Ambition on China's Energy Plans", East Asia Forum, 24 February 2017; Editor, "Questions about China's Growth", ibid., 24 July 2017 and Helen Wong, "The East Is Turning Green", Financial Times, 31 July 2017.

While China has introduced numerous policies to decrease its coal consumption for improving air quality in major cities and other environmental problems, its energy reform policies have to cope with mounting problems and challenges. Indeed, political declarations are adopted much faster than its implementation of changes in China's energy policies or even the transformation of its entire national energy system.[39]

Figure 5: China's Primary Energy Demand by Fuel (2000-2016)



Source: © OECD/IEA 2017 World Energy Outlook, IEA Publishing. Licence: www.iea.org/t&c

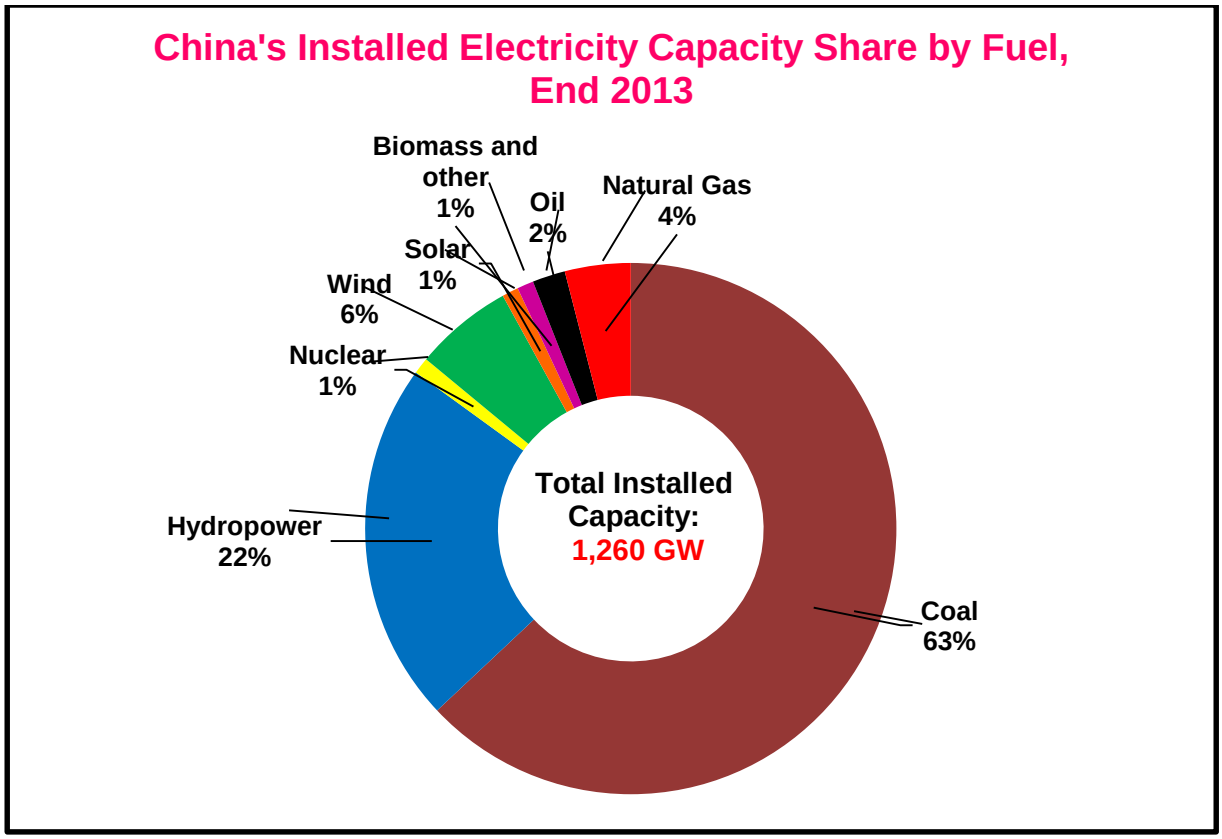
New Environmental Policies and Impact on Expanding RES

While China's energy mix is getting "greener", its expansion of RES is very much driven by its economic-industrial as well as technology policies and its anti-air pollution fight rather than Beijing's global climate protection policies.[40]

In the spring of 2014, China declared a "war on pollution" with plans to improve air quality and reduce CO_2 emissions per capita by 40 to 45 per cent by 2020 from 2005 levels.[41] In 2014, for the first time, a record of additional renewable capacity surpassed the additional capacities of coal with its lowest increased level since 2004. But China will still remain the largest emitter through 2040 and may produce more than twice the amount of GHGE set to originate in the US by 2030. In 2012, China already emitted some 60 per cent more CO_2 than the US. In 2014, for the first time, China was producing more CO_2 per capita than the EU (7.2 t vs 6.8 t respectively).

[39] See also IEA, "WEO 2017" (Paris: OECD/IEA, 2017), pp. 471 ff.
[40] See also F. Umbach, "China Won't Save Climate Protection Policies", Geopolitical Intelligence Service, 21 March 2017.
[41] See also "Smog Clouds China's Future as a World Leader", Strafor.com, 14 February 2017.

Figure 6: China's Installed Electricity Capacity Share by Energy Resource (End of 2013)



Source: Dr F. Umbach based on EIA, "China. Analysis Briefs", 14 May 2015.

During the last years, China has dramatically expanded its investments into RES for economic, environmental and energy security reasons.[42] With more than one-quarter of the world's RES capacity (totalling some 564 GW, incl. 305 GW of hydropower), it has become the world leader in investments for RES and production of solar panels as well as batteries for electric mobility. The government envisages some 340 GW of hydropower, 110 GW of solar and 210 GW of wind power by 2020.[43] China has announced spending of more than US$360bn on RES and creating more than 13 million new jobs in the RES sector by 2020.[44]

The number of new wind installations dropped by 24 per cent in 2016 relative to 2015[45], though it was still able to add 23.4 GW of the worldwide total of 55 GW (42%) of wind power capacity in 2016.[46] It has also lowered its solar and wind power targets for 2020 due to existing overcapacities and the inability of its national grid to absorb the newly-generated electricity. At the beginning of 2017, China's

[42] It's important to take into account that China's definition of RES as well as "clean energy resources" includes hydropower and nuclear power.
[43] See "China Leads the World in Renewables Drive", www.interfaxenergy.com, Global Gas Analytics, 6 July 2017, p. 2 and Simon Göss, "China's Renewable Energy Revolution Continues on its Long March", Energy Post, 13 February 2017.
[44] Andrew Ward, "Wave of Spending Tightens China's Grip on Renewable Energy", 5 January 2017, and Michael Forsythe, "China Aims to Spend at Least $360 Billion on Renewable Energy by 2020", New York Times, 5 January 2017.
[45] See "China Scales Back Solar, Wind Ambitions as Renewables Cool", Bloomberg News, 8 November 2016 and James Taylor, "Five Secrets to China's Renewable Energy Success", Forbes, 29 December 2016.
[46] See "China Leads the World in Renewables Drive".

National Energy Administration (NEA) has prohibited new wind power projects in six provincial regions.[47]

China may also overtake the US in nuclear power generation by the building of another 19 reactors over the next 10 years as another "clean energy resource". Nuclear power is produced presently at 38 nuclear power plants. In 2015, nuclear power generated just 3.6 per cent of its total net electricity generation. [48]

Ambivalent Coal Policies

In 2015, China officially stated that it would reach the peak of its GHGE by 2030 and only afterwards, decrease them. In the same year, Beijing approved some 155 new coal projects — the equivalent of 15 per cent of overall Chinese coal-fired power capacity in 2014, or almost 40 per cent of the capacity of all operational American coal plants. The capacity of Chinese coal-fired power plant has been projected to increase by a further 420-600 GW by 2040 — the total combined recent coal-fired generation capacity of the US, the EU and Japan.

China is currently building 50 additional modern coal plants, which may produce an estimated 1.1 billion tonnes of CO_2 per year. Almost all projected scenarios for China have concluded that, through 2040, the majority of Chinese energy and electricity generation mix will still come from fossil fuels at higher volumetric levels.

Over the last 15 years, China has continuously tried to restructure its coal sector and industry, which is beset by small local and often inefficient coal mines with out-dated equipment and insufficient investment — 7,500 of these mines produced 20 per cent of the national output.[49] Beijing has created, through mergers and acquisitions, 10 large coal companies, accounting for about 60 per cent of the country's total coal production, and reducing the overall number to 4,000 mines by 2015. China's coal production has moved westwards to the cheaper, but more unstable Xinjiang province following depletion in old mining areas. It is not clear whether Beijing's present coal plan will only reduce CO_2 emissions in China's largest cities or just shift most of the pollution to other regions.

The present consolidation process in China's power sector may result in a triopoly of giant power companies with nearly a trillion dollars of assets. It might force a merger between the "Big Five" coal power generators with large state-owned coal mining and nuclear power companies.[50]

[47] See "New Wind Power Projects banned in 6 Regions", China Daily, 23 February 2017.
[48] See also EIA, "Chinese Coal-Fired Electricity Generation Expected to Flatten as Mix Shifts to Renewables", Washington D.C. 2017, p. 2.
[49] See F. Umbach/Ka-ho Yu, "China's Expanding Overseas Coal Power Industry", pp. 31 ff.
[50] See Lucy Hornby, "China's Consolidation Push Turns to Sprawling Power Sector", Financial Times, 14 June 2017.

China also seeks to further enhance the energy efficiency of its coal-fired power plants in order to reduce emissions and decrease air pollution. Current efficiency levels reach 37 per cent and are thus already higher than the world's average of 33 per cent. China wants to shut down many older "subcritical" coal power plants and build new and cleaner "ultra-supercritical" coal power plants with lower emissions and higher efficiency. In 2015, 90 of the worldwide 100 top ultra-supercritical plants were operated in China - compared with just one in the US[51]

In January 2017, Beijing stopped more than 100 coal-fired projects.[52] Reportedly only 22 GW of new coal-fired power generating capacity was approved for construction compared with 142 GW in 2015.[53] According to the 13th Five-Year Plan (2016-2020), around 150 GW of new coal capacity will be cancelled or postponed until at least 2020.[54] China's coal capacity in the pre-construction planning stage decreased to 570 GW of coal power capacity in 2017 from 1,090 GW a year before.[55] It would cut its coal power capacity by 300 million tons (mt), that will shrink its coal output rise to 3.9 bn t of coal by 2020 (up from 3.75 bn t in 2015), while its coal consumption will grow from 3.96 bn t to 4.1 bn t over the same time. Thereby it will decrease 800 mt of outdated and inefficient coal capacity and add 500 mt of clean coal capacity.[56] The decision has been taken primarily to curb overcapacities as China's coal-fired power plants had an average load factor of just 46 per cent, risking many newly build ones becoming "stranded assets."[57]

[51] See Melanie Hart/Luke Bassett/Blaine Johnson, "Everything You Think You Know about Coal in China Is Wrong", Center for American Progress, Washington D.C., 15 May 2017 and idem, "Research Note on US and Chinese Coal-Fired Power Data: Assessing Combustion Technology, Efficiency, and Emissions", Center for American Progress, Washington D.C. 2017.

[52] See "In Latest Move, China Halts over 100 Coal Power Projects", Global Energy News, 17 January 2017; Michael Forsythe, "China Cancels 103 Coal Plants, Mindful of Smog and Wasted Capacity", New York Times, 18 January 2017 and Paulina Garzon/Leila Salazar-Lopez, "China's Other Big Export: Pollution", New York Times, 21 July 2017.

[53] See also John A. Mathews, "China's Continuing Green Shift in Electric Power: Evidence from 2016", p. 8.

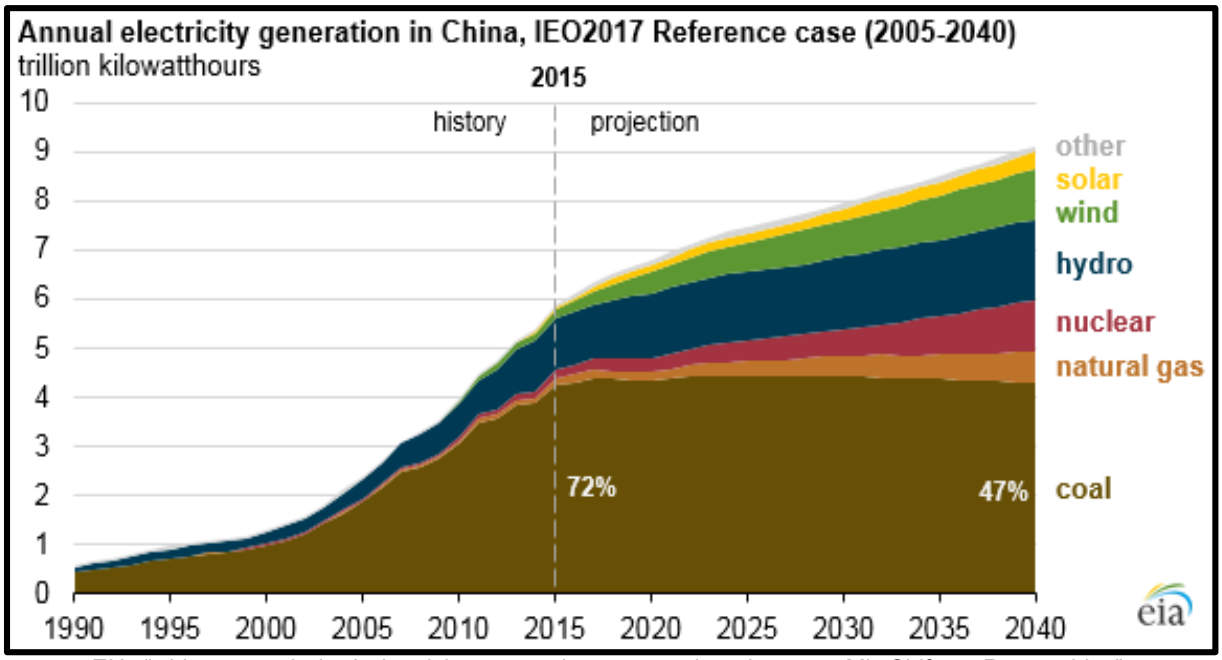
[54] See EIA, "Chinese Coal-Fired Electricity Generation Expected to Flatten as Mix Shifts to Renewables", p. 1.

[55] See Christine Sheareret.al., "Boom and Bust 2017: Tracking the Global Plant Pipeline".

[56] See also Tom Hancock, "China Targets Aggressive Coal Capacity Cuts by 2020", FT, 3 January 2017.

[57] See also Emily Feng, "China Coal Glut Threatens to Create $90bn in 'Stranded Assets'", FT, 13 November 2018.

Figure 7: China's Electricity Generation 1990-2040



Source: EIA, "Chinese Coal-Fired Electricity Generation Expected to Flatten as Mix Shifts to Renewables", Washington D.C. 2017.

Despite China's efforts to reduce its coal share in its electricity mix from more than 70 per cent in 2011 to 62 per cent in 2016 and to 55 per cent by 2020, it was forced to adjust its policy in response to pressing domestic considerations. China relaxed production controls for mining coal in the second half of 2016 by allowing 800 mines to operate up to 330 days instead of 276 days (a target it introduced in April 2016), due to the steep increase in prices and bottlenecks of supply after its coal production dropped 11 per cent in the first 10 months of 2016 compared with the same period of 2015. The relaxed production controls could increase the coal production.[58] The steep increase of coal prices had alarmed China's steel mills and big utility companies as their profit margins were threatened.[59]

As a result, in combination with a higher economic growth, China's coal consumption (for the first time since 2013) increased again in 2017 by an estimated 4 per cent towards the previous year to 1.4 bn t[60] alongside of its coal imports (even doubling those from the US of its total of 270 mt[61]) in 2017.

[58] See Lucy Hornby, "China Backs Away from Using Central Government to Close Coal Mines", Financial Times, 8 March 2017; Neil Hume, "Coking Coal Cools as China Mines Raise Output", Financial Times, 18 January 2017; Keith Bradsher, "Despite Climate Change Vow, China Pushes to Dig More Coal", New York Times, 29 November 2016, and Lucy Hornsby, "China Eases Coal Mine Working Day Curbs as Supply Tightens", Financial Times, 17 November 2016.

[59] See Jonny Sultoon/Prakash Sharma, "China's Coal Policy: A Victim of its own Success?", Financial Times, 24 March 2017; Neil Hume, "The Dangers of Writing Coal's Obituary", Financial Times, 26 January 2017 and idem, "Coking Coal Cools as China Mines Raise Output", Financial Times, 18 January 2017.

[60] See "China's Coal Output Grows Fastest in Years in May on Summer Outlook", Thomson Reuters, 14 June 2017; Nicole Rashotte, "China 2017 Coal Consumption Rises after Three-Year Decline", Coal Investing News, 28 February 2018; Emily Feng, "China's Annual Coal Consumption Rises for the First Time in 3 Years", Financial Times, 28 February 2018; Trevor Houser/Peter Marsters, "China Energy Snapshot 2017", Rhodium Group, 25 January 2018, and Ye Qi/Jiagi Lu, "China's Coal Consumption has Peaked", Brookings, 22 January 2018.

[61] See Clyde Russell, "China, not Trump, Drives US Coal Export Revival", Reuters, 20 February 2018.

Hence, China's GHGE also climbed by 3 per cent in 2017 after three years when the emissions were falling primarily due to a slowing economic development.[62] China's shift from coal to gas also resulted last winter in mounting problems in a sufficient gas supply as the turning off coal power plants has not replaced with sufficient gas infrastructures in place. Beijing had to revive coal power plants and to lift restrictions on coal imports as it has no replacement for heat or electricity generation.[63]

Most international experts meanwhile expect a peak of coal consumption in China already before 2030, around 2026.[64] According to the IEA's "New Policy Scenario", China will still account for almost 45 per cent of the worldwide coal demand by 2040.[65]

Since the beginning of 2016, China's imports of coal have also increased. It regained the status as the world's largest coal importer.[66] While China imports just around 5 per cent of its coal, it equalises around 20 per cent of the worldwide seaborne coal market.[67] The demand is largely driven by higher grades of thermal coal.[68] Only in the first months of 2018, did coal imports decreased.[69]

[62] See Keith Bradsher/Lisa Friedman, "China Emissions: More than US plus Europe, and Still Rising", New York Times, 25 January 2018; Andreas Walstad, "Chinese Growth Propels World Emissions Higher", www.interfaxenergy.com, NGD, 16 November 2017, and Tobias Buck/Lucy Hornby, "China Recovery Pushes Greenhouse Emissions to Global Record", Financial Times, 13 November 2017.

[63] See also Peter Wood, "China Faces Wintertime Energy Crisis of its Own Making", China Brief, Vol. 17, Issue 17, 22 December 2017; Tanh Tian, "China to Tread more Softly on Coal-to-Gas Campaign", www.interfaxenergy.com, NGD, 12 March 2018, pp. 1-2; Colin Shek/Tang Tian, "China Left with Few Options to Solve Gas Supply Crisis", ibid., 11 December 2017, pp. 1-2; Colin Shek, "Downstream Bears Brunt of China's Gas Supply Crunch", ibid., 2 January 2018, pp. 1-2; Olivia Boyd, "Dialling Down the Ambition on China's Energy Plans", East Asia Forum, 24 February 2017; Lucy Hornby, "China Gas Shortages Spread after botched Coal Conversion"; Financial Times; 12 December 2017, and idem, "North China Relaxes Home Coal Ban as Gas Shortage Bites", Financial Times, 7 December 2017.

[64] See Henry Sanderson, "Investors Shine Spotlight on Coal Groups over Climate Change Risk", Financial Times, 11 July 2017.

[65] See IEA, "WEO 2017", p. 609.

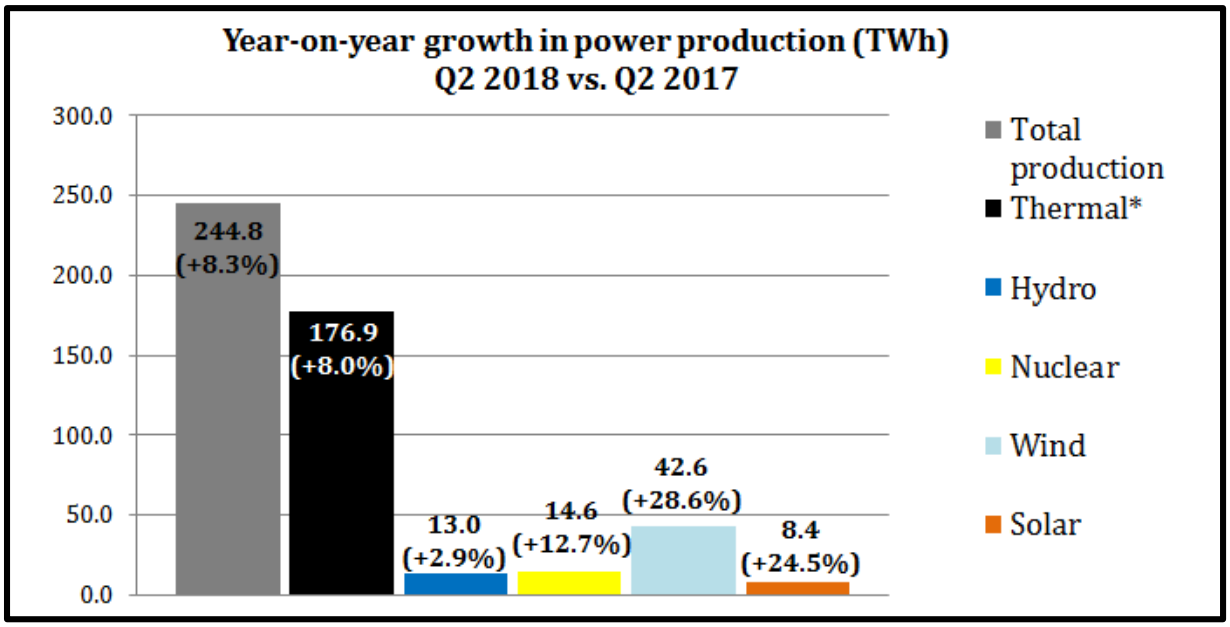
[66] See also Tang Tian, "Coal-Gas Switching Buoys China Import Growth", www.interfaxenergy.com, NGD, 16 November 2016, p. 5.

[67] See also Jonny Sultoon/Prakash Sharma, "China's Coal Policy: A Victim of its own Success?" and Kara Sherwin, "China Is Outsourcing Its Pollution", Foreign Policy, 7 December 2016.

[68] See Clyde Russell, "China's Coal Imports Soar as India's Stumble", Thomson Reuters, 3 August 2017 and Henning Gloystein, "Like a Phoenix from the Ashes, Coal Rises from Half a Decade of Slump", Thomson Reuters, 10 February 2017.

[69] See Clyde Russell, "Column-China Coal Imports Tumble on New Rules, India Yet to Take up the Slack: Russell", Reuters, 23 April 2018.

Figure 8: Year-on-Year Growth in Power Production (TWh) – Q2 2018 vs. Q2 2017



Source: China Energy Portal (https/chinaenergyportal.org/2018-q2-electricity-and-energy-statistics/ (accessed on 15 August 2018).

While Beijing's policymakers have shown some willingness to sacrifice economic growth, it clearly has its limits. New analyses of China's coal sector, confirmed by satellite imagery, have concluded that many coal-fired power projects (46.7 GW), which had ceased in January 2017, quietly restarted. They can increase China's coal-fired capacity by 4 per cent. In the first half of 2018, the country's national coal consumption increased officially by about 3.1 per cent. In total, an estimated 259 GW of new coal-fired capacity is still under development — the equivalent of the entire present US coal fleet (with a capacity of 266 GW). The approved capacity of new coal-fired plants will increase by 25 per cent to the already existing 993 GW.[70] China's NEA and many Chinese energy experts are still defending the promotion of "green", environmentally friendly and efficient use of coal as being "equally important as developing new energy".[71]

Reliance on coal for China's primary energy and generation mix may drop to 45 per cent by 2040 as projected by the IEA, yet the country's present annual coal consumption cannot be replaced entirely by gas and renewables. Consequently, coal will remain China's most reliable resource to guarantee base-load stability and energy supply security.

[70] See Christine Shearer/Aiqun Yu/Ted Nace, "Tsunami Warning. Can China's Central Authorities Stop a Massive Surge in New Coal Plants Caused by Provincial Overpermitting?", Coalswarm, September 2018; Feng Hao, "China Is Building Coal Power again", Chinadialogue, 3 August 2018; Matt McGrath, "China Coal Power Building Boom Sparks Climate Warning", www.bbc.com, 26 September 2018. According to the consulting firm Woods Mackenzie, China could even add as much as 400 mt of new coal capacity over the next two years – see Michael Bastasch, "How 'Green' China Fooled the World as New Coal Boom Continues", The Daily Caller, 24 September 2018.

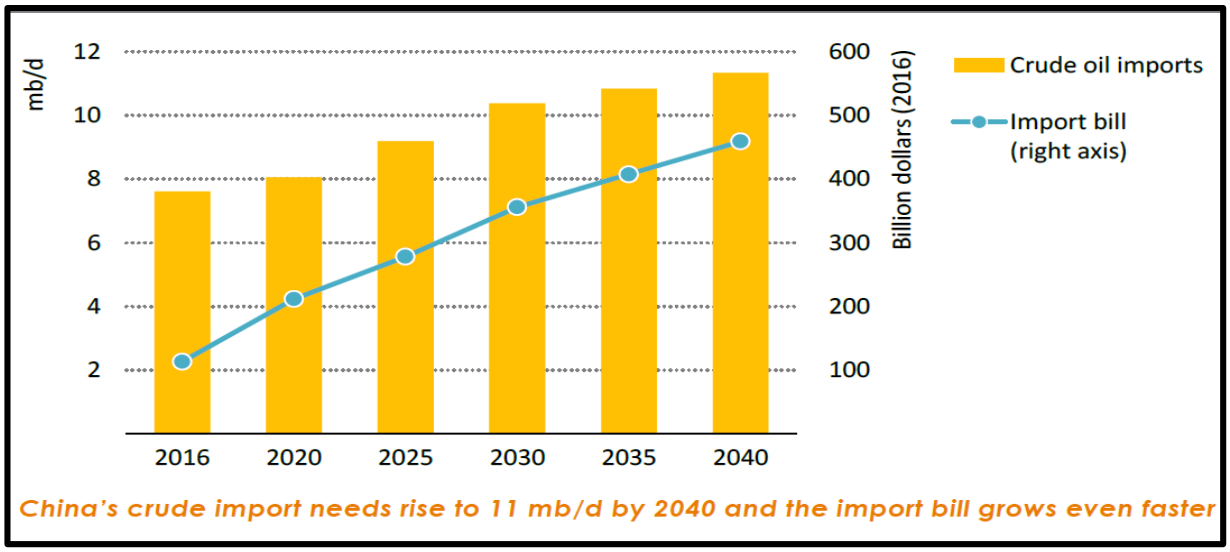
[71] Quoted following: Liu Yukun/Liu Zhihua/Sun Ruisheng, "Green Coal, By-Products Power Clean Energy Drive", China Daily, 18 September 2018.

Growing Oil Import Dependencies

In 2017, China revised several times its overall oil and gas demand forecast, which could reduce its future oil and LNG imports – but rather in the long-term perspective. Its indigenous oil production has been declining for years down to 4 million barrels per day (mb/d) in 2016 though it remains the seventh-largest producer in the world. By 2040, its production could further fall to 3.1 mb/d, while its oil demand will increase by another 35 per cent up to 15.5 mb/d. Hence, China's oil import dependency will rise from presently 70 per cent (and 64% in 2016) to more than 80 per cent of its demand.[72]

Chinese oil companies have increasingly engaged abroad and increased their overseas equity production to around 3 mb/d in 2016. Their expanded investments in oil and gas infrastructures and supply chains included high-risk countries such as Sudan. In 2016, its crude oil imports increased up to 7.6 mb/d. More than 1 mb/d is transported via pipelines from Kazakhstan, Myanmar and Russia. In 2017, China might have become the world's largest oil-importing country (around 30% of the internationally traded oil), surpassing the US which relies increasingly on its rapidly rising own indigenous shale and tight oil production.[73] Despite rising oil imports from Russia, China will remain dependent on half of its oil imports from the Middle East and, therewith, on unstable SLOCs and the congested Strait of Malacca.

Figure 9: China's Crude Oil Import Volume and Associated Import Bill in the New Policies Scenario (NPS)



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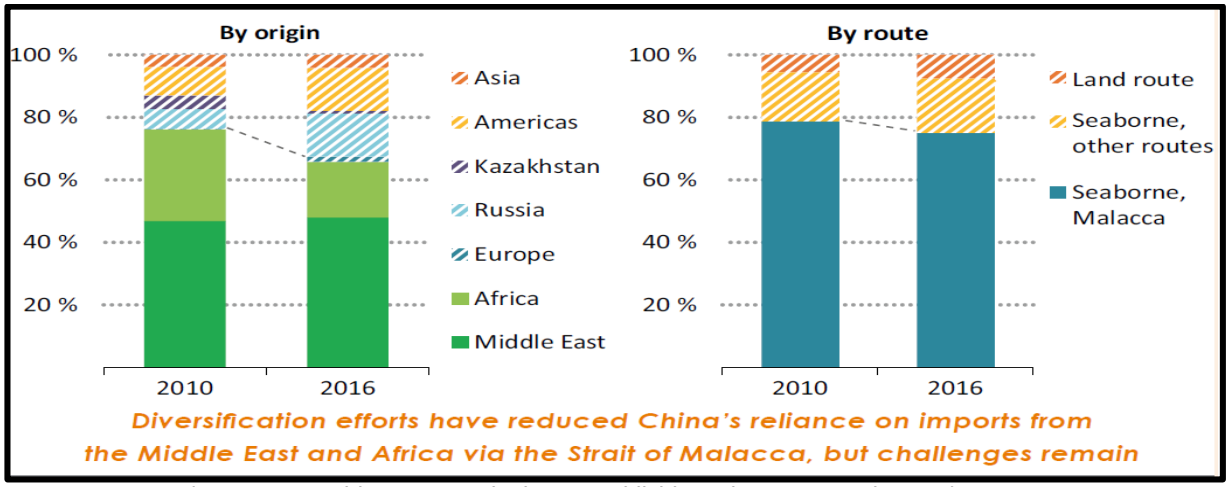
In its oil supply security strategy, Beijing and its oil companies have increased (i) their equity of overseas oil production, (ii) their oil stocks to around 245 mb (more than 30 days of net imports), (iii)

[72] See IEA, "WEO 2017", pp. 561 ff. and Colin Shek, "Chinese NOC to Lift Domestic Output after Xi Order", www.interfaxenergy.com, NGD, 3 September 2018, pp. 1-2 (2).
[73] See IEA, "WEO 2017", pp. 486 ff.

land-based pipeline supplies to reduce its reliance on seaborne shipments and (iv) the diversification of its oil imports. The share of imports from Russia has more than doubled between 2010 (6% of its imports) and 2016 (to 14%), surpassing those from Saudi Arabia. As a result, the combined share of oil imports from the Gulf Region and Africa to China has decreased from 75 per cent to less than 65 per cent and the share of oil deliveries via the Strait of Malacca from around 80 per cent to 75 per cent (mainly due to the China-Myanmar oil pipeline) since 2010.[74]

Figure 10: China's Crude Oil Imports by Origin and Route



Source: © OECD/IEA 2017 World Energy Outlook, IEA Publishing. Licence: www.iea.org/t&c

Rising Gas Consumption and Imports

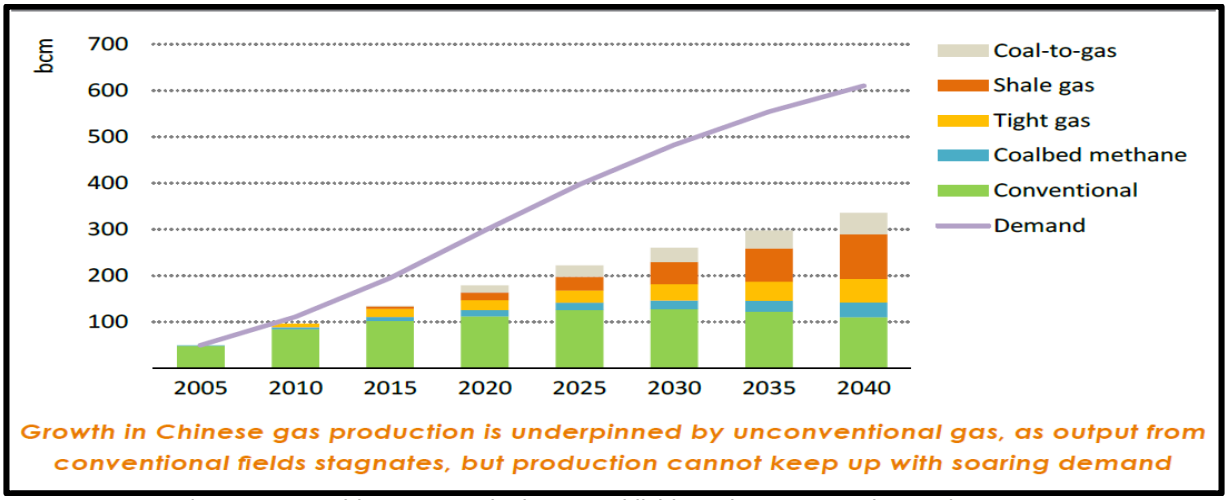
China surpassed Japan as the third-largest natural gas consumer in 2009, yet the share of gas was just 7 per cent in its national energy mix in 2017. By 2020, Beijing hopes to increase the share of gas up to 10 per cent and by 2030 up to 15 per cent.[75] As a result of an evolving coal-to-gas switch, its gas demand has been revised again by increasing from presently 400 billion cubic meters per year (bcm/y) up to 620 bcm/y by 2035 and 695 bcm/y by 2050, fueled by the rising consumption of its industry, power and residential consumers.[76]

China's gas imports in general and Liquefied Natural Gas (LNG) imports, in particular, will rise even faster compared with its oil imports. But the volumes of the imports depend to a large extent whether its shale gas projects and ambitions can be realised. China possesses 31.6 trillion cubic meters (tcm) of technically recoverable shale gas resources (15% of the worldwide shale resources) — almost as much as the United States (32.9 tcm). In 2017, China produced 148.7 bcm/y of conventional and unconventional natural gas as the world's six-largest gas producer, which may rise up to 160 bcm/y

[74] See ibid., p. 580 f.
[75] See IEA, "WEO 2017", pp. 507 ff. and 589 ff.; Li Xin, "Next Five Years Crucial for Chinese Climate Pact", Interfaxenergy.com, NGD, 14 November 2014, p. 4.
[76] See "Chinese Gas Consumption to Hit 620bcm/y by 2035", www.interfaxenergy.com, NGD, 19 September 2018 and IEA, "WEO 2017", pp. 507 ff.

this year.[77] Beijing aims to expand its own gas production up to 207 bcm by 2020 — including 30 bcm of shale gas, 37 bcm of tight gas, 16 bcm of Coal-Bed Methane (CBM) and 10 bcm of allocated gas -, 300 bcm in 2035 (including 100 bcm of shale gas) and 350 bcm/y in 2050. Its domestic pipeline network is projected to expand from 64,000 km in 2015 to 104,000 km by 2020 and 163,000 km by 2025.[78]

Figure 11: China's Natural Gas Demand and Production by Type in the NPS



Source: © OECD/IEA 2017 World Energy Outlook, IEA Publishing. Licence: www.iea.org/t&c

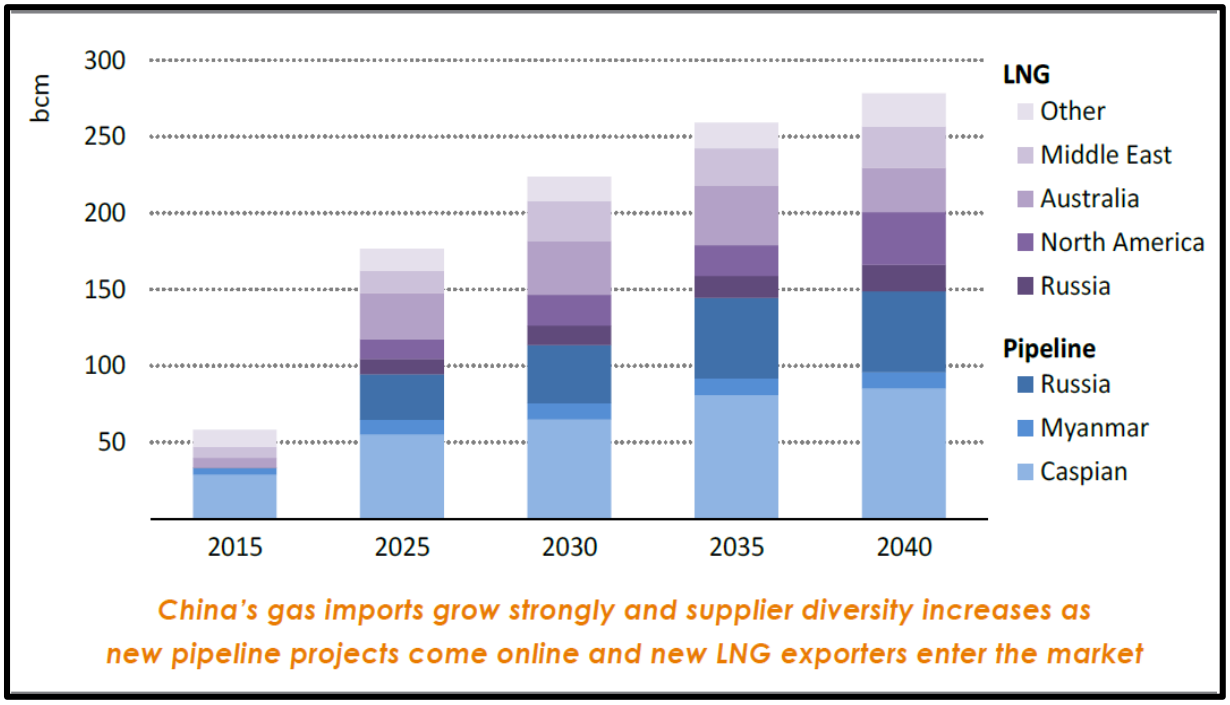
China has been a net natural gas importing country since 2007. Its gas import dependency rose from 35 per cent in 2016 up to 39 per cent in 2017, which might further grow up to 44 per cent by 2020 (with rising consumption of 360 bcm/y) and up to 52 per cent by 2045.[79] In 2016, it was already the fourth-largest importer in the world, totalling 73 bcm. Half of it was delivered as LNG imports from 16 countries, the rest of it as pipeline gas from Turkmenistan, Uzbekistan, Myanmar and Kazakhstan. China has now 17 LNG import regasification terminals in operation with a capacity of 70 bcm per year. The total capacity of the three Central Asia gas pipelines and the one with Myanmar was 67 bcm in 2016.[80] By 2040, its overall gas imports could expand up to 280 bcm, making it the second-largest gas importer after the EU.

As new data indicates, China's LNG imports have risen much more since the second half of 2017. China has become the world's second-biggest LNG importer in 2017 as it has overtaken South Korea, though its imports of LPG as the world's largest importer had been estimated to be surpassed by India for the first time last December.[81] Its present LNG import capacity of 68 million tonnes (mt) at 20 terminals might further grow 8.6 per cent annually up to 90 mt by 2020 and 100 mt by 2025. Its

[77] See Tang Tian, "China Turns Policy Gaze towards Raising Gas Output", www.interfaxenergy.com, NGD, 12 September 2018, pp. 1-2 (1).
[78] See DataFusion Associates, "LNG Insights. China LNG Forecast", October 2017, p. 1.
[79] See Tang Tian, "China Turns Policy Gaze towards Raising Gas Output", p. 1, Colin Shek, "Chinas Gas Demand on Course for Double-Digit Growth" ibid., 21 August 2017.
[80] See IEA, "WEO 2017", p. 489 f.
[81] See Henning Gloystein, "China Becomes World's No. 2 LNG Importer in 2017, behind Japan", Reuters, 26 December 2017; idem, "India Challenges China as World's Biggest LPG Importer", ibid., 27 December 2017.

pipeline imports could rise from 40 bcm in 2016 to 150 bcm.[82] As new analysis suggests, China might already overtake Japan as the world's largest natural gas (but not of LNG) importer until the end of this year.

Figure 12: China's Natural Gas Imports by Exporter and Transport Mode in the IEA's NPS



Source: © OECD/IEA 2017 World Energy Outlook, IEA Publishing. Licence: www.iea.org/t&c

The Chinese government does not want to become overly dependent on gas imports. A rising gas import dependence would only heighten Beijing's perceived anxiety about its rising dependence on maritime imports of oil, gas, and coal supplies via unstable SLOCs and choke points.

While Beijing also follows a coal-to-gas change in its energy mix, in contrast to the US, China does not have sufficient own gas resources to boost a dramatic change. Hence, it has to import much more expensive gas pipeline supplies from Central Asia (i.e., Turkmenistan) and Myanmar (as part of its China-Indochina Peninsula Corridor[83]) as well as LNG imports, including from the US. In the future, rising imports from Russia (both pipeline and LNG) are anticipated as well as from other countries.

[82] See ibid., p. 594 f.
[83] See "Southeast Asia: A Notch in China's Belt and Road Initiative", Stratfor.com, 18 May 2017; "China and Japan Compete for Southeast Asia's Railways", ibid., 4 May 2016 and Mark Canning, "Myanmar Weighs Infrastructure, Strategic Ties to China" Financial Times, 31 May 2017.

China's Energy Interests in the Regions of the BRI

Expanding Investments in Energy Projects Overseas

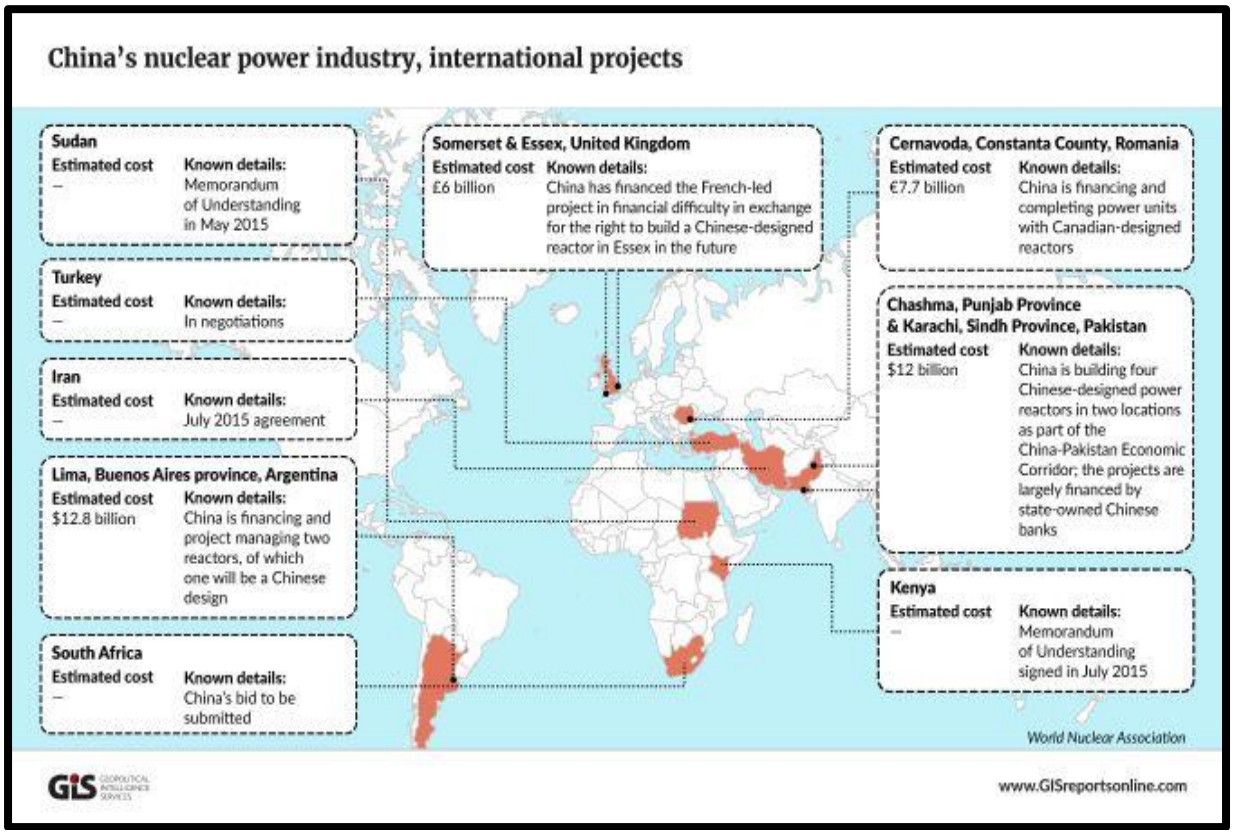
China has become the world's largest overseas investor of RES as well as coal power plants, coal mines, and nuclear power projects. Its expansion of nuclear power plants for a higher share of its national energy mix is accompanied by an ambitious program for building nuclear power plants abroad with Chinese investments and by Chinese companies becoming the world's new nuclear technology leader.[84] China will expand its nuclear power generation and represent around half of the global increase by 2035. It will become the largest producer of "climate-friendly" nuclear power after 2030 by adding more capacity than the total installed US capacity at present.[85]

Another example of its ambitious energy projects overseas as part of the BRI is its plan to develop an export supergrid for supplying electric power generated in China to neighbouring countries and across Asia extending to Europe.[86] It would allow using its electricity over-capacities to export them to neighbouring countries. In effect, it would reduce their energy self-sufficiency and make these countries dependent on China for electricity supply. As these exported Chinese electricity supplies might, even in the longer-term, still be based around 45-50 per cent on coal-fired electricity production, the resulting global emissions might also be higher than those countries would opt for in their own decentralised electricity production based on RES.

In December 2015, Chinese SOEs had already constructed, started building or formally announced plans to build at least 92 new coal-fired power plants in 27 countries with a combined capacity of 107 GW. It would be more than the planned closing of all coal-fired plants in the US through 2020. Combined with China's domestic coal-fired electricity (already more than twice as much as any other country), China's overseas coal capacity would add another 10 per cent to its domestically generated coal-fired electricity.[87]

[84] See also Joseph Dobbs, "China's Nuclear Energy Ambitions", Geopolitical Intelligence Service, 4 July 2017.
[85] See also Andrew Follett, "China Will Overtake US in Nuclear Power within 10 Years", The Daily Caller, 1 February 2017 and EIA, "China. Analysis Briefs" 14 May 2015.
[86] See Adam Minter, "China Wants to Power the World", Bloomberg, 4 April 2016.
[87] See Michael Forsythe, "China's Emissions Pledges Are Undercut by Boom in Coal Projects Abroad", New York Times, 11 December 2015.

Figure 13: China's International Nuclear Power Projects



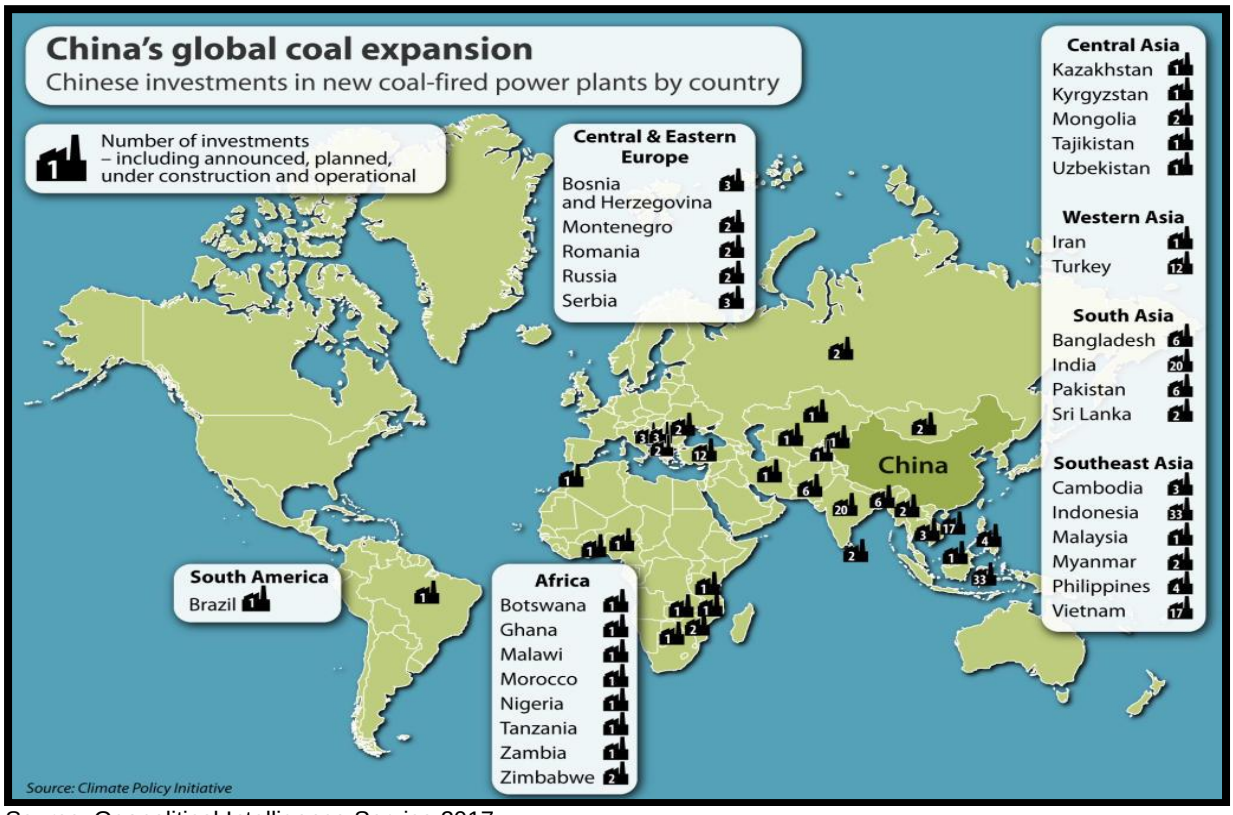
Source: Geopolitical Intelligence Service 2017

Chinese banks have provided at least US$25 billion of overseas investments for foreign coal power plants. But given the lack of transparency of China's overseas coal investments, the NYT analysis of December 2015 of US$25 billion overseas coal investments could get financing figures for only 26 of the 92 identified power plants abroad.[88] While it would also help China to reduce national emissions, it may contribute to higher emissions on a global scale.[89]

[88] See ibid., and Jane Nakano/Michelle Melton, "Overseas Public Financing for Coal. Bringing China into the Debate", CSIS-Commentary, Washington D.C., 24 April 2015.

[89] See again my previous study - also F. Umbach/Ka-ho Yu, "China's Expanding Overseas Coal Power Industry".

Figure 14: China's Global Coal Expansion



Source: Geopolitical Intelligence Service 2017

Since the signing of the Paris Agreement in December 2015, Chinese state-owned companies have continued their investments into new coal power and coal mining projects worldwide — ranging from Indonesia and Southeast Asia to Pakistan and South Asia to Turkey and the Balkan states in Europe as well as to Africa and Latin America. But despite newly enforced efficiency standards for coal power plants with lower CO_2 emissions and environmental regulations for decreasing air pollutions on its domestic energy market, those new standards and regulations do not apply for China's exported coal power projects abroad. Those investments also often take place in countries which have low environmental regulations and standards as well as weak laws and to cope with endemic corruption. According to various new studies and dependent on the concrete stage of planned or already those under construction, the number of Chinese funded coal power projects abroad range from 79 to around 140.[90]

These overseas Chinese coal projects might also be explained by China's rising coal imports. Since 2011, China has been the world's largest coal importer (with the exception of 2016 when India replaced China). The rise of coal imports has been driven by China's steady energy and coal demand growth, high domestic transportation costs, the government's overt efforts to boost national energy supply security and the following four domestic factors: (i) high costs and bottlenecks in domestic coal transport, which make domestic production more costly and imported coal more economically

[90] See also Sagatom Saha/Theresa Lou, "China's Coal Problem. How it Undermines the Fight Against Climate Change", Foreign Affairs, Snapshot, 4 August 2017, p. 2.

attractive, particularly in Southeast China; (ii) the need to save water for agricultural and human consumption, as well as the need to comply with national and international environmental standards; (iii) the need to address the country's mining safety challenges; and (iv) the lack of specific coal resources, especially steam and coking coal.[91]

In 2017, China possessed an estimated 138,819 million tonnes of proven coal reserves — the equivalent to 13.4 per cent of global coal reserves and the fourth-largest behind the US (24.2%), Russia (15.5%) and Australia (14%). But China's reserve-production (R/P) ratio is just 39 years compared with 357 years in the United States, 391 years in Russia and 301 years in Australia.[92] In 2013, the R/P ratio was a decidedly low 30 years, which helps explain the Chinese search for coal import supplies and investment abroad.[93]

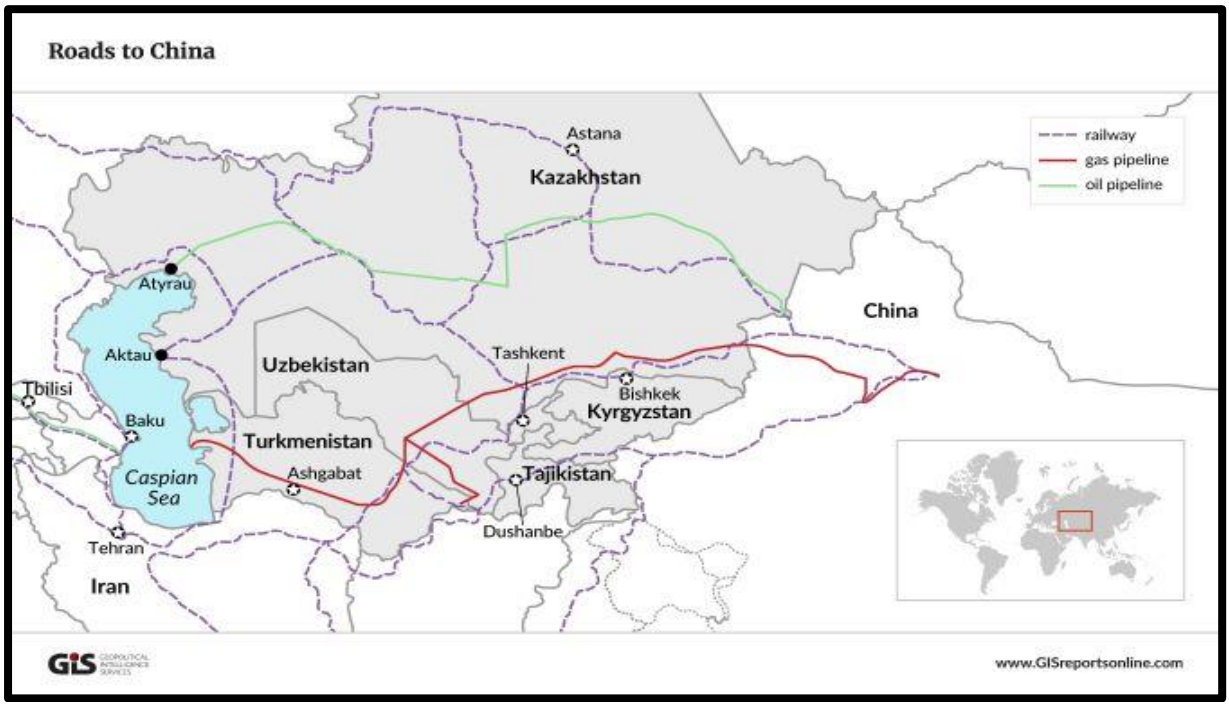
In the best-case scenario, China's net imports could peak by 2020.[94] Given its new environmental targets, Beijing might not only reduce its coal consumption by 2030, but also its coal import demand.

Central Asia - The Land-Bridge to Regional Oil and Gas Reserves

Beijing aims to pursue a close strategic energy partnership with the countries of Central Asia and the Caspian Region (CACR). In the context of these investments, China's Xinjiang region stands as particularly important for both economic (i.e., rich of fossil fuels and raw materials) and security reasons. China had already created closer energy and gas links with CACR in the second half of the 1990s. Turkmenistan is currently China's biggest supplier of its gas imports.[95] In 2007, the countries signed a bilateral agreement for supplying an annual 30 bcm via a new gas pipeline from Turkmen gas fields to China. The addition of two extra lines will increase its overall transport capacity up to 65 bcm by 2020.[96] To fill this gap, Uzbekistan is expected to deliver 10 bcm per year in addition to Turkmenistan's 30 bcm. Turkmenistan's new giant gas field South Elotan supply the remaining 25 bcm. Beijing has financed this huge project with a direct loan and controls the field's development with Chinese subcontractors.[97]

[91] See also F. Umbach/Ka-ho Yu, "China's Expanding Overseas Coal Power", pp. 40ff.
[92] See BP, "Statistical Review of World Energy 2018", June 2018, p. 36.
[93] See BP, "Statistical Review of World Energy 2014", June 2014, p. 30.
[94] See IEA, "WEO 2014", p. 139 ff.
[95] According to BP's Statistical Review of World Energy of June 2018, Turkmenistan has the world's fourth-largest proven gas reserves with 19.5 trillion cubic meters (tcm) – a 10.1 per cent share of global gas reserves. With its population of just 5.5 million, the ratio of gas reserves versus production is more than 341 years (much more than the US of 11.9 years and even Russia with 55 years). With its Galkynysh gas field, it has the world's second-largest, already feeding its gas exports to China. Turkmenistan plans to increase its total gas production of 69.3 bcm in 2014 to 230 bcm and its gas exports to 180 bcm by 2030.
[96] See F. Umbach, "First Steps in Turkmenistan Deal to Supply Gas to Europe", Geopolitical Intelligence Service, 9 July 2015.
[97] Chinese companies are part of a limited number of international firms operating in Turkmenistan, gaining an important spot ahead of the EU and breaking Russia's Turkmen natural gas export monopoly in the region.

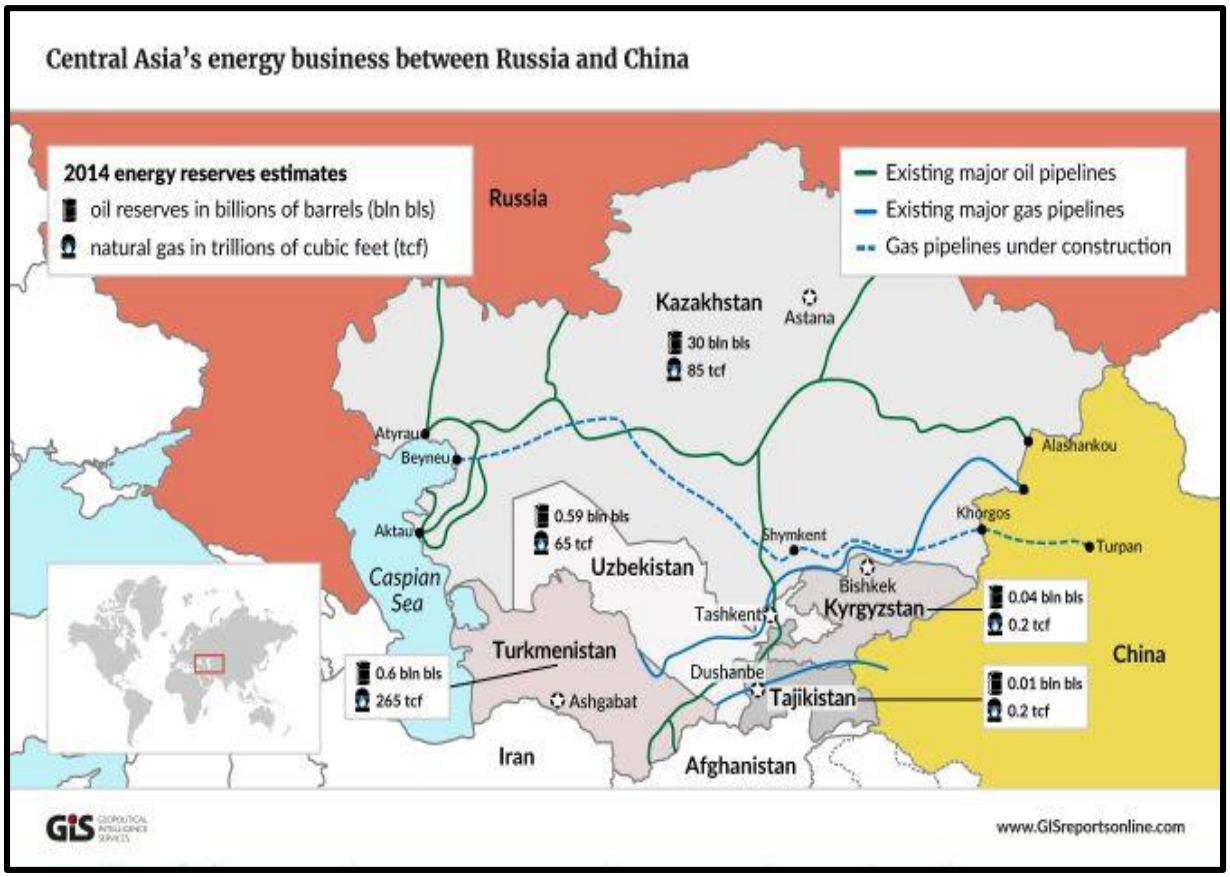
Figure 15: Oil and Gas pipelines and New Railway Projects



Source: Geopolitical Intelligence Service 2017

Since Russia is no longer purchasing natural gas from Turkmenistan, the country is now dependent on China as its sole export market but seeks to diversify its gas export destinations. Turkmenistan's presently best-known gas export diversification project is the Turkmenistan-Afghanistan-Pakistan-India Pipeline (TAPI) that aims to feed energy-hungry India and Pakistan. The almost 1,800 km long gas pipeline with an annual capacity of 33 bcm (costs: ~US$10bn) faces important security challenges in its transfer route through politically unstable Afghanistan and Pakistan — 735 and 800 km, respectively. The project has experienced various delays in its construction.

Figure 16: Russian and Chinese Energy Infrastructures in Central Asia



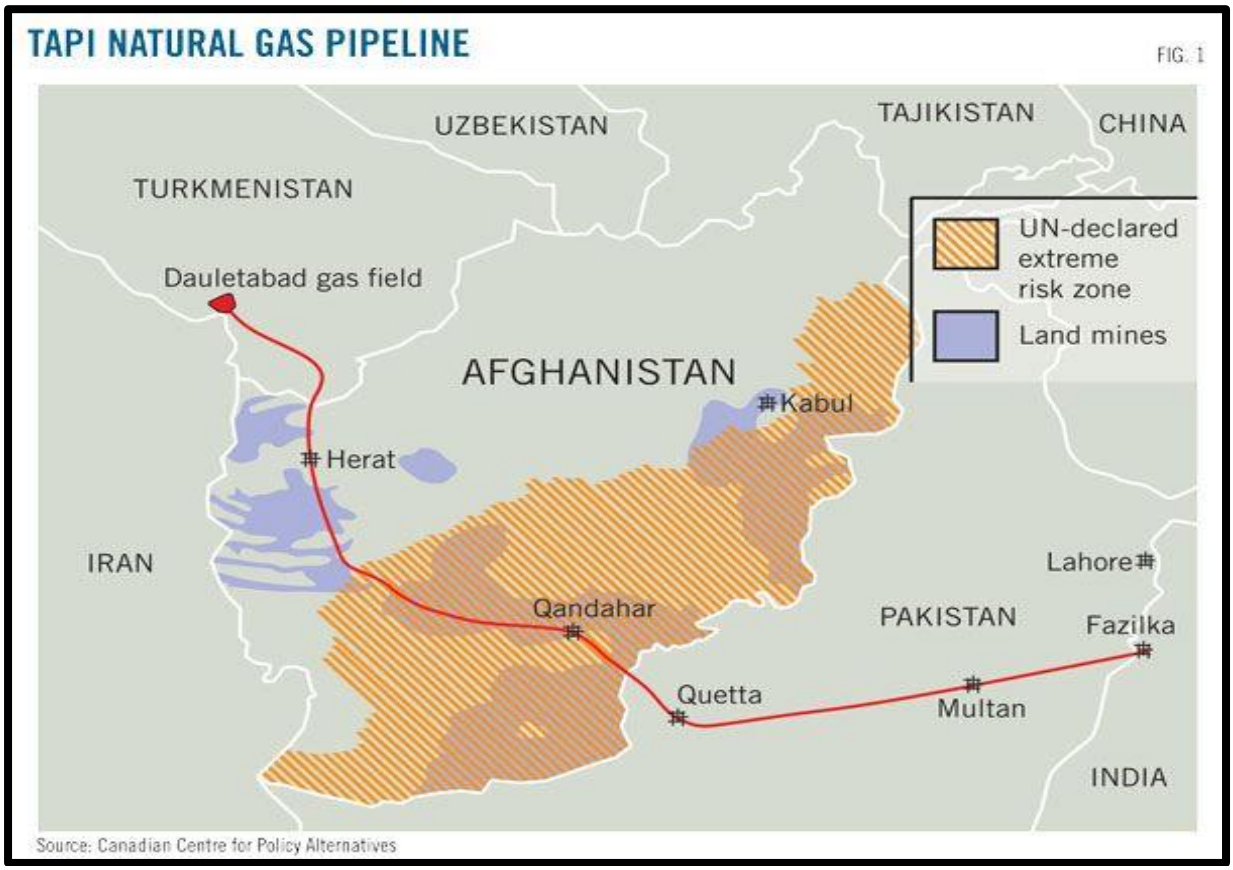
Source: Geopolitical Intelligence Service 2018

TAPI may not just diversify Turkmenistan's gas exports but could also alter the geopolitical landscape of an increasingly Russia-independent Central Asia as a resource deposit for Eurasia and South as well as East Asia.[98] The implementation of TAPI and the BRI gas mega-projects could not only boost natural gas businesses and other forms of economic cooperation, but it might also create new interdependencies in Eurasia.[99]

By guaranteeing energy supply security in Central Asia, TAPI could contribute to one of the cornerstones of India's strategic interest in establishing much closer relations with countries in the region. But the pipeline is still very much disputed in India as it would make the country dependent on the political cooperation and political stability of Pakistan, its perceived hostile neighbour.[100]

[98] See F. Umbach, "First Steps in Turkmenistan Deal to Supply Gas to Europe".
[99] See Ariel Cohen, "China's 'One Belt, One Road' Mega-Project Will Boost Eurasian Natural Gas Opportunities", Natural Gas Asia, 29 June 2015.
[100] See also Michael Tantum, "Energy is the Key to Modi's Central Asian Reset", South Asia Monitor, 9 July 2015 and Dai Yonghong, "China-India Energy Cooperation: A Perspective of Geopolitics and Geo-economics", China-India Brief, No. 50, 1-13 May 2015.

Figure 17: The Turkmenistan-Afghanistan-Pakistan-India (TAPI) Gas Pipeline Route



Source: Oilpro.com

By using its financial power for investing in numerous larger infrastructure and energy projects throughout the region, Beijing's political leverage will constantly increase at the expense of the economic-political independence strategy of the region itself, but also of Russia and India. While Russia and China hitherto have closely and pragmatically cooperated in this region, China's rapidly increasing economic and financial power has changed the overall regional balance of power at the expense of Russia. For the time being, both sides see it in their common short-term strategic interest to weaken the US geopolitical influence in Central and South Asia. Therefore, Russia has become one of the biggest benefitting partners of China's BRI, receiving around US$46bn in funding for BRI projects and stimulating their bilateral economic trade up to US$84bn in 2017.[101] In the mid and long term, however, the rivalries for influence and power might increase between Moscow and Beijing and question their presently growing bilateral cooperation in the world (i.e., the Middle East, South America etc).[102]

[101] See James Kynge, "Brdige-Building a Pillar of Sino-Russian Détente", Financial Times, 25 September 2018.
[102] See also F. Umbach/Slawomir Raszewski, "Strategic Perspectives for Bilateral Energy Cooperation between the EU and Kazakhstan"; "Unlikely Partners. Xi Jinping and Vladimir Putin Behaves Like the Best Buddies. But Suspicion between Russia and China Runs Deep", The Economist, 20 July 2017, and Stefan Hedlund, "Russia Losing the New Great Game", Geopolitical Intelligence Service, 14 August 2017.

China-Pakistan Economic Corridor and Afghanistan

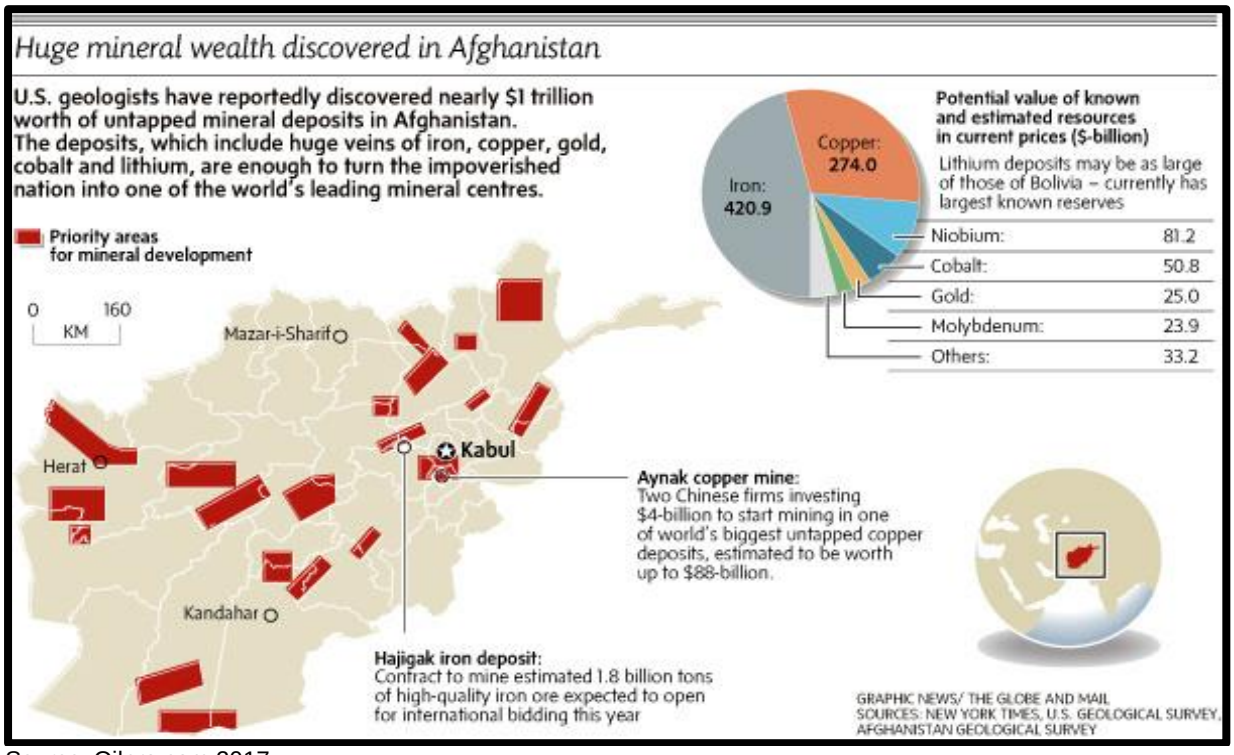
The China-Pakistan Economic Corridor (CPEC) of the BRI has been considered in Beijing as the flagship of its BRI for both geo-economic and geopolitical reasons. By building the Gwadar port for China's civilian ships transporting energy resources and other goods from the Persian Gulf, Africa and Europe, it allows Beijing to link it to the Arabian Sea and reduce its dependencies on longer sea routes through the Indian Ocean and the South China Sea/Malacca Strait. The 3,000 km corridor with its future railways, highways and pipelines can transport the shipped goods via a shorter land route from Gwadar to the southwestern region of China. The Pakistani port will also be used by China's expanding naval forces.

It also allows China to link the port of Gwadar with Afghanistan and its rich raw materials and minerals (worth of up to US$1tr)[103], where China is already heavily engaged. Given the numerous transport and energy projects of the BRI both in Central Asia and South Asia, Afghanistan could also become an important transit country by connecting all these infrastructures and energy projects in both regions.[104] But given the security situation with increasing terrorist attacks in Afghanistan, China's economic interests are threatened by instabilities. Despite Chinese security forces (probably of the Ministry of Public Security) already operating in Afghanistan, Beijing is reluctant to widen its security engagement and fight the Taliban directly.[105]

Geopolitically, it allows China to encircle India and to maintain pressure on it, particularly in the case of a larger conflict. Hence China has enhanced its military cooperation with Pakistan and has expanded its arms purchases to its close ally. But these policies and economic interdependencies carry for both sides numerous strategic risks.[106]

[103] See also John C.K. Daly, "Afghanistan's Mineral Deposits Again Attract International Interest, Unrest and Smuggling", the CACI-Analyst, 27 August 2017.
[104] See "Afghanistan Back on the Grand Chessboard", Oilpro.com, 25 April 2017.
[105] See Dirk van der Kley, "Why Might Chinese Security Services be in Afghanistan", Stratfor.com, 7 March 2017.
[106] See also "China's Money Is a Mixed Blessing for Pakistan", Financial Times, 25 April 2017.

Figure 18: Mineral Wealth of Afghanistan



Source: Oilpro.com 2017

In Pakistan, China has announced a US$62bn infrastructure plan as part of the CPEC project. It could account for 20 per cent of the country's GDP during the next 5 years and boost its economic growth by about 3 per cent.[107] Pakistan was the first country China sold a nuclear reactor to as part of the CPEC project. The largest part of China's Pakistan investments — around US$37bn – will be used for various energy projects. These energy investments will focus on electricity, and mostly on building new coal-fired plants. Pakistan has coal resources of more than 185.5 bn t — sufficient to generate 100,000 MW of electricity for 30 years. In overcoming Pakistan's electricity crisis, its government plans to add 10,400 MW of electricity at a cost of US$15.5bn by 2018.[108]

Beijing is supporting, in particular, Pakistan's "Thar Coal Mining and Energy Project"[109], with financing expected to come from Chinese banks or the Asian Infrastructure Investment Bank (AIIB).[110] The project holds great importance for Pakistan energy development given its potential to address the energy shortages that are stifling the country's economic growth. The project will allow exploiting estimated coal reserves of more than 175 bn t spreading over 9,000 km^2 in the Thar Desert. Pakistan

[107] See Henry Sender/Kiran Stacey, "China Takes 'Project of the Century' to Pakistan" and Thomas S. Eder, "The BRI in Pakistan: China's Flagship Economic Corridor", MERICS, Berlin, 18 September 2018.
[108] See Jeremy Page, "China's President to Cement Huge Coal Power Projects", Wall Street Journal, 19 April 2015; Naveed Butt and Ali Hussain, "China to Invest $37 Billion in Energy Projects", Business Recorder, 18 April 2015 and Henry Sender/Kiran Stacey, "Glimmer of Light in Pakistan's Blackout Crisis", Financial Times, 30 April 2017, and Go Yamada/Stefania Palma, "Is China's Belt and Road Working? A Progress Report from Eight Countries".
[109] See Rafaqat Hussain, "Thar Coal: From Dark to the Light", Pakobserver, 26 July 2014.
[110] See Manoj Kumar/Tony Munroe, "For India, China-Backed Lender May be Answer to Coal Investment", Reuters, 5 November 2014; Peter Foster, "Why Coal Looms Large in India's Future", The Financial Post, 16 April 2015.

plans to build 21 power plants — mainly coal-fired ones with a capacity of 9.5 GW — to combat its chronic electricity shortages.[111]

Most of China's investments should be implemented by Xinjiang Production and Construction Corps (XPCC), which is being viewed as a quasi-military organization for Beijing's oil and security policies but also dominates the agriculture economy of China's frontier region of Xinjiang and functions there autonomously.[112]

Pakistan had begun to construct a 700 km long Iran-Pakistan-India (IPI) gas pipeline from the port of Gwadar in July 2015.[113] But part of the section to be built has been shelved due to pressure from Saudi Arabia and low LNG prices, which might leave the country more reliant on LNG imports for the time being.[114] Together with India, they imported a combined 25 mt in 2016 (just 8% of the global LNG demand). But together with Bangladesh, which will start to import LNG this year, the entire South Asian region is one of the fastest-growing LNG import regions and could even overtake Europe as the world's second-largest one by around 2025.[115]

As the number of Chinese workers has risen in Pakistan with more CPEC projects, so are the number of Chinese being kidnapped and killed. Officially, China declared not to deploy troops in Pakistan to secure its economic projects and protect workers of Chinese companies. But Chinese security and military engagement are rising.[116] Pakistan has established a 15,000-strong army division to protect Chinese projects and contractors, though the Pakistani military itself is underfunded. China also wants to give Pakistan's army a lead role in the infrastructure projects of CPEC due to the latter's experiences in implementing and supervising larger infrastructure projects. But Beijing's proposal is disputed for both economic and security reasons, as it could further increase Pakistan's dependence on China. Pakistan's new government under Prime Minister Imran Khan seeks now to review and re-negotiate the BRI agreements with China. The aim is to extend the loans and projects over a longer timeframe.[117]

Between 2011 and 2016, China was also the largest supplier of arms to Pakistan.[118] As in other politically unstable countries of Chinese investments, Chinese companies have also to rely

[111] See Kiran Stacy, "Pakistan's Pivot to Coal to Boost Energy Gets Critics Fired up", Financial Times, 31 July 2018.
[112] See Henry Sender/Kiran Stacey, "China Takes 'Project of the Century to Pakistan", pp.4 and 10.
[113] See Andrew Walker, "China Investment Springboards Pakistan Section IPI", interfaxenergy.com, NGD, 19 August 2015, pp. 1-2.
[114] See idem, "Gulf Spat Leaves Pakistan Reliant on LNG", interfaxenergy.com, NGD, 4 July 2017, pp. 1-2.
[115] See "South Asia Could Overtake Europe in LNG Imports", ibid, 3 August 2017, p. 9.
[116] See Ahmed Rashid, "The Stakes Are High for China in Pakistan and Afghanistan", Financial Times, 21 July 2017.
[117] See Jamil Anderlini/Henny Sender/Farhan Bokhari, "Pakistan Rethinks its Role in Xi's Belt and Road Plan", Financial Times, 9 September 2018.
[118] See Sibren de Jong et.al., "A Road to Riches or a Road to Ruin? The Geo-Economic Implications of China's New Silk Road", p. 19.

increasingly on private security companies facing the same problems and dilemmas as Western companies.[119]

China's economic and security ties have also expanded in Sri Lanka. The Chinese built the US$1.3bn deep-sea port at Hambantota, in a remote corner of Sri Lanka with little large-scale freight traffic, operating since 2011. This port is commercially unprofitable but strategically attractive for China's increasing military presence in the Indian Ocean.[120]

Middle East and Persian Gulf – Rising Energy Import Dependency

As the result of its constantly growing oil and LNG imports from the Gulf Region and the wider Middle East and Africa, China's foreign and security policies towards these regions have become proactively engaged, accompanied by a shift of strategic priorities as well as an overall strategic calculus.

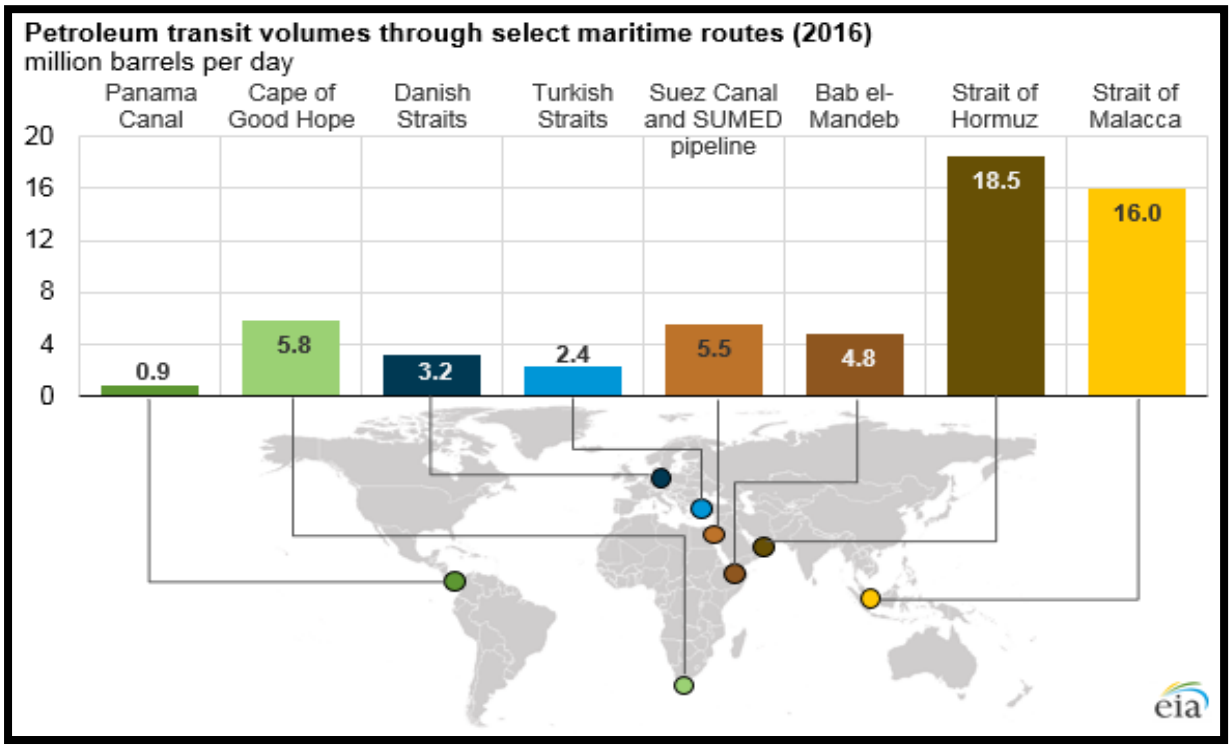
As the world's largest oil importer, China receives about 52 per cent of its total crude oil imports from the Middle East and 22 per cent from Africa. More than 82 per cent of its oil imports are shipped via the SLOCs of the Indian Ocean through the Malacca Strait and the South China Sea to China; more than 40 per cent of its crude oil imports are transported through the Strait of Hormuz, and almost 40 per cent of its foreign trade through the Indian Ocean. Given these energy and trade dependencies on secure sea lines, there is an overall need for China's expanding naval forces in the Indian Ocean. While the initial mission of the PLA Navy (PLAN) was to protect Chinese shipping from pirate attacks in the Gulf of Aden and the Somali offshore waters, it has used the opportunity to raise its maritime power status. In Djibouti, China has created its first overseas military base as a support facility for warships and aircraft as well as peace, stability and security missions in Africa and beyond.[121]

[119] See also Alessandro Arduino, "China's Belt and Road Initiative Security Needs. The Evolution of Chinese Private Security Companies", RSIS Working Paper, No. 306, Singapore, 29 August 2017 and Helena Legarda/Meia Nouwens, "Guardians of the Belt and Road. The Internationalization of China's Private Security Companies", MERICS-China Monitor, Berlin, 16 August 2018.

[120] See also James Kynge, "A Tale of Two Harbours Tells Best and Worst of China's 'Belt and Road'", Financial Times, 25 September 2018.

[121] See David Shinn, "China's Power Projection in the Western Indian Ocean", China Brief, Vol. 17, No. 6, 20 April 2017, p. 3; Sam Bateman, "China Joins the Crowd in Djibouti", East Asia Forum, 14 August 2017; "Looking over China's Latest Great Wall", Stratfor.com, 26 July 2017 and Peter Wood, "20,000 Li Over the Sea: China Sends Troops to First Permanent Base in Djibouti", China-Brief, 21 July 2017.

Figure 19: Shipping Lanes and Energy Security



Source: EIA (2016)

China's closest ally in the Middle East and the Persian Gulf is Saudi Arabia, the world's largest crude oil exporter and also China's largest oil importing source. In 2016, it imported around 1 mb/d — accounting for 20 per cent of China's annual oil import demand. China is Saudi Arabia's largest oil export destination country, surpassing the US since 2009. Both sides are currently negotiating to involve Chinese companies in building 16 nuclear power plants worth of US$100bn.[122] Saudi Arabia has also expressed its interest in participating in the CPEC. It can be expected that their bilateral relationship will further grow alongside China's rising energy demand and related regional security interests in the Persian Gulf and the Middle East.[123] Together with Iran, China considers the relationship with Saudi Arabia as a "comprehensive strategic partnership".

Given its rising LNG demand, China has also expanded and deepened its relations with Qatar — the world's largest LNG exporter — up to that of "strategic partners", Qatar on its side supports the BRI and the Chinese-led AIIB as one of the most important funding sources for the BRI's infrastructure and energy projects.[124]

Iran has become more important for China not only due to its oil and gas resources but also for Teheran's own North-South infrastructure connections to Azerbaijan, Turkmenistan and other

[122] See Sibren de Jong et.al., "A Road to Riches or a Road to Ruin? The Geo-economic Implications of China's New Silk Road", p. 16.
[123] See Chris Zambelis, "China and Saudi Arabia Solidify Strategic Partnership amid Looming Risks", China Brief, Vol. 17, Issue 3, 2 March 2017.
[124] See Peter Wood, "China-Qatar Relations in Perspective", ibid., 7 July 2017.

countries of Central Asia and the various transit roles Iran can play in the infrastructure plans of BRI connecting the Eurasian landmass. Both sides want to increase their present bilateral trade of just US$50bn up to US$600bn over the next decade.[125]

China is not supporting the re-imposition of US sanctions on Iran. But China has become a hostage of the increasing Saudi-Iranian rivalry in the Middle East. Beijing is also facing limitations to rival the US worldwide. This is not just about insufficient military resources for a sustained regional presence. On the other hand, as the conflicts in the Middle East and on North Korea absorb considerable US military and diplomatic resources, Washington can spend only limited resources on the South China Sea conflict.

At the same time, China's green energy revolution has also attracted the interests of the United Arab Emirates for its "Clean Energy Strategy 2050". Both sides have expanded their cooperation on solar power, other joint investments and currency cooperation. The UAE is also a founding member of the AIIB. Furthermore, the UAE has become an important infrastructure hub for various ports and land and maritime transport routes.[126]

But given China's equally rising energy and military ties with Iran and Syria, they could complicate its future relationship with Saudi Arabia and have negative impacts on its maritime strategy in the region.[127]

South China Sea and its Energy Resources

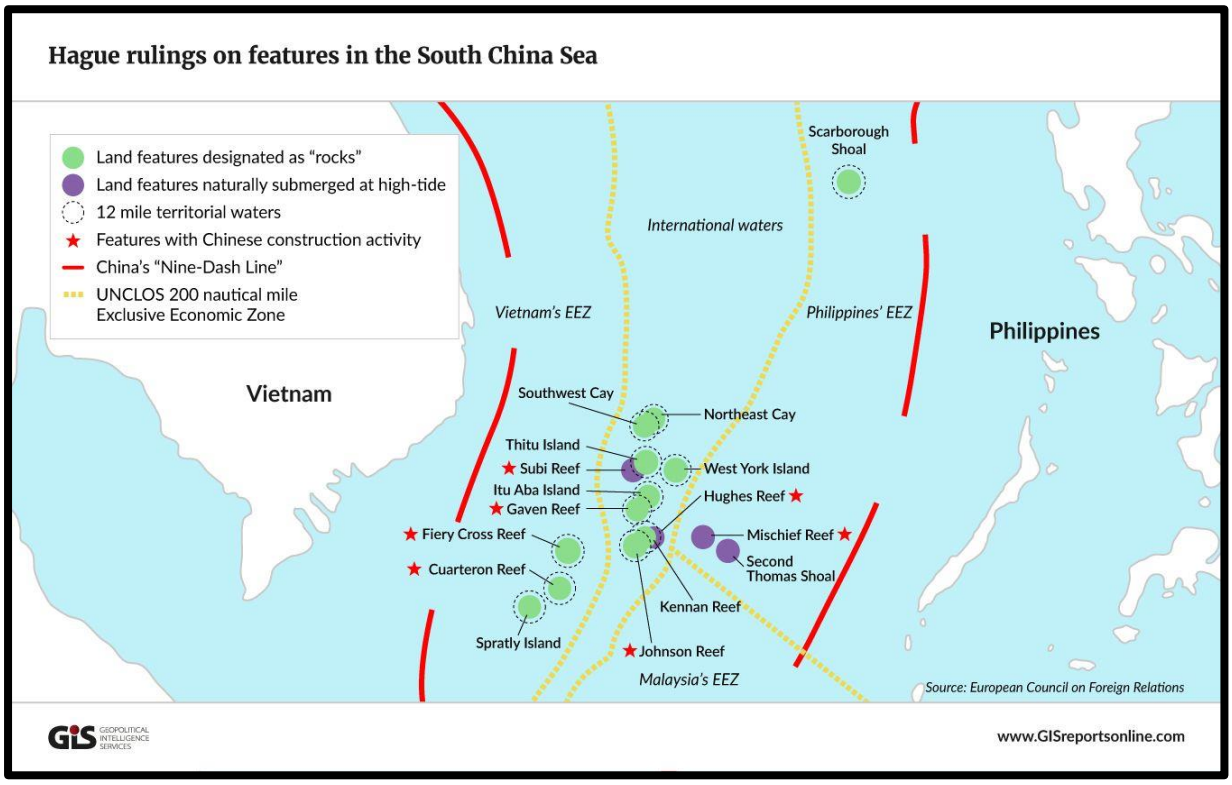
Energy resources play a very important role in China's BRI and South China Sea (SCS), which might have considerable hydrocarbon resources. Moreover, China, Japan and Taiwan receive 80 per cent of their crude oil (more than 14 mb/d) and LNG imports (more than 6 tcm a year) via the SLOCS of the SCS.

After the ruling of the Permanent Court of Arbitration (PCA) in The Hague on July 12 2016, in rejecting China's "historical" territorial claims in the SCS, the question how China reacts to and designs its future policies in the maritime domain has become ever more geopolitically important. Before and after the ruling, China conducted a diplomatic "lawfare" strategy as part of broader hybrid warfare[128] based on the principles of "no acceptance, no participation, no recognition and no

[125] See Chris Zambelis, "China and Iran Expand Relations After Sanctions End", ibid., Vol. 16, Issue 5, 7 March 2016.
[126] See April A. Herlevi, "China and the United Arab Emirates: Sustainable Silk Road Partnership?", China Brief, Vol. 16, Issue 2, 25 January 2016.
[127] See Peter Wood, "In a Fortnight: Xi Jinping's Middle East Diplomacy", China Brief, Vol. 16, 25 January 2016.
[128] The neologism is a combination of "law" and "warfare" and can be defined as a strategy of using and misusing laws as substitutes for traditional military means to achieve strategic objectives - see also Christian R. J. Pogies, "UNCLOS and the South China Sea Arbitration: Into Lawfare's Abyss?", Asien 143, April 2017, pp. 93-105 (99f.).

implementation [of the ruling]" to delegitimise the PCA's ruling.[129] Experts have warned that China follows a tactic of "picking and choosing within the global order" which only serves its own national interests.[130]

Figure 20: The Impact of the Hague Ruling on Islands and Reefs in the South China Sea



Source: Geopolitical Intelligence Service 2017

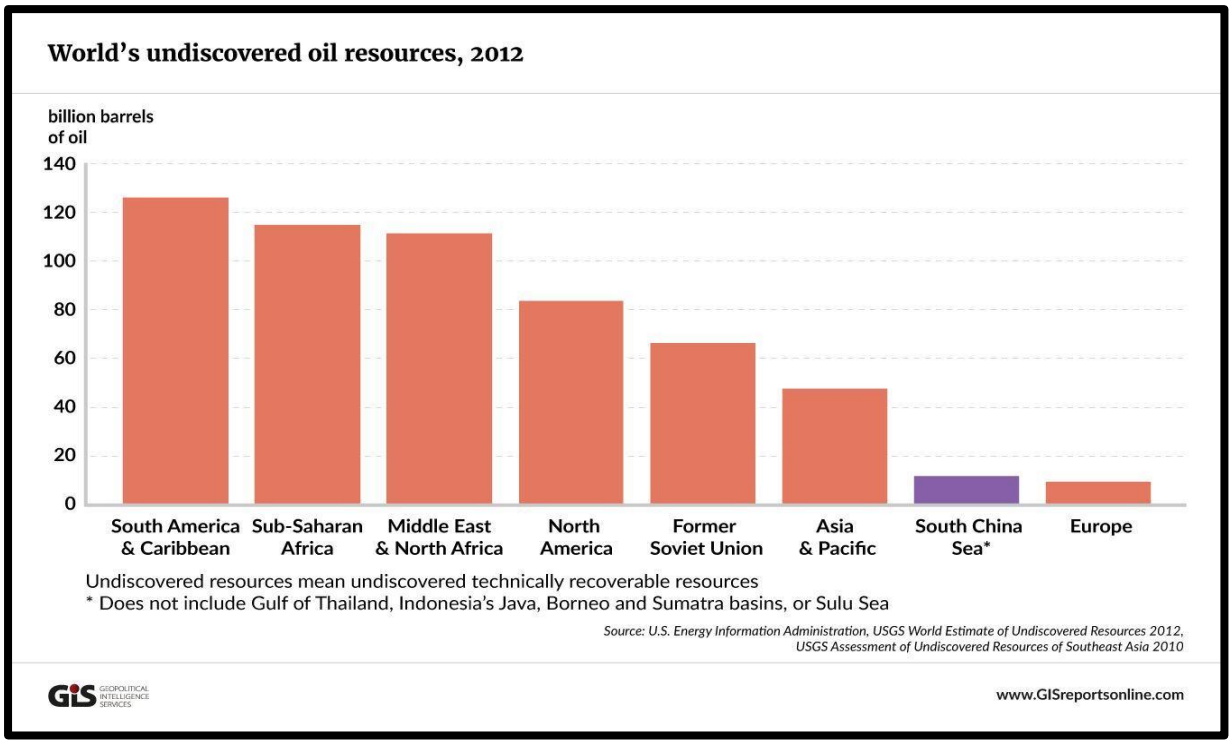
An underlying factor of fueling Beijing's assertive "creeping occupation" strategy of rocks and reefs in the SCS is its energy independence strategy and the presumed large offshore oil and gas resources in the SCS.

All SCS claimant states have become increasingly interested in exploiting the offshore oil and gas reserves.[131] Some ASEAN member states will become new oil and gas net importers and ever more energy import-dependent. As a result, their oil and gas offshore resources will define their future energy and maritime security policies more than ever.[132] Moreover, the presumed oil and gas reserves in the SCS are limited in regard to global reserves (oil: 0.3-1.3% and gas: 0.9-3.7% of world reserves).[133] But it may hold additional undiscovered or underestimated oil and gas resources in

[129] Ying Fu, "Why China Says no to the Arbitration on the South China Sea", in: Foreign Policy, 10 July 2016.
[130] Francoise Godement, "Expanded Ambitions, Shrinking Achievements: How China Sees the Global Order", ECFR-Policy Brief, No. 204, March 2017, pp. 8-10.
[131] See also F. Umbach, "The South China Sea Disputes: The Energy Dimensions", RSIS Commentary, No. 085/2017, 4 May 2017.
[132] See also idem, "Securing Energy Supply and Maritime Interests: Seeking Convergence", S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University (NTU), Singapore, Working Paper No. 316, 1 October 2018.
[133] See EIA, "South China Sea", Washington D.C. 2013.

underexplored areas. The US Geological Survey (USGS), for instance, has estimated those additional resources between 5-22 billion barrels of oil and 70-290 tcf of natural gas.[134] But under commercial conditions of dramatically falling oil and gas prices as well as an oversupply on the market until the beginning of this year, new offshore "ultra-deepwater" (deeper than 1,500 metres under the sea) oil and gas drilling projects were hardly profitable.

Figure 21: The Worldwide Undiscovered Oil Resources (2012)

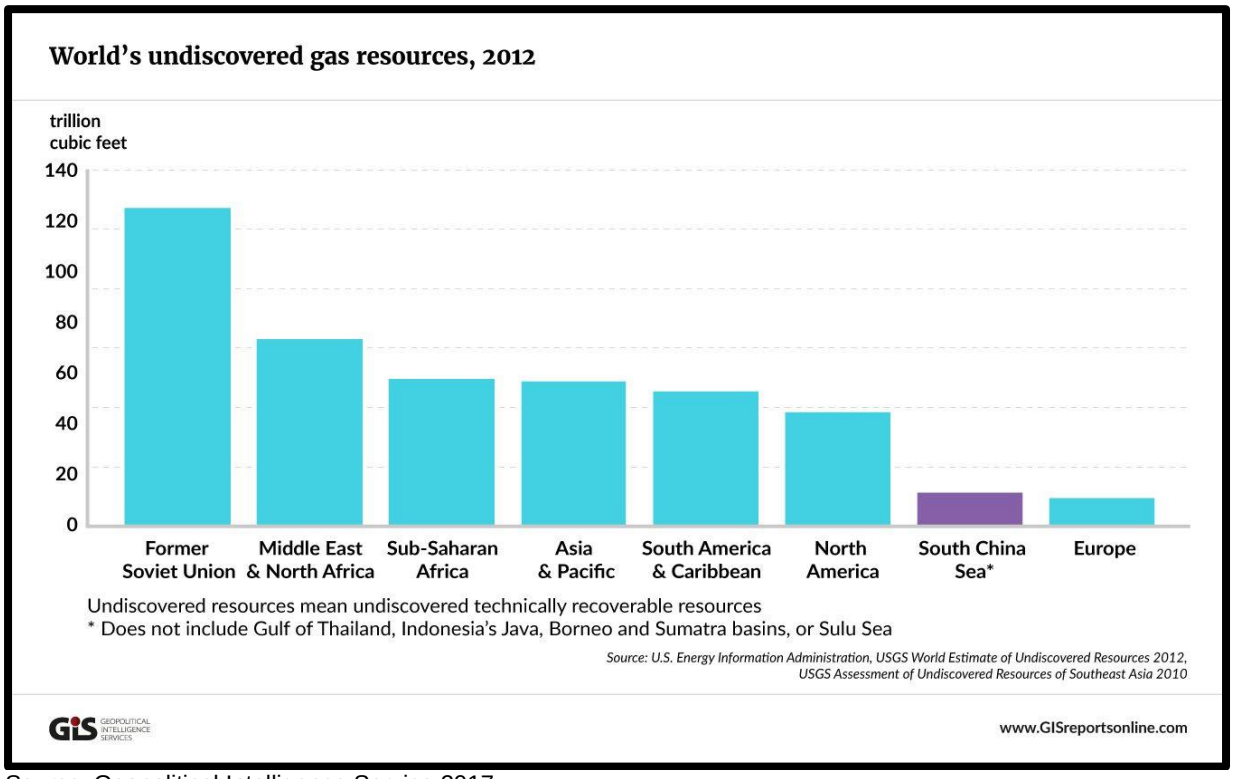


Source: Geopolitical Intelligence Service 2017

Although China has grown much stronger and could be more self-confident, it has not become more pragmatic since the PCA ruling in the summer of 2016. On the contrary, Beijing's policies appear even more assertive and provocative in its strategy of a "creeping occupation" as well as the militarisation of reefs, not recognised by the recent PCA ruling based on international law. Neither before nor after the PCA ruling, Beijing has ever clarified in detail what its maritime territorial claims are within its "nine-dash line" (covering almost 90% of the SCS) or its understanding of "undisputable sovereignty" as part of its strategy of "strategic ambiguity".[135]

[134] See ibid., p. 2.
[135] See Oliver Holmes, "Warning that Beijing's Military Bases in South China Sea Are Ready for Use", the Guardian, 28 March 2017; Andrew Walker, "South China Sea Tensions Rise as Trump Sworn in", interfaxenergy.com, NGD, 24 January 2017, p. 5 and International Crisis Group, "Stirring up the South China Sea (IV): Oil in Troubled Waters". Asia Report, No. 275, 26 January 2016.

Figure 22: The Worldwide Undiscovered Gas Resources (2012)



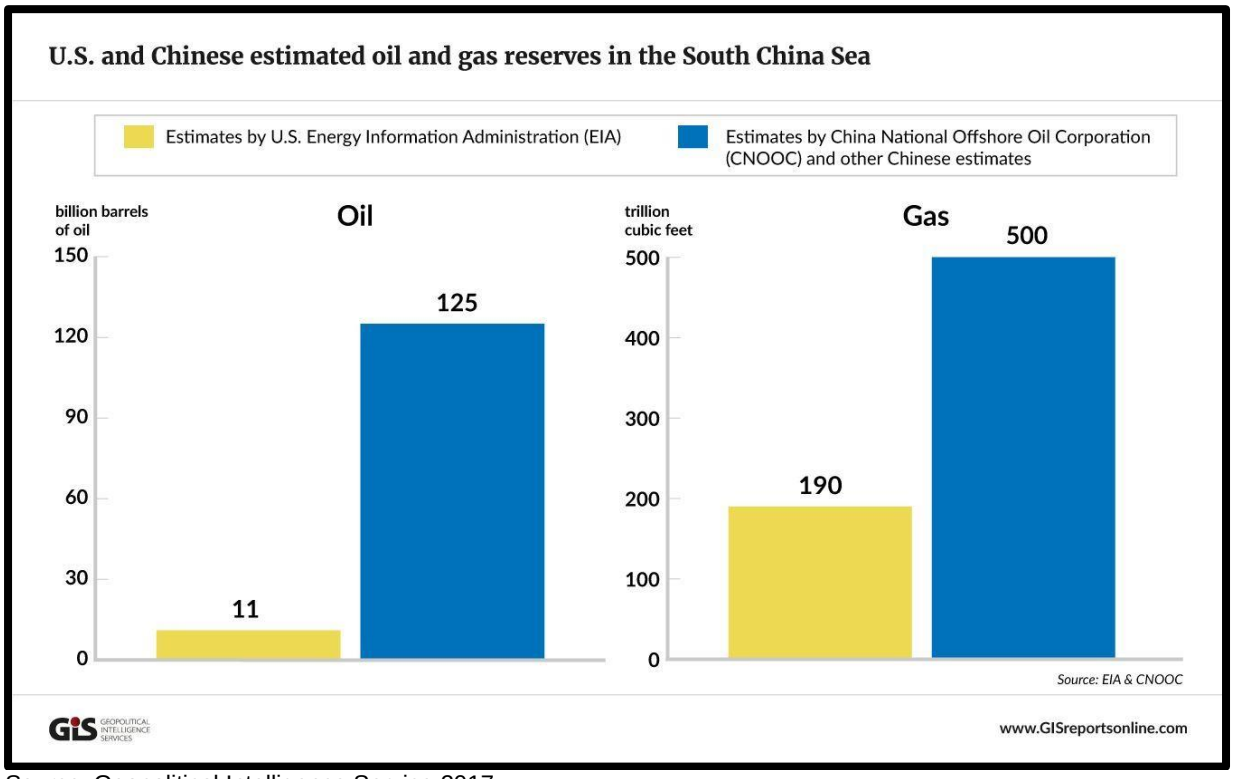
Source: Geopolitical Intelligence Service 2017

During the last decade, alongside the technological capabilities of their national oil and gas companies, all claimant parties in the SCS have become more interested not only to expand their oil and gas projects in shallow waters (<200m), but increasingly also those in deep-water (>200-300m). Technology innovations have led to new capabilities both on the sides of Chinese energy companies and China's naval and air forces. These newly acquired technological capabilities have not only transformed dramatically companies and the PLA. But the dynamics have also opened new economic-commercial as well as military options.

While many observers of China's SCS policies have assumed that the energy dimensions have fueled the regional maritime disputes, they have often overlooked that China's oil and gas exploration projects also legitimise domestically maritime territorial claims.[136] China's deep-water projects are also continuing without really slowing down its speed despite negotiating a regional code of conduct with ASEAN. For the second half of 2018, CNOOC is preparing to initiate two new gas projects with a combined peak capacity of 57,700 barrels of oil equivalent per day in the western waters of the SCS.[137]

[136] Quoted following Colin Shrek, "China Brushes off Vietnam Protests over Drilling", interfaxenergy.com, NGD, 6 May 2014, p. 7.
[137] See Colin Shek, "Chinese NOC to Lift Domestic Output after Xi Order", p. 1.

Figure 23: US vs. Chinese Estimates of Oil and Gas Reserves in the South China Sea



Source: Geopolitical Intelligence Service 2017

China's recently revised and decreased its oil and gas demand forecast does not automatically decrease the overall geopolitical importance of the SLOCs in Southeast Asia and the SCS (or the port connected oil and gas pipelines from China to Myanmar[138]). Whoever controls the SCS controls a decisive part of the global trade, 90 per cent of the European Asian trade and regional oil, as well as gas imports. If China's territorial claims in the SCS are pushed through by transforming the SCS de facto to a Chinese lake instead of international waters, then almost the entire oil and LNG imports of the ASEAN countries, Japan, Taiwan and South Korea as well as the regional order are becoming solely dependent on China's goodwill instead of international law and a regionally defined security order for the SCS.

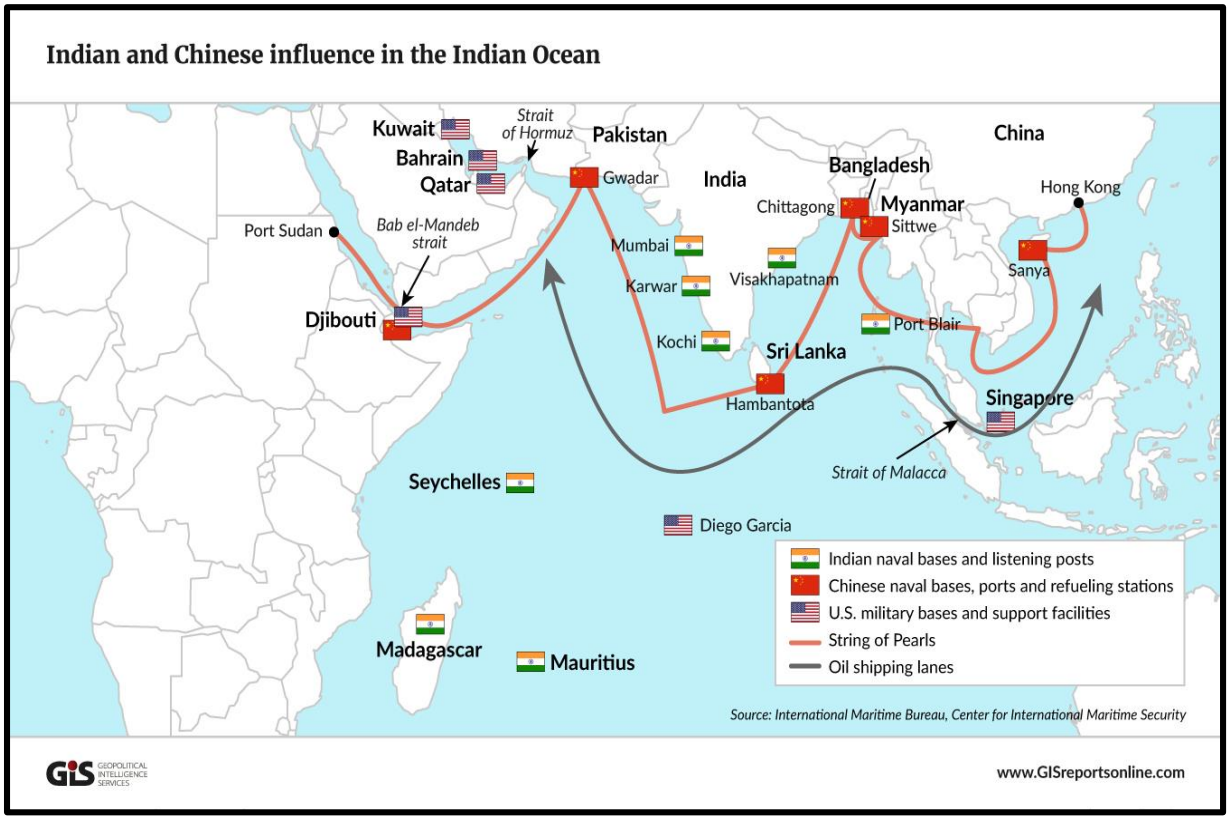
China's long-standing SCS policies have now become an integral part of its BRI strategies. They are guided by the long-term strategic objective of controlling the SCS as well as the Indian Ocean. That objective has become ever more important for a stable supply of China's vulnerable and rising maritime imports of oil and LNG. The building and buying of stakes in ports in South Asia, including in Myanmar, Bangladesh and Sri Lanka, or the plan to build the Thai canal connecting the Bay of Bengal with the Gulf of Thailand[139] seems to confirm a Chinese long-term "string of pearls" strategy as part of the BRI in order to reduce China's energy import and shipping trade vulnerabilities. India has reacted

[138] The oil pipeline has been launched in March 2017 and is being supplied by shipped oil from overseas — see Irina Slav, "New China-Myanmar Oil Route Nears Launch", Oilprice.com, 21 March 2017.

[139] See also Andre Wheeler, "The New China Silk Road (One Belt One Road)- Changing the Face of Oil and Gas in SE Asia", LinkedIn, 6 August 2015 (https://www.linkedin.com/pulse/new-china-silk-road-one-belt-changing-face-oil-gas-se-andre-wheeler/).

by raising its own port investments, including in Myanmar and Iran, and by enhancing its economic and military cooperation with Vietnam to counter its perceived Chinese encirclement due to growing concerns and a naval rivalry in the Indian Ocean.[140]

Figure 24: China and India – Geopolitical Competition the Indian Ocean



Source: Geopolitical Intelligence Service *2018*

[140] See Jonathan Ward, "Sino-Indian Competition in the Maritime Domain", China Brief, Vol. 17, Issue 1, 13 January 2017; Rear Adm (Dr) S. Kulshrestha, "Three Ports under China's Gaze", Indian Military Review, Vol. 8, August 2017, pp. 31-32, 66, and Kiran Stacey, "India on Edge over Influx of Chinese Cash to Neighbours", Financial Times, 25 September 2018.

Conclusion

The key drivers of China's BRI and its expanding overseas infrastructure and energy projects are the manifold problems and challenges of China's domestic energy policies (i.e. energy-industrial over-capacities) as the result of the country's energy reforms.

China has prioritised the expansion of the economic, trade and infrastructure projects of the BRI along key energy trade and transport routes. Beijing is concerned about the vulnerabilities of the SLOCs through the Indian Ocean, the Malacca Strait and the SCS. It seeks to minimise the risks by:

- decreasing its overall energy demand through diversification of its energy mix (with rising shares of RES, hydropower, gas, nuclear sources) and import routes while enhancing energy efficiency and conservation;
- building alternative transport ways with ports and pipelines in its southern and western neighbours to decrease maritime transportation via the US controlled SLOCs; and
- developing a blue-water navy which can rival the US and secure China's access to foreign ports (bought and controlled by China) and military bases in foreign countries (i.e., Djibouti).

China's previous "going out" strategy has cumulated in the formulation of the BRI and acquisition of energy production and infrastructure facilities in a much more strategically-designed long-term plan. The strategic objective behind the BRI is to establish secure sea routes from the China coast to the Indian Ocean and the Mediterranean Sea and to create alternative supply routes overland to ensure diversification of transport routes for oil and gas supplies as well as trade and access to foreign markets in the case of maritime supply disruptions.

Despite China's focus on new overland routes of railways and highways, most trade will continue with container and tanker transport via SLOCs. Presently around 90 per cent of international trade travels by sea. It will remain far cheaper than air cargo or transports via railways and highways.

In its investment strategies of the BRI, Beijing also supported and implemented projects, which are commercially questionable and unprofitable. Those projects and underlying strategies have demonstrated repeatedly that China's geopolitical interests and its energy policies often outweigh commercial considerations.

At the same time, the need to protect its overseas energy investments and projects drives China's security and military interests abroad as well as the capabilities of the PLA, particularly its naval and air forces. But these Chinese strategies to enhance its overall geoeconomic and geopolitical power in the Eurasian landmass and along the maritime routes have also produced new security dilemmas for both China and its BRI cooperation partners. Mistrust has increased as much as economic cooperation. Most recently, Malaysia's Prime Minister Mahathir Mohamad has even warned of a "new

colonialism" in regard to China's BRI. He called for fair bilateral trade and suspended US$22bn projects of BRI.[141] Equally, Myanmar has scaled back a large BRI project by reducing the costs of a Chinese-supported port on its western coast.[142]

For the economic partners of China's BRI, the cooperation with China in various projects is not without risks. In many cases, it is obvious that Beijing favours and prioritises its own interests over those of its partners. Since the bilateral relationships are not based on equal footing, China is often dictating terms based on its strategic interests, while its partners are being attracted by short-term rather than long-term interests.

As China's economic interests in the BRI are closely intertwined with its geopolitical objectives, the rising economic dependencies have also resulted in growing military implications. Ultimately, it raises the question whether the future regional and global order will be based on common rules such as the prevailing international law that takes the economic and security interests of all countries into account or whether Beijing will follow its traditional way and assert the central role of a "Middle Kingdom" that seeks to define the future rules of the game unilaterally.

For China, its new economic and security cooperation also present risks. It has become more dependent on politically unstable countries with rising security challenges and related costs. While foreign markets become ever more important for China's SOEs and private companies and their growth strategies as well as profits, they have to operate in very different economic, political and cultural environments. They are still learning how to operate in those foreign markets and different cultures.

Some new research highlights that the Chinese government and its institutions may be losing their grip.[143] China's SOEs and private companies move fast, and their own interests require them to shake off too much central control by Beijing. On balance, control and coordination problems also offer new opportunities for China's partners and strategic competitors to influence Beijing's future BRI investment projects and strategies.

The complex competition between China and the West as well as between China and ASEAN for building and financing huge infrastructure projects is not only complicating existing dynamics among Europe, ASEAN, Japan and the US It also betrays a lack of an adequate understanding for examining economics and security as two sides of a coin in an integral investment and implementation strategy.

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[141] See Stefania Palma, "Malaysian Rethink on Projects Risks Contagion in the Region", Financial Times, 25 September 2018; idem, "Malaysia Suspends $22bn China-Backed Projects"; idem, "Malaysia PM to Court Global Investors in US", Financial Times, 16 September 2018; idem, "Malaysia Cancels China-Backed Pipeline Projects", and Hannah Beech, "We Cannot Afford This: Malaysia Pushes Back against China's Vision".

[142] See Kanupriya Kapoor/Aye Min Thant, "Excusive: Myanmar Scales Back Chinese-Backed Port Project to Debt Fears – Official", Reuters, 2 August 2018.

[143] Lakruwan Wanniarach Chi, "China's Belt and Roller Coaster", CSIS Reconnecting Asia, 14 September 2018.

China's recently enhanced civil-military integration concepts and plans demonstrate that civilian infrastructures are designed not just according to economic means but also in regard to the potential military use in war times. Even when China's planned infrastructures overseas as part of the BRI do not have the same strategic importance as domestically planned infrastructures, China's cooperation partners of the BRI cannot totally ignore the potential military dimensions of those concepts.

While Chinese investments, in general, are welcomed, the rising economic dependency of European and ASEAN economies on Chinese investments and companies has caused growing economic and foreign policy concerns as well as debates about the nature of China's BRI and investments. They range from Chinese demands for arbitration and negotiation through diplomatic channels rather than following local legislation to an unwillingness to cooperate with environmental and social NGOs. Furthermore, there are persistent reports of failing transparency standards and widening corruption, leading to high unpayable debts and problematic debt-for-equity arrangements. Most alarming are successful attempts of Beijing to influence political decision-making processes such as in the EU review of critical investments and critical foreign policy declarations towards China. Such concerns and perceived mistrust will hardly disappear in the coming years as China's foreign and security policies might become equally more assertive. Therefore, "The real challenge for China may be winning hearts and minds rather than showering dollars and pounds."[144]

[144] Yu Jie, "China's Belt and Road Plan Hobbled by Ironies and Mismatches", Financial Times, 7 August 2018.

About the Author

Frank Umbach has been appointed as Adjunct Senior Fellow in RSIS with effect from 22 September 2017. Dr Umbach graduated from the University of Bonn with a MA degree in Political Science and a PhD ("Dr Phil"). He is presently the Research Director of the European Centre for Energy and Resource Security (EUCERS) at King's College in London as well as a Senior Associate at the Centre for European Security Strategies (CESS GmbH), Munich and a Visiting Professor at the College of Europe in Natolin (Warsaw) in Poland, teaching on "EU External Energy Governance". Furthermore, he is also an Executive Advisor at Advisor at Proventis Partners GmbH (an M&A company), Munich, and a consultant for the Gerson Lehrman Group (GLG) and Wikistrat.com. Since 2014, he is an independent "Subject Matter Expert (SME)" on international energy security of NATO's annual "Strategic Forecasting Analysis (SFA)" and a regular presenter at high-level NATO conferences on energy security. He is an internationally recognised expert on global energy security, geopolitics, critical (energy) infrastructure protection/CEIP, and (maritime) security policies in the Asia Pacific as well as Russia/Central Asia.

Previously, he was also a (Non-Resident) Senior Fellow of the Atlantic Council of the United States (ACUS) in Washington D.C. between 2010 and 2015. From 2003 to 2007, he was a Co-Chair of the European Committee of the Council for Security Cooperation in Asia-Pacific (CSCAP-Europe). From 1996 to 2007, he was the head of the programmes "Security Policies in Asia-Pacific" and "International Energy Security" at the German Council on Foreign Relations (DGAP) in Bonn and Berlin; a research fellow at the Federal Institute for East European and International Studies (BIOst) from 1991 to 1994 and a visiting research fellow at the Japan Institute for International Affairs (JIIA) in Tokyo from 1995 to 1996.

Dr Umbach has done consultancy work and testimonies for the German Ministries of Foreign Affairs and Defence Policies; European Commission and European Parliament, US-State and Energy Departments, US-China Economic and Security Review Commission (US-Congress), the Lithuanian Government, the House of Lords (British Parliament), the Polish Foreign and Economic Ministries, Hungarian Foreign Ministry, South Korean Foreign Ministry, NATO, OSCE, World Energy Council (WEC), Federation of the German Industries (BDI), energy and consultancy companies (incl. APCO and Roland Berger) and has advised international investors (via GLG). He is also the author of more than 500 publications in more than 30 countries worldwide, including being a contract author of the Geopolitical Intelligence Service (GIS) in Liechtenstein, since 2011.

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