SHANGHAI INSTITUTES FOR INTERNATIONAL STUDIES

BRI – Economic Corridors and Key Operational Investments

March 2018

GRISONS PEAK
Merchant Banking Innovation

CHINA INVESTMENT RESEARCH

Selected Projects pre-Belt and Road

Kazakhstan – China

- China's 1st oil pipeline co-owned by CNPC and KazMunayGas.
- Agreed in 1997, 1st section completed in 2003, 2nd section completed in 2005, 3rd section in 2009. Total length of the pipeline is over 2,200 kilometers with annual production of 20 million tons/year.
- In 2011, the Chinese government announced that it would jointly sponsor the construction of a high-speed rail line between Astana and Almaty in Kazakhstan between China and Western Europe as part of an HSR link.

Central Asia – China Gas Pipeline

- In 2006, China and Turkmenistan signed a framework agreement on the pipeline construction and long term gas supply.
- In 2007, it was announced that Turkmenistan will join China- Kaz pipeline. In 2008 construction of the Uzbek section started. In 2009 the whole pipeline was launched.
- In 2010, China and Kazakhstan signed an agreement to expand this into Western Kazakhstan. The 2nd line was completed in 2010, the 3rd line by 2012, the 4th by 2014.

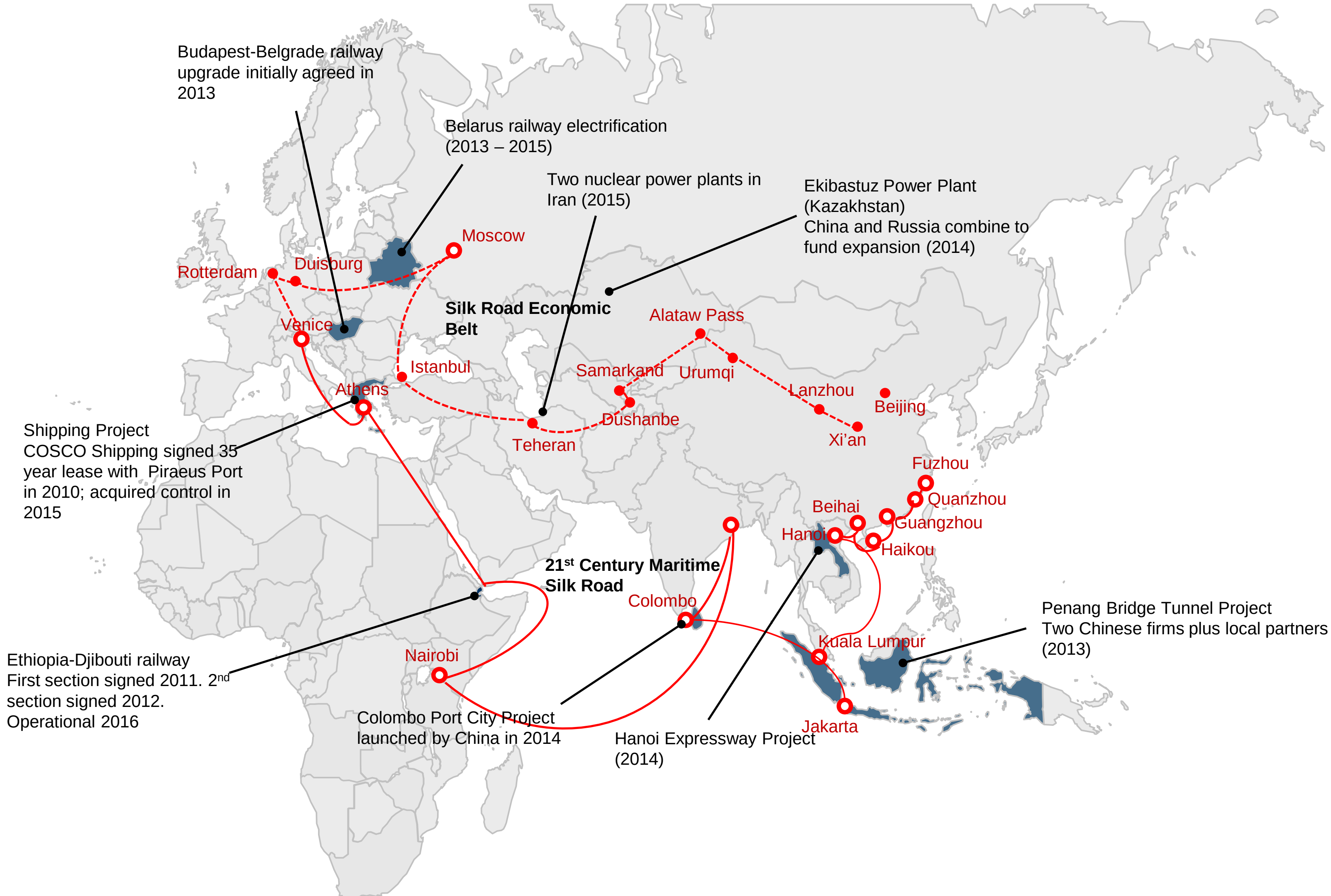
Turkey – HSR

- Turkish State Railways began building HSR in 2003.
- The 1st section of 533 km was inaugurated in 2009, linking Istanbul to Ankara.
- The Marmaray Project/Tunnel will connect the railway lines on the European and Asian parts of Istanbul.

Arguably, the first Belt and Road project dates as far back as 1967, when China provided both a $60 million loan and labour to the Karakoram highway, the highest paved international road in the world, which links Pakistan to China.

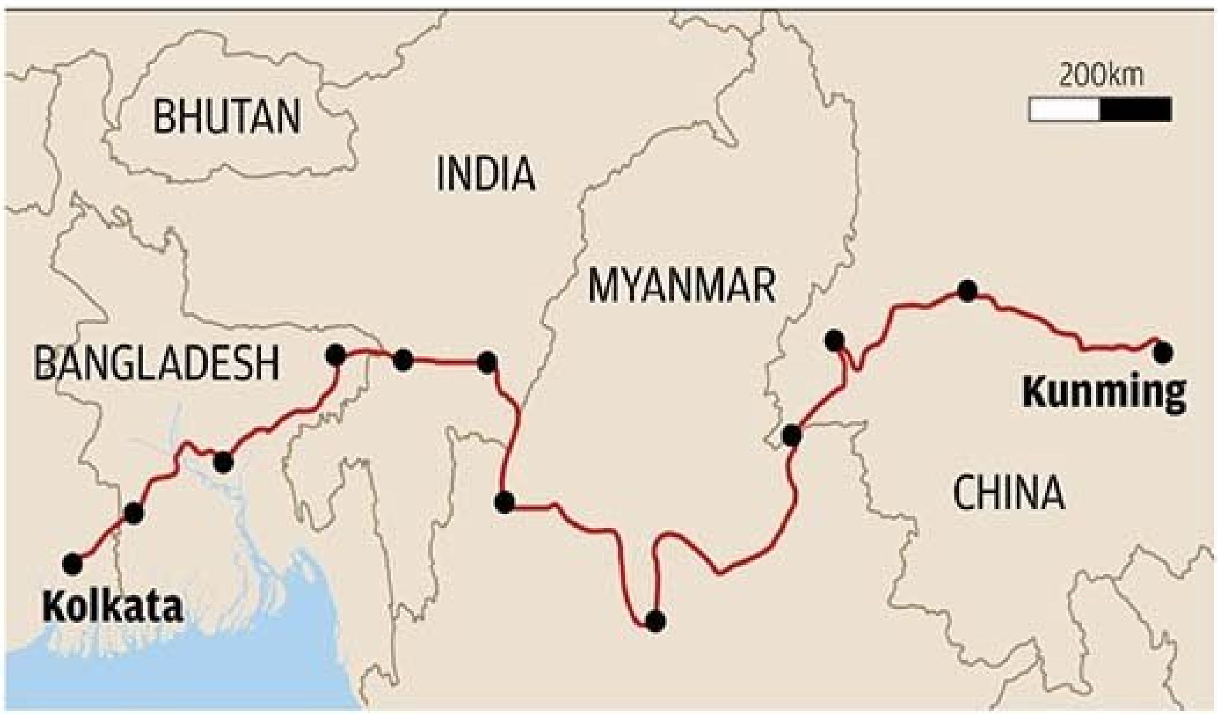
Official OBOR – Pre launch (2013)

OBOR 2013 map – Selected Projects along Corridors since launch



BCIM Economic Corridor (2013)

- The Bangladesh–China–India–Myanmar (BCIM) is a sub-regional organisation of Asian nations aimed at greater integration of trade and investment between the four countries.
- The corridor covers 1.65 million square kilometers, encompassing an estimated 440 million people in China's Yunnan province, Bangladesh, Myanmar, and West Bengal in Northern India.
- The concept was initially discussed by all the countries during the late 1990s and was known as the ‘Kunming Initiative’. The first meeting of the Initiative was convened in 1999 in Kunming.
- In December 2013, the four nations drew up a long discussed plan, whereby it was agreed that the corridor will run from Kunming to Kolkata, linking Mandalay in Myanmar as well as Dhaka and Chittagong in Bangladesh.



Specific BCIM Economic Corridor Projects

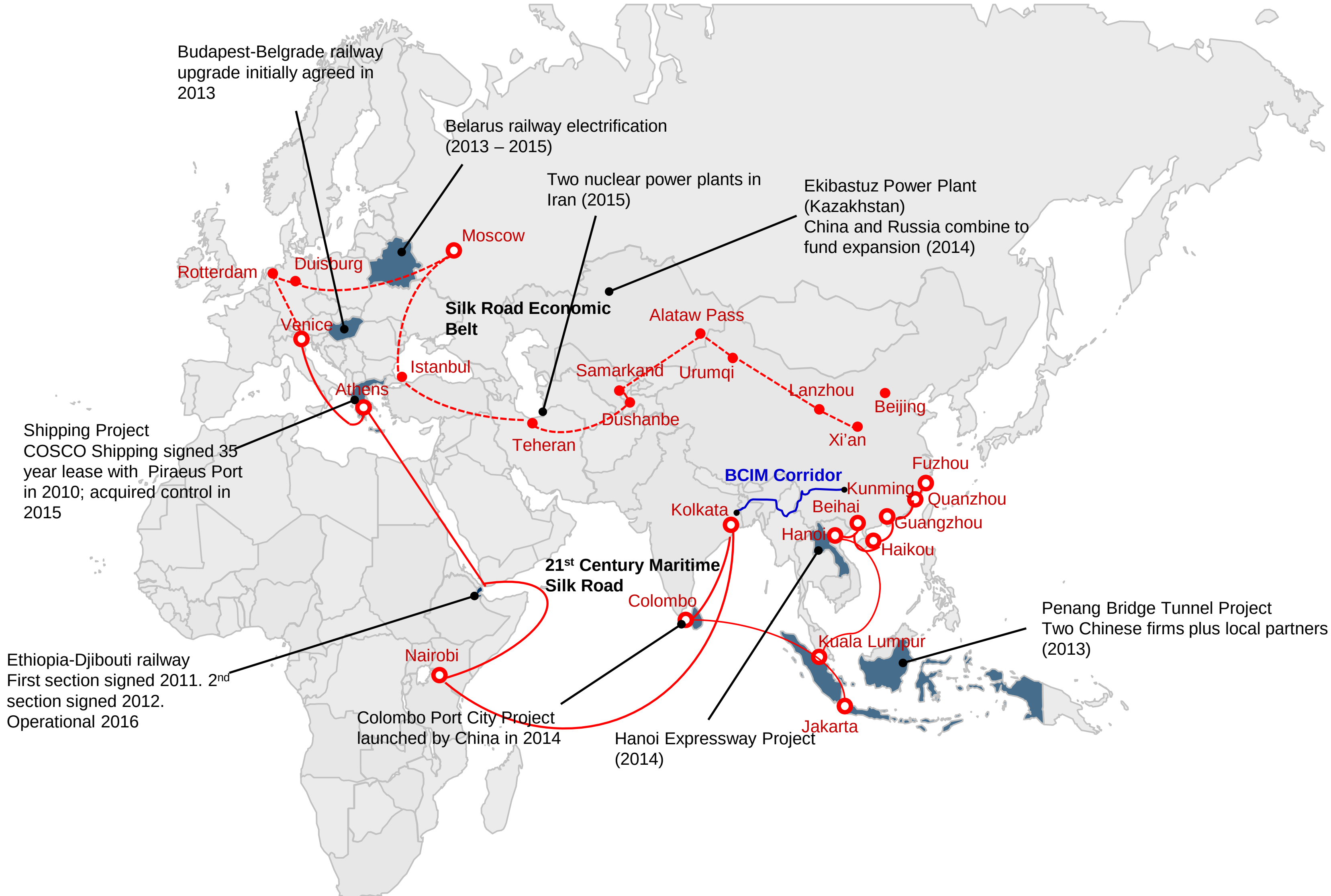
Bangladesh

- In October 2016, Bangladesh and China approved a draft MoU for two loan agreements of $706 million with China for the construction of a multilane road tunnel beneath the Karnaphuli river. It is also part of a plan to bolster Chittagong's role as a communications hub, develop the Dhaka-Chittagong-Cox's Bazar national highway, create a link with the Asian Highway Network thus increasing connectivity with Myanmar and India.
- Bangladesh has a power grid deficiency, and has turned to China increase grid capacity. The goal, announced in 2016, as part of a plan to increase the country's total power generation capacity to 40,000 MW by 2030, from the current level of around 13,500 MW. It is estimated that 30% of the target capacity will be generated from coal-fired power plants while the remaining 70% is to come from renewable energy.
  - Bangladesh's state-run Ashuganj Power Station Ltd (APSCL) and China Energy have agreed to build a 1,320-MW coal-fired TPP in Patuakhali through a 50/50 joint venture. The proposed 2x660-MW generating project is to be developed at Kalapara at an estimated cost of US$2 billion, with a debt-to-equity ratio of 70%/30% (loans from CEXIM). The technology-based plant will use imported coal of around 12,000 tonnes of coal/day. From countries such as Indonesia, India and Australia. Bangladesh's state-owned West Zone Power Distribution Co Ltd will build a transmission line from the proposed plant to Patuakhali sub-station to connect the national power grid.
  - Payra Project: Also North-West Power Generation Co Limited last year set up a 50/50 joint venture with CMEC in 2016 for development of a 1,320-MW coal-fired TPP at Payra. CEXIM provided a US$1.6 billion loan for this project.

Myanmar

- China's CITIC Group is looking to lead a consortium (which includes CHEC, China Merchants Holdings, TEDA, and Yunnan Construction Engineering Group) to take a stake of up to 85% in the $7.3 billion Kyauk Pyu port , a strategically important sea port in Myanmar. In exchange for control of the port, China had signalled it was willing to abandon the controversial $3.6bn Myitsone dam project, which has been blocked for a number of years. Like Gwadar (discussed later),Kyauk Pyu is important for China because the port is the entry point for a Chinese oil and gas pipeline which gives it an alternative route for energy imports from the Middle East that avoids the Malacca Straits.
- The port is part of two projects, which also include an industrial park, to develop a special economic zone in Myanmar's western Rakhine State. A second consortium led by CITIC has also proposed taking a 51% stake in the $2.3bn industrial park. The only non-Chinese SOE involved in the consortium is Thailand's Charoen Pokphand Group.

OBOR map – BCIM Economic Corridor (2013)



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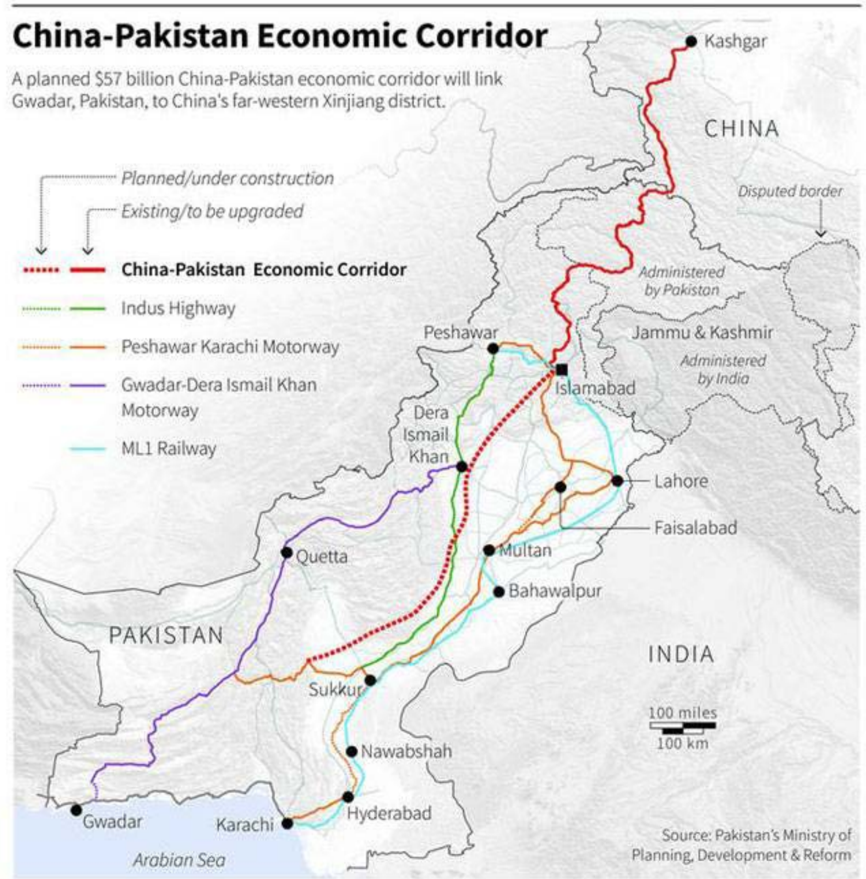
China-Pakistan Economic Corridor (CPEC) (2014)

- CPEC is an economic corridor comprising a collection of projects currently under construction at a cost of $62 billion. CPEC aims to provide sufficient power to eliminate the power shortages and to facilitate trade along an overland route that connects Kashgar and Gwadar, through the construction of a vast network of highways, railways, optical fiber and oil pipelines. The corridor is intended to rapidly expand and upgrade Pakistani infrastructure.
- Pakistani officials predict that the project will result in the creation of upwards of 700,000 direct jobs between 2015–2030, and add 2 to 2.5% to Pakistan's GDP growth. Upon implementation, the value of those projects would be equal to all foreign direct investment in Pakistan since 1970, and would be equivalent to 17% of Pakistan's 2015 GDP.
- Gwadar Port became operational in November 2016 when the initial outbound vessel (with Chinese goods) set sail to the Middle East and Africa: in December 2016 the first large shipment of Chinese goods arrived into Gwadar.

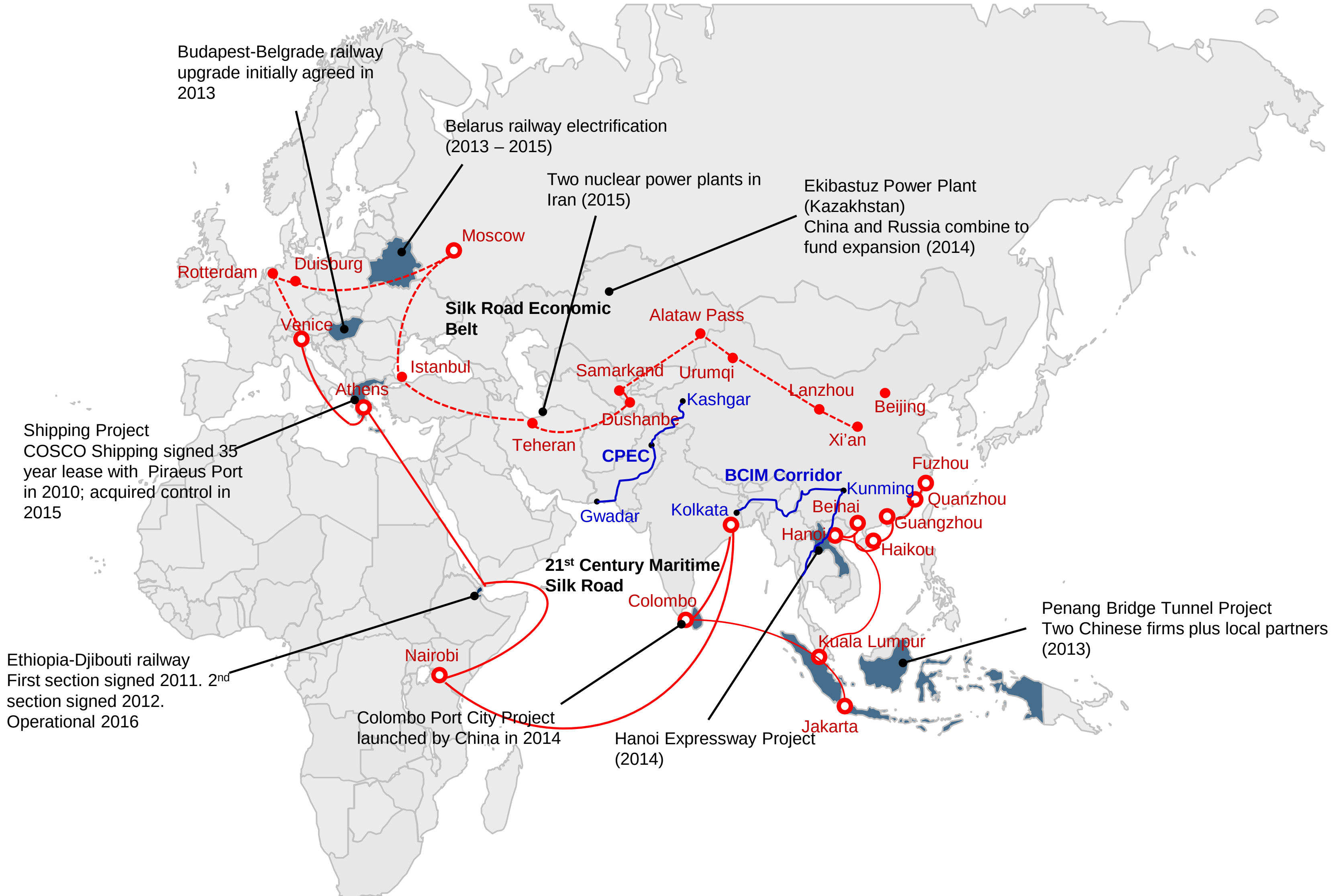


Once fully operational, China will realise considerable cost savings ($ billions per year), shortening oil shipping from 13,000 kms to 3,000km/barrel for every barrel of oil imported from the Persian Gulf as well as providing additional revenues to Pakistan. 91% of the revenues to be generated from the Gwadar port in CPEC would go to China, while the GPA would get 9% for the next 40 years.

China-Pakistan Economic Corridor (CPEC) (2014)

- In Q2 2015, and as part of the China-Pakistan Economic Corridor (CPEC), China announced $46 billion in pledges to Pakistan. Original estimates thought that roughly $35 billion investments would relate to the energy sector and $11 billion in infrastructure and Gwadar. By Q4 2016, roughly $37 billion of this amount had already been allocated to specific or proposed projects.
- Early Harvest Project Status
  - Only 4-5 of the 18 projects have been completed to date (less than 2,000MW).
  - Most of the major energy grid uplift pushed back to 2018 completion or later (delaying GDP growth).
- Chinese Domination of Early Harvest Financing
  - Chinese policy banks and ICBC have 90% market share of the debt for the Early Harvest projects- local ICBC operation has grown substantially; BoC planning to double presence in 2018.
  - Despite plenty of liquidity, Pakistani banks have been virtually shutout of all of the Early Harvest projects – except for Thar II, where 5 Pakistani banks share nearly equal debt exposure with 3 Chinese banks. Same is true with foreign banks.
  - The majority of the projects are structured using some type of partnership with the Chinese partner owning control (only 4 controlled by Pakistan companies).
- Non Chinese Private Investment
  - Have been very limited to date.
  - Mostly large government funds in Muslim countries, Qatar, Saudi, Malaysia.
  - This summer, Abraaj Group sold 66% of K Electric to Shanghai Electric, for $1.77 billion, which represents the largest M&A transaction in Pakistan. In addition, Shanghai Electric agreed to invest $9 billion into KE over the next 7 years.

OBOR map – China-Pakistan Economic Corridor (CPEC) (2014)



China-Indochina Peninsula Economic Corridor (CICPEC – 2015)

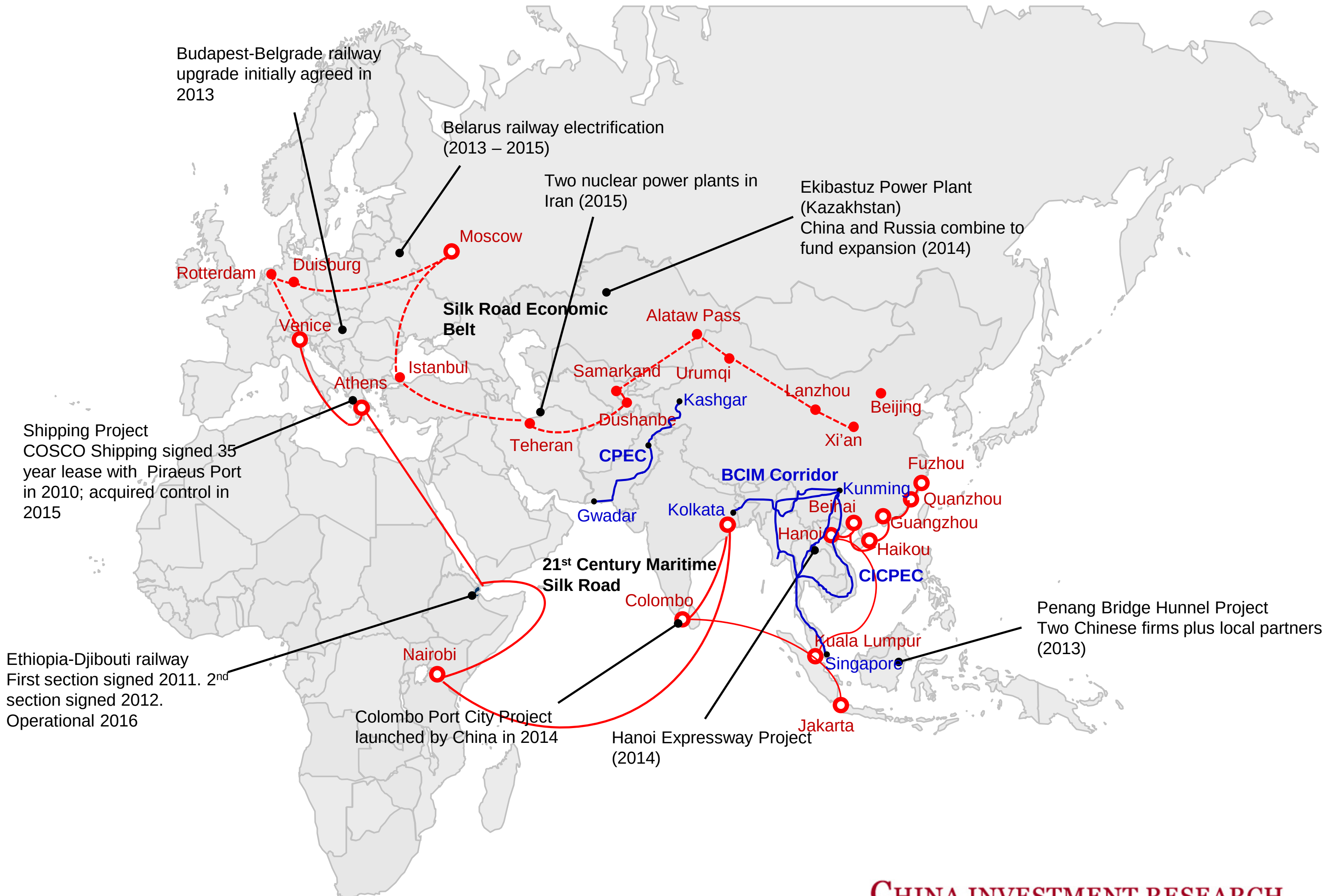
Kunming-Singapore Railway (Pan-Asia Railway Network)

- Been discussed since 1900 with the British and French Empires; these lines would directly link Kunming to Singapore and all Southeast Asian countries, involving over 3,900 kilometers.
- Three routes:
  - Eastern – via Vietnam (estimated completion 2030)
  - Central – via Laos (2022)
  - Western – via Myanmar (2020)
- Once fully operational: projected to increase Chinese GDP by $375 billion.
- <u>Kuala Lumpur-Singapore HSR</u>
  - Agreement between both countries signed December 2016
  - Construction planned to 2018-2026
  - HSR: 350 km – travel time 90 minutes
- <u>Indonesia HSR</u>
  - Jakarta-Bandung 142 km HSR announced July 2015
  - 2016 JV: 60% Indonesian SOEs, 40% CRRC (2017 discussions?)
  - $6 billion project, funded by $4.5 billion CDB loan (2017)
  - Plans to be operational 2019: so will be Southeast Asia's first HSR

Shanghai – Kunming HSR of 2,264 km became operational in December 2016 (reducing travel time from 34 to 9 hours)

OBOR map – China-Indochina Peninsula Economic Corridor (CICPEC – 2015)

Kunming-Singapore Railway (Pan-Asia Railway Network)



European Land Bridges (2016)

Kazakhstan – via Transportation Link within BRI

- Khorgos Gateway, the world's largest dry port, sits within the broader Khorgos Eastern Gate SEZ – a 600-hectare development area strategically positioned in Kazakhstan on the border with China.
- Khorgos Gateway sits at the heart of an emerging network of trans-Eurasian rail lines (TER), which directly connects cities in China with cities in Europe.

- In May 2017, China's COSCO Shipping, one of the world's largest shipping companies and the Port of Lianyungang acquired a 49% stake in Khorgos Gateway. After just one year of operation, Khorgos was already handling over 1/5 of its 2020 goal of 500,000 TEU per year. With its new partners, cargo volumes are expected to increase significantly.
- The Port of Lianyungang is one of the larger seaports in the world, moving 200 million tons of cargo and 5 million containers per year. It is also one of the starting points of the central corridor of the overland BRI between China and Europe.
- The partnership involving two of China's shipping industry with the Kazakh dry port shows the increasing importance of Kazakhstan within the BRI.

BTK – The Middle Corridor Link

- The 850 kilometers long journey connects the eastern Turkish province of Kars (16-18 hours) with the Azeri capital Baku on the Caspian Sea through the Georgian capital Tbilisi.
- BTK reduces the transport time of goods from China to Europe to 15 days, less than 50% of the time via sea transport.
- With the recent opening of the BTK line, a person can now travel without changing trains from London to Beijing.

- The Baku–Tbilisi–Kars (BTK), or Baku-Tbilisi-Akhalkalaki-Kars railway (BTAK), is a regional rail link connecting Baku in Azerbaijan, Tbilisi in Georgia and Kars in Turkey (and therefore Central Asia and China to Europe). It is considered to be a very significant part of the middle corridor of the Modern Silk Road. The Middle Corridor runs from China to Kazakhstan, Azerbaijan, Georgia, Turkey, and Ukraine, crossing the Caspian and Black sea along the route. The corridor forms an alternative to the popular Trans-Siberian (TSR) route.
- Initially, an annual volume of 6.5 million tonnes of cargo is expected to be transported along the route, with the aim to increase to 17 million tonnes of cargo per year. Currently, conditions are being created to send around 400,000 tons of grain, wood, and coal from Russia. It is expected to be able to transport 1 million passengers at the first stage increasing to 3 million passengers per year over time.

China – Pakistan Railways

- Two China – Pakistan Railways have been planned.
  - ➢ In China, they will start in Kashgar in Xinjiang Uygur Autonomous Region.
  - ➢ In Pakistan, both lines will be extended to the ports along the Arabian Sea; one is the deep-sea Gwadar Port and the other is Karachi.

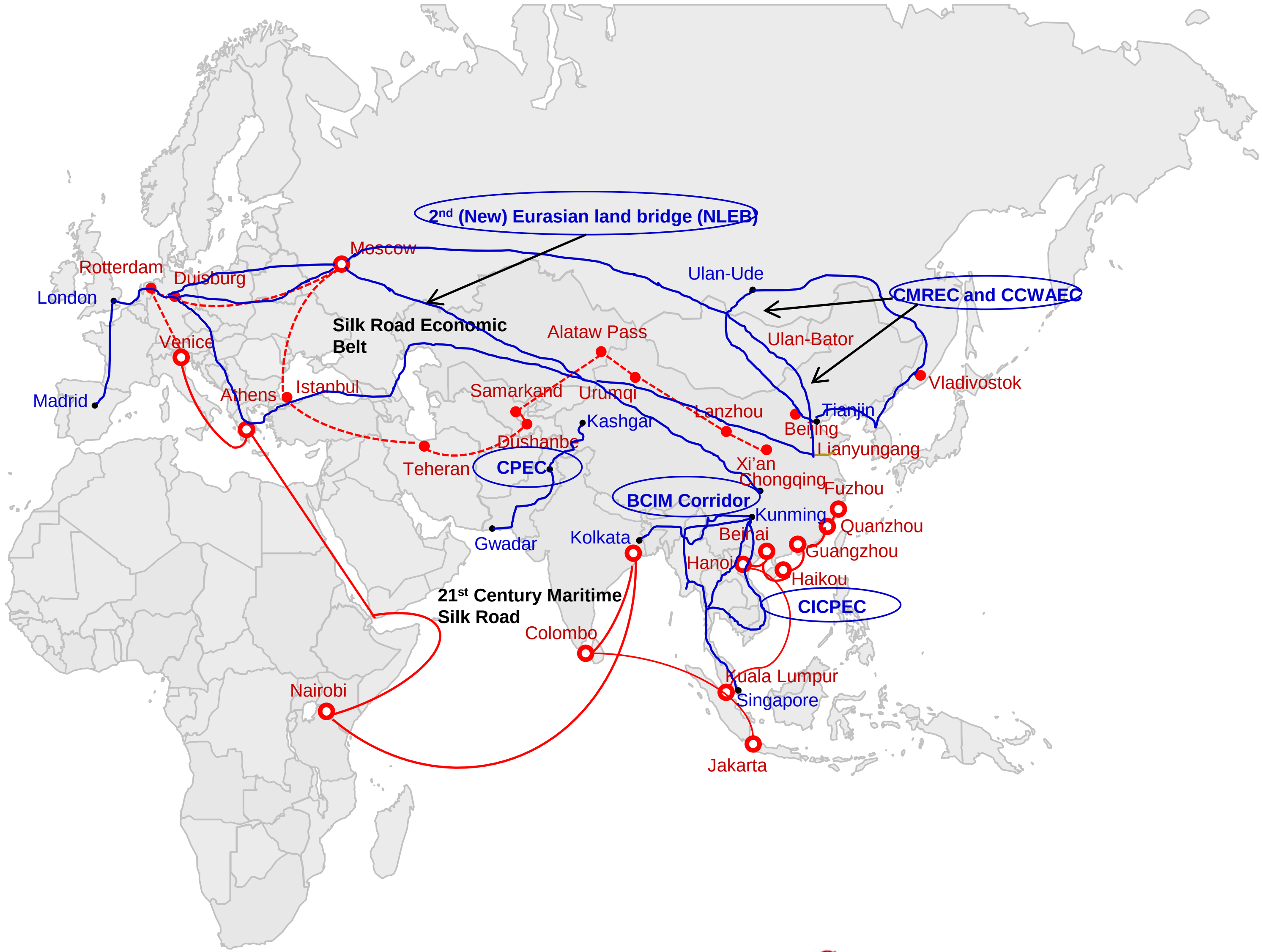
- Kashgar – Gwadar Railway Project is planned to be built through the undeveloped north part of Pakistan, where no rail lines have been laid before. The Gwadar Port become operational in November 2016, however the rail line is still at the planning stage and the aim is for it to be completed by 2030.
- Kashgar – Karachi Train: Will run through the more prosperous cities in the east of the country, such as Islamabad, Peshawar, Lahore, and Karachi. A rail line has already existed between Karachi and Peshawar known as Pakistan First Railway Main Line. However, it needs to be renovated and upgraded. This work began in January 2016 and is expected to be completed by 2019. In the future, the line will be extended to Kashgar.

China-Russia-Mongolia Economic Corridor (CMREC and CCWAEC – 2017)

- The China-Russia-Mongolia (CMREC) and the China-Central Asia-Western Asia corridor (CCWAEC) will form a two-wing central circle, which will extend across the Eastern Eurasian continent, connecting to the Asia-Pacific and westward entering into the European economic circle.
- Inner Mongolia of China, which has 16 national open ports, including 13 land ports and 3 aviation ports, borders Mongolia and Russia for over 4,200 kilometers. The Manzhouli land port is presently the most important land-sea channel from Bohai Rim Region to Russia and onto European countries. The Erenhot railway port is currently the only railway port connecting China and Mongolia and onto Europe.
- Adding this corridor to the BRI will accelerate the construction of a trans-border sea-land multimodal transportation channel in Inner Mongolia that connects the economic trade in Russia and Eurasia. Specific projects are expected to be based on around:
  - Manzhouli Port of China and the Zabaikalskport area of Russia. China and Russia will co-construct an economic zone connecting far-eastern Russia and north-eastern China, including Dalian port, Jinzhou port and the Russian-Eurasian railway joining the interior Europe.
  - Inner Mongolia Erenhot port of China and the Zamyd-Uud port area of Mongolia and China will co-construct the economic zone connecting Beijing, Tianjin and Hebei, Tianjin port, Qinhuangdao port and Ulan Bator railway linking with the Russian-Eurasian railway.
  - Maodu port of China's Inner Mongolia and the port area of Mongolian Gashusuhaitu. China and Mongolia will co-construct the new railway of Mongolia northwards connecting the southern concentrated area of Mongolia, southward connecting Shanxi, Guangxi, and Guangdong.
  - Selected existing ports in Mongolia. China and Mongolia will co-construct the sea-land multimodal transportation channel through Erenhot, linking ports with and the Bohai economic zone. This would have the effect of linking the concentrated area in the southeast of Mongolia to the Russian-Eurasian railway.

China-Europe freight trains passing through Erenhot railway port during H1 2017 already increased by 300% over 2016, while China-Europe inbound/outbound freight trains passing through Manzhouli land port increased by 33%.

BRI map – Economic Corridors (June 2017)



16+1 (2012)/Sino-CEE Fund[1] (2016)

- 16+1 is an initiative launched in 2012 by China to expand cooperation with 11 EU Member States and 5 Balkan countries (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia) in the fields of investments, transport, finance, science, education, and culture. In the framework of the initiative, China has defined three potential priority areas for economic cooperation: infrastructure, high technologies, and green technologies.

Preferential/Policy Bank Loans – Senior Debt (2012-2016)

- During the period of 2012-2016, China made a considerable number of preferential, mostly policy bank loans to several countries within CEE, which we list below by country in descending order[3]:

Country	Amount ($bn)	Sector
Serbia	5.8	Energy, Infrastructure
Romania	3.4	Energy
Bosnia/Herzegovina	2.3	Energy, Infrastructure
Montenegro	1.0	Infrastructure
Macedonia	0.6	Infrastructure
Albania	TBD[2]	Infrastructure
Total	$13.1 bn	

- It is worth noting that several of these projects also saw minority equity investments (less than 20%) from some of the major Chinese partners such as China Road and Bridge (CRBC).

(1) But not (yet) a part of the BRI
(2) Loan under discussion since 2015
(3) Sources: Grisons Peak, EBRD

16+1 (2012)/Sino-CEE Fund (2016)

Equity Investments/M&A (2013-2015)

- In 2013, China, in conjunction with CEE Equity Partners, announced a CEE focussed PE fund, funded by up to $1.5 by CEXIM. As of Q4 2017, the China-CEE Cooperation Fund has only invested $435 million. Selected investments from September 2014 through January 2017 include:
  - Minority stake in a wind farm in Poland (along with a prominent Poland based investor)
  - Majority stake in a Bulgarian climbing wall manufacturer (business model exported to China)
  - Majority stakes in Czech's largest solar power company and in a leading player in Hungarian telecoms.
- In September 2015, China Energy (CEFC) announced numerous acquisitions/investments into the Czech Republic, including;
  - Minority stakes in a major media group (which it sold back to the vendor 3 years later), in Czech Airlines and in J&T Finance group, a holding for a major energy company, both of which CEFC subsequently attempted to acquire control
  - Also during this spree, CEFC acquired controlling stakes in Czech Republic's 5th largest brewery, one of Czech's oldest football clubs and two of its most prestigious hotels
- In December 2015, China Three Gorges announced that it acquired a 49% stake in a 598MW portfolio of EDP Renewables' wind project in Poland and Italy for €392 million ($398 million). The transaction covers 392MW of operational wind capacity in Poland and 100MW in Italy, as well as a total 107MW under construction in Poland and Italy.

16+1 (2012)/Sino-CEE Fund (2016)

Equity Investments/M&A (2016)

- In March 2016, the Canadian Banker's Petroleum Company (a Canadian based company), announced the sale of oil exploration and production rights in Albania to Petroleum Geo-Jade (China) for $380 million.
- In April 2016, CITIC Telecom announced the acquisition of the telecommunication business of Linx Telecommunications including Linx’s 470 kilometer optic fiber network in the Baltic Sea, and its network operations centres in Moscow and Tallinn, Estonia. The acquisition also included Linx’s data center in Tallinn, which serves as Estonia‘s largest Internet Exchange.
- In April 2016, HBIS Group of China agreed to acquire Smederevo steel mill, Serbia’s largest, for $54 million. HBIS agreed to also invest an additional $120 million to upgrade its operations. By Q3 2017, Smederevo had become profitable, after 7 previous years of prior losses.
- In July 2016, China Everbright International acquired Poland's biggest solid waste disposal company, Novago, for $137 million. Acquisition debt was funded by Bank of China Poland branch.
- In October 2016, a Chinese consortium which includes China Everbright and Friedmann Pacific Asset Management announced the acquisition of the concession rights of Tirana International Airport for an estimated price of $90 million.
- In October 2016, KazMunay Gas sold a 51% stake in KazMunayGas International (Romania) to CEFC for an estimated $600 million.

16+1 (2012)/Sino-CEE Fund (2016)

Chinese Investment into Greece (2016-2017)

Via Acquisition

China has been actively investing into Greece since the beginning of the crisis, initially by acquiring Greek Government bonds, then spreading across infrastructure, shipping, energy and real estate. Outside of Greek government bonds, Chinese investments into Greece to date in Greece exceed €7 billion, examples of which are set out below:

- In July 2016, Cosco acquired 67% of Pireaus port for $409 million. Through this investment and the 2009 operating concession, over the past few years, Cosco has transformed the Pireaus port area.
- In June 2014, Fosun agreed to invest $200 million as part of a Greek consortium to develop the former Hellenikon airport – only 8 km from the center of Athens. In June 2017, the Greek Government approved a $7.9 billion development to include Fosun, Thomas Cook and Abu Dhabi.
- In July 2017, China State Grid acquired 24% in Greece' power grid operator ADMIE for $356 million.
- In September 2016, China Machinery (CMEC) signed an MoU with Greece's PPC for the construction of a 450MW power station at a cost of €750 million.

De Novo

- In September 2016, Alibaba and 160 Greek companies began discussions for the development of e-commerce between Greece and China.
- ZTE Corporation and Huawei have also established a significant presence.
- China Development Bank entered Greece in 2010; ICBC, the world's largest bank, has recently applied for a license to enter.

16+1 (2012)/Sino-CEE Fund (2016)

Sino-CEE Fund

- In November 2016, in Riga, Premier Li launched China's most recent initiative in the 16+1 platform with the Sino-CEE Fund.
- In March 2017, the €10 billion Sino-CEE Fund was officially launched in Munich. Key Highlights include:
  - Recruited Former Group ICBC Chairman Jiang to manage the fund
  - Equity in the fund is provided by Chinese SOEs and POEs- rather than by policy banks. Functions as a single unit with all partners able to leverage off each others' CEE investments
  - Focus is infrastructure, manufacturing, consumer, financial services
- Also in Q1 2017, China's Hesteel announced plans to acquire US Steel's Slovakian subsidiary US Steel Kosice, the largest employer in Eastern Slovakia, for $1.5 billion.
- In May 2017, three Chinese insurers each made €700+ million offers to acquire 75% of Ethniki, Greece's largest insurer. However, the Greek Govt chose a Greek/US consortium to win this particular auction.
- In November 2017, Shenhua Group agreed to acquire a 75% stake in four Greek wind farms developed by Copelouzos Group and also announced an MoU to take part in PPC Solar Solutions, a joint company of Greek electric utility Public Power Corp SA (PPC) and Copelouzos, as part of a planned $3.5 billion future investment program.

It has been rumored that the number of projects being evaluated by this fund since launched are in the hundreds.

Maritime Silk Road – LAPSSET Corridor/East African Railway

LAPSSET Corridor

- The LAPSSET Corridor Program (Lamu Port Southern Sudan-Ethopia Transport Corridor) is Eastern Africa's largest infrastructure project bringing together Kenya, Ethiopia and South Sudan. This project consists of seven key infrastructure projects including a new large new port at Lamu (Kenya); as well as Interregional Highways a crude oil pipeline a product oil pipeline, and an interregional Standard Gauge Railway lines all linking the 3 countries. It also includes 3 International Airports, 3 Resort Cities and a major hydroelectric dam.

- As of July 2017, construction on several berths at Lamu Port were underway (first to be completed by June 2018), both the Lamu Manda and Isiolo airports have been completed, several of the roads have been completed, and construction of the dam has commenced – after delays.

East African Railway

This $14 billion project plan is to rejuvenate existing railways in Kenya, Tanzania and Uganda, extending them initially to Rwanda and Burundi and then to Ethiopia and South Sudan.

New East African railway

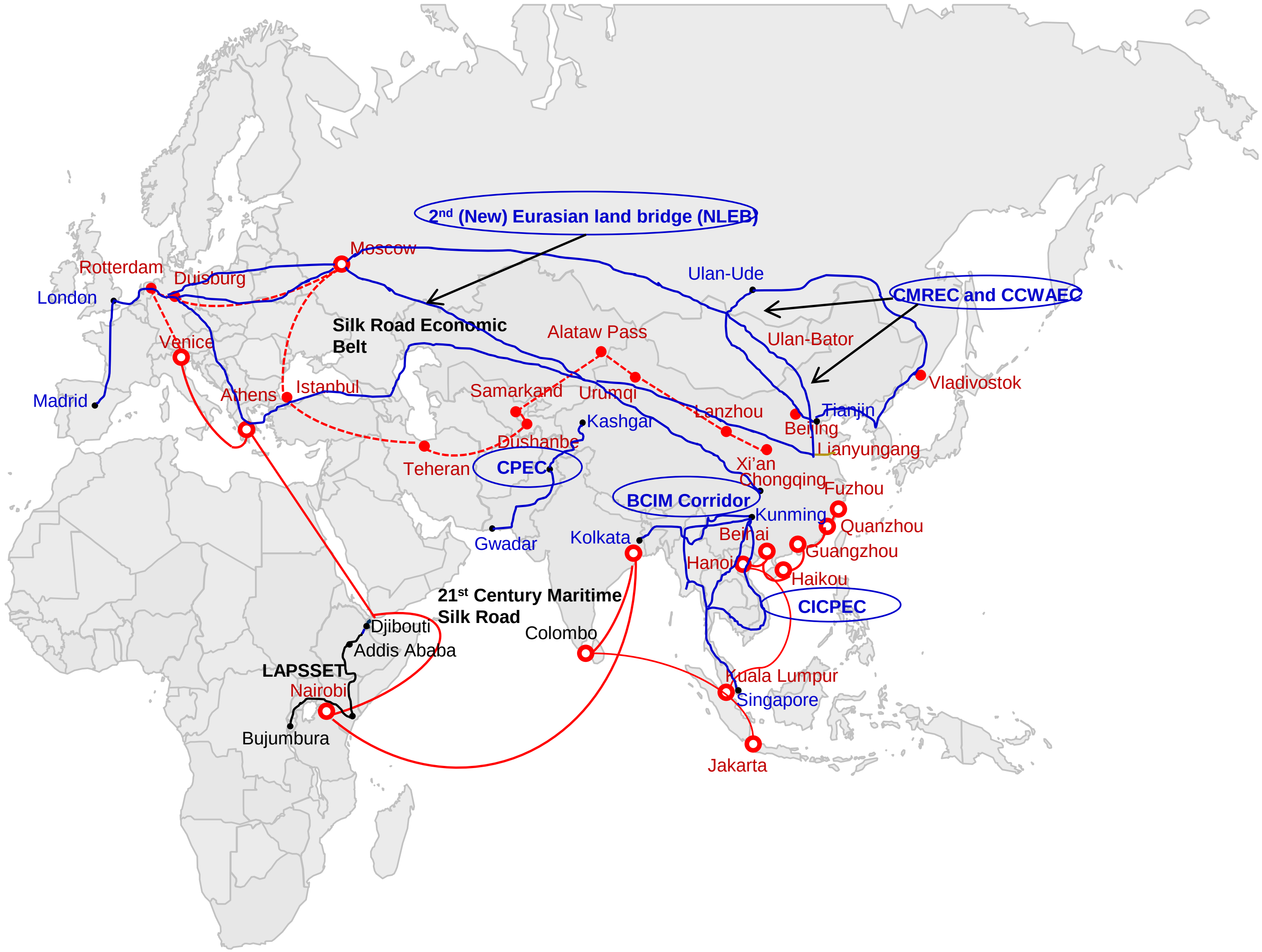
Kenya

- In May 2017, Kenya opened a major new 470km (290 miles) line railway between the port city of Mombasa and Nairobi-- 18 months ahead of schedule. Earlier in May, Kenya received additional commitments of $3.6bn from China to extend the railway line 250km (155 miles) west from Naivasha to Kisumu.

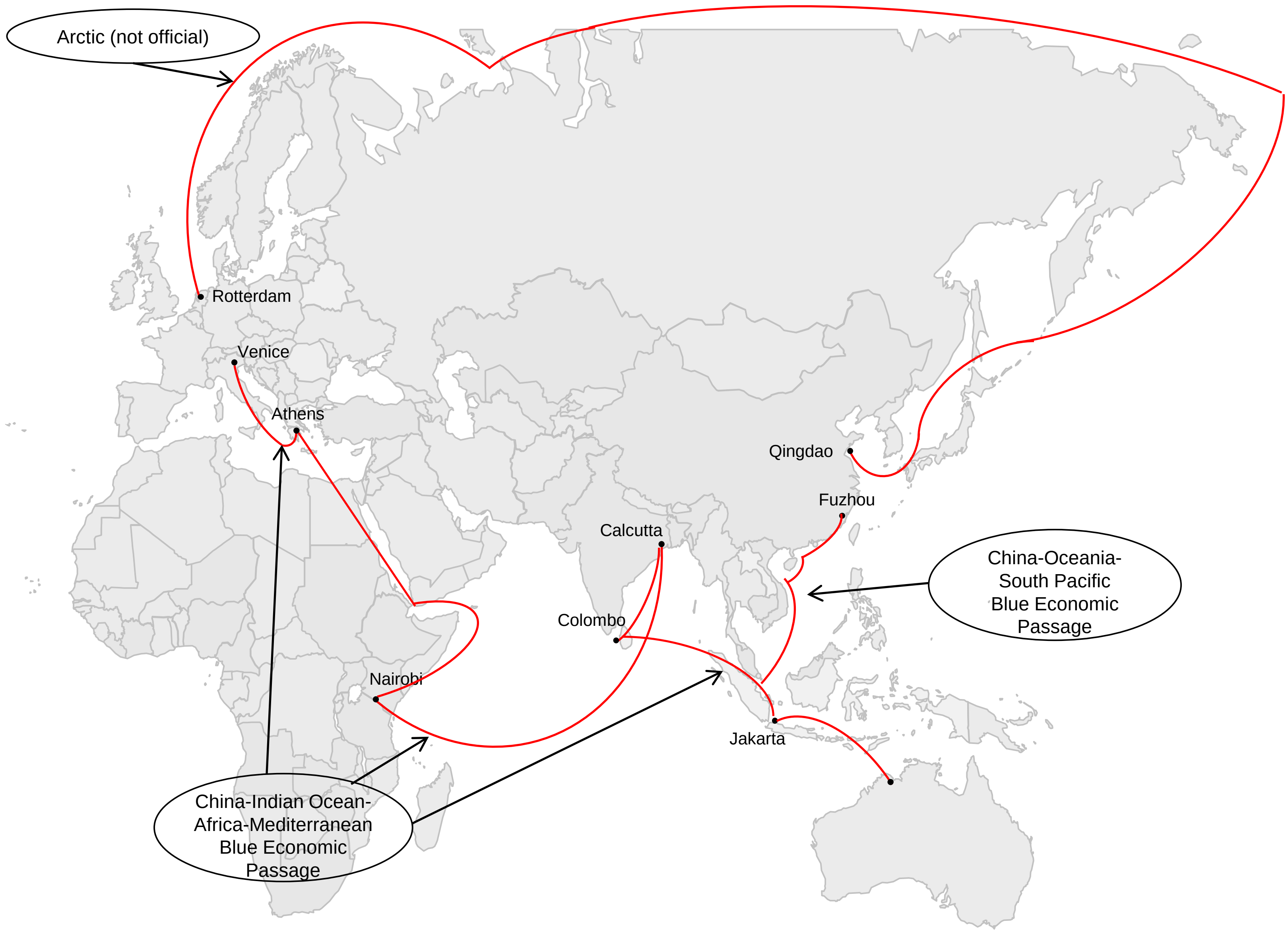
Ethiopia

- The Addis Ababa–Djibouti Railway links Ethiopia's capital of Addis Ababa with Djibouti and its Port of Doraleh. The 756 km (470 mi) mile line was officially inaugurated in October 2016 by Ethiopia and in January 2017 by Djibouti, it was still in testing in May 2017. It is now expected to be operational by end of 2017. Addis Ababa previously launched its 34 kilometre light rail system in September 2015.

Maritime Silk Road – LAPSSET Corridor/East African Railway



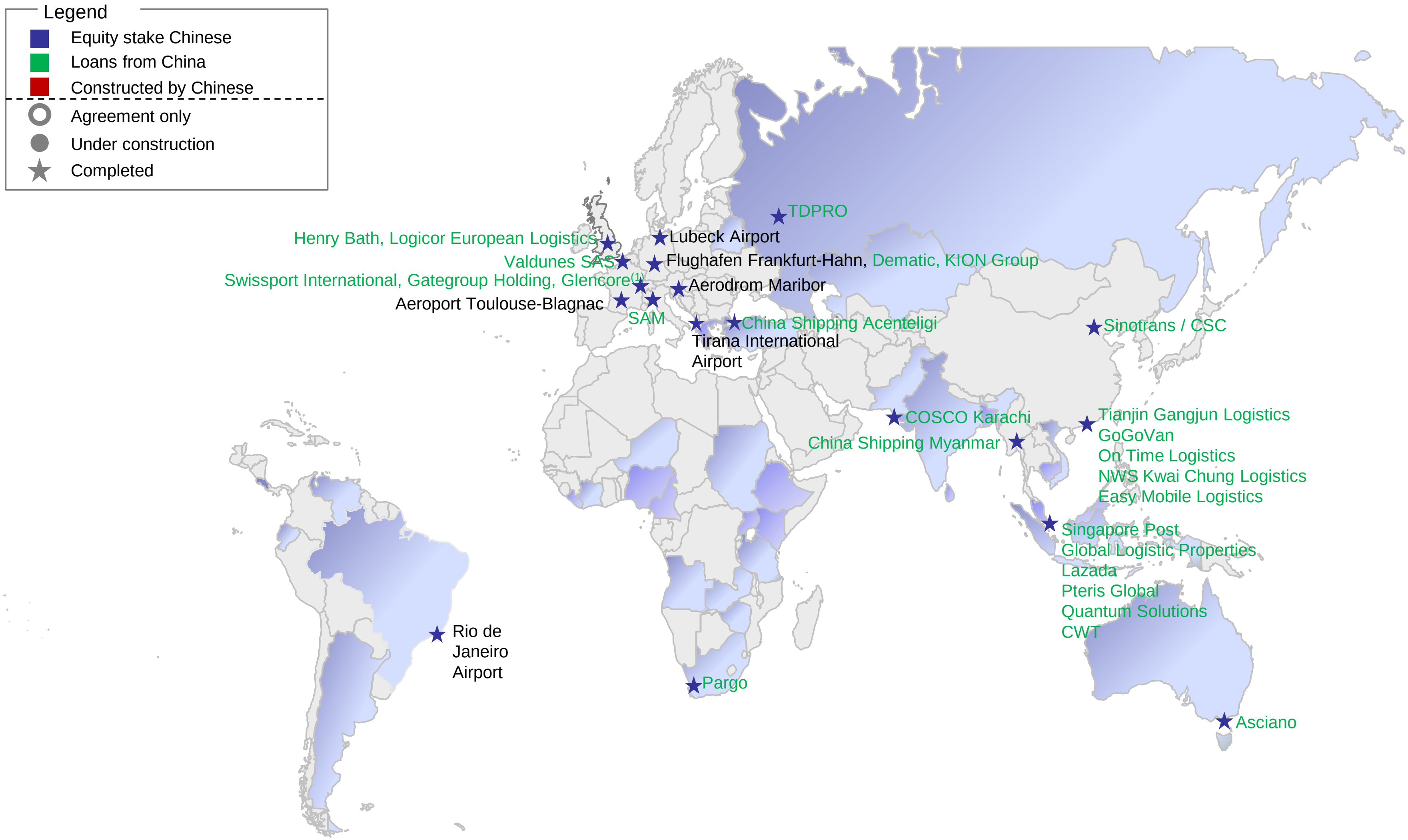
Official BRI map – Blue Economic Passages (June 2017)



Selected Chinese Outbound Ports Investment / Under Construction

Excludes ports owned by Hutchison Whampoa, which is a HK based company

Selected Chinese Outbound Airports and Logistics Investment



Excludes US-based targets: Blumberg Investment Partners (acquired by Ping An in October 2015), the logistic properties acquired by China Life in May 2017 and Ingram (acquired by HNA in April 2016)
(1) Oil products and logistic business

2018 Proposed Expansion

Q1

- Polar Silk Road
- Pacific Maritime Silk Road

Polar Silk Road

Key Developments

- In 2013, COSCO, one of the world's largest shipping organizations, sent a ship from China's Dalian port to Rotterdam via the Northern Sea Route, across the Arctic Ocean. The voyage was completed in 30 days saving a third of the usual shipping time.
- In June 2017, a policy paper co-released by China's National Development and Reform Commission (NDRC) and the State Oceanic Administration (SOA), which provided new insights into how the Arctic may be more closely tied to international trade, in particular to the BRI. The paper outlined China's interest in working with other partners in the region which could include oil and gas exploration with firms from Iceland and Norway, cooperation with Russia on the Yamal liquefied natural gas plant in Siberia, and mining projects in Greenland, including rare earth elements and potentially zinc.
- In October 2017, Wang Yang, previously Chinese State Council Vice-Premier, who has been at the forefront of the Arctic discussions for the past several years was elevated to the Politburo Standing Committee (PSC).
- In a November 2017 meeting between President Xi and Russian Prime Minister Medvedev, both agreed that China and Russia should jointly develop and cooperate on the use of the North Polar sea route and build a Silk Road on Ice.
- In January 2018, China's State Council published a white paper titled *"China's Artic Policy"* outlining China's long history (since 1925) in the Arctic and a *"Polar Silk Road"*.

Since China trades over $4 trillion of goods per year, 90% of which are transported by sea, it has long sought ways to reduce its shipping costs. The Arctic routes will further drive global transport costs down by offering an alternative route to existing shipping routes, such as the Malacca Straits and the Suez Canal.

Polar Silk Road

Advantages over Traditional Shipping Routes

- 10-12 days shorter on average
- Eliminates monsoons in Pacific near Hong Kong, India
- Eliminates pirate interventions
- Less carbon emissions
- Eliminates blockages/congestion at Suez Canal

Cosco Operating History along Route

- 1st trip 2013
- 1st round trip 2015
- Began to scale 2016/17
- 3-4 westbound 2018 (steel, wind power)
- 4-6 eastbound 2018 (agriculture/pulp)

Ice Status

- Currently passable up to 6 months/year (July-November)
- Ice layer in the North Sea Route shows increasing melt rate through 2030-2035 (ice layer near Yamal declined by 2.5%/year each of last 3 years)
- Ice free year round by 2050

Polar Silk Road

Country Level Cooperation

- China will work with countries bordering the Arctic Ocean to build infrastructures, such as harbors, roads, bridges and communication facilities in order to improve connectivity and commercial feasibility of the Arctic route.
- Russia is the only one of the Arctic countries part of the 2013 list of BRI countries. Currently, companies from China and Russia are seeking to jointly explore the Arctic's oil and gas resources, while at country level, both countries are negotiating an effective mechanism to work on taking advantage of the Arctic channel and the region's resources, promoting infrastructure construction, tourism, and scientific investigation.
- Finland

  Most likely to play a pivotal role in the Arctic Corridor portion of the BRI. One of the key proposed projects is for a US$3.4 billion *"Arctic Corridor"* railway that would connect Northern Europe with China and Arctic Ocean deep-water ports. It would connect the city of Rovaniemi in northern Finland with the Norwegian port of Kirkenes (ice-free) on the Barents Sea. The Arctic Corridor railway could also be joined at the Finnish border to Russia's rail network, which in turn connects with China's. In early November 2017, a freight train loaded with timber and pulling 41 containers set off on a 9,110km journey left Kouvola in southeastern Finland to arrive in Xi'an via Kazakhstan and Russia in 17 days. The Kouvola-Xi'an link is the first railway link to join China with the Nordic countries.
- Norway is also paying attention to the possibility of greater Chinese Arctic shipping, such as via Kirkenes or Tromsø. The two governments are seeking to revive stalled free trade negotiations, and Norway's shipping groups are especially interested in greater engagement with China.

Polar Silk Road

Country Level Cooperation

- Iceland

Since Jiang Zemin's first visit in 2002 – the first-ever by a Chinese President – China has cooperated with Iceland, where geothermal plants generate 66% of Iceland's primary energy, in clean energy. In 2012, China signed a framework agreement with Iceland to support greater cooperation on geothermal energy, along with marine and polar science. Sinopec in China and Iceland's AGEC have since developed geothermal projects in 23 cities in China as well as the planned Xiong'a megacity near Beijing. In 2015, both countries signed a free trade agreement, have engaged in a series of bilateral initiatives including a Joint China-Iceland Aurora Observatory and are allowing CNOOC to explore oil and gas resources in Iceland's territorial waters. More recently, Chinese tourism has rocketed annually to Iceland as well as their interest in Iceland real estate (recently slowed by Iceland).

- Greenland

In November 2017, a number of business and political leaders from Greenland travelled to China to discuss to discuss a wide range of issues, including Chinese Arctic research programs, economic ties and Arctic Council issues. While the near term focus is enhancing frozen fish exports, there were also discussions surrounding future mining projects as well as airport upgrades to all 5 of Greenland's airports – which could lead to increased tourism. Such economic programmes could make the economic base be strong enough to allow Greenland to become financially independent from Denmark.

Polar Silk Road

Specific Key Investments/Transactions to Date

- In September 2017, numerous Chinese state-backed companies stated that are keen to invest in a new project near Arkhangel, a historic Russian port city, which would include the Belkomur railway project and the development of a deep-water port in the Northern Dvina River. A delegation from Arkhangel visited Beijing and reportedly received backing for a new railway that will take raw materials (coal, mineral fertilizer, oil, timber, ores, construction materials and containers) to a new port 55 km north of the city of Arkhangel and reloaded for sea transport at the new port. This port will be built near the Mudyug Island in the Dvina river delta; close to the existing port facilities for larger vessels. CEXIM has committed to provide loans for the project while Cosco has said it would like to participate as well as Chimbusco, a state-run Chinese bunker company, Poly Group and the China Marine Fuel Service Corporation.

- In October 2017, COSCO Energy Shipping Transportation, the oil and gas shipping unit of COSCO Shipping, has approved a plan to acquire a 50% stake in the Mitsui OSK (MOL) subsidiary that owns four conventional LNG carrier newbuildings booked to deliver cargoes from Yamal LNG, expanding the two firms' joint fleet to 17 LNG carriers. Total investment is $877 million. The deal is its fourth joint LNG project for MOL China Cosco. The two firms jointly own four ships delivered in 2015-2016 for charter to ExxonMobil, six vessels due for delivery in 2016-2018 for charter to Sinopec and three of the 15 icebreaking LNG carriers that will load Yamal LNG cargoes at the Port of Sabetta in the Russian Arctic.

- In November 2017, NOVATEK one of the largest independent natural gas producers in Russia, signed a Strategic Cooperation Agreement with the Chinese National Petroleum Company (CNPC), which already owns 20% of LNG 1, a $27 billion production project. The strategic cooperation agreement confirms the parties' intentions to cooperate in implementing the Arctic LNG 2 project, as well as collaborating in different segments of the LNG and natural gas markets, including LNG trading and gas infrastructure development. Novatek also signed an agreement with China Development Bank for cooperation as part of this project (9.9% of LNG 1 is owned by the Silk Road Fund). France's Total also has a 20 percent stake in the LNG-1 project and would like to participate in LNG2 (as well as other possible international investors).

Polar Silk Road

Pacific Maritime Silk Road

- In January 2018, Foreign Minister Wang Yi addressed the 33 member Forum of China and the Community of Latin America and Caribbean States (LAC), which was founded in 2015. In this, the CELAC's first such meeting since the 19th Party Conference, Minister Wang read a letter from President Xi proposing that the China-LAC partnership be led by joint efforts to implement the BRI initiative. During his address, Minister Wang also mentioned the concepts of "*Pacific Maritime Silk Road*" and the "*Chinese Boat*", both of which have been previously mentioned by President Xai.

- The *Pacific Maritime Silk Road* dates back to the middle of the 16th century. It commenced in Fujian Province, passed by the Philippines, crossed the Pacific and ended in Mexico. Through this Pacific Maritime Silk Road, China and LAC exchanged eastern silk, porcelain and spice for American corn, potato and pepper as well as other forms of trade.

- Minister Wang's announcement followed a 4 year carefully managed programme. In his July 2014 inaugural summit address, President Xi laid out a "1+3+6" cooperation framework; the "1" referred to the China-LAC Cooperation Plan 2015-2019; "3" identified three driving forces for cooperation, trade, investment and finance; "6" prioritized six fields of cooperation, including energy and resources, infrastructure construction, agriculture, manufacturing, scientific and technological innovation and information technology. During this speech, President Xi also laid out plans for two regional China led LAC funds.

  - ***China-Latin America Cooperation Fund (CLAI)*** (launched September 2015)

    China established the Sino-Latin American Production Capacity Cooperation Investment Fund Co. Ltd, of $10 billion to support China's industrial cooperation with Latin America. Led by the People's Bank of China (PBOC), SAFE and CDB, the fund was designed to provide medium- and long-term financing to major projects in the fields of manufacturing, new and high technology, agriculture, energy, infrastructure and finance in Latin America.

  - ***Brazil-China Cooperation Fund for Expansion and Productive Capacity*** (launched June 2017)

    This fund was designed to make some $20 billion available in credit for projects in infrastructure, transformation, technology and agribusiness. Funding decisions are made jointly by Chinese and Brazilian representatives to finance Brazilian plans only. Funding was via $15 billion from China through the China-Latin America Industrial Fund (CLAI Fund) and $5 billion from Brazil.

Pacific Maritime Silk Road

- By 2016, LAC countries had become the second largest destination of Chinese investments overseas and over 2,000 Chinese enterprises have invested in the region.
- In conjunction with these funds, Grisons Peak estimates that China has made in excess of $75 billion policy bank loans to Caribbean, Central America and Latin American countries since Q1 2013.

Chinese led potential BRI funding vehicles

Chinese Government

Sovereign Wealth Funds (SWF)

CIC

- $900bn AUM
- Plans to play an active role in BRI investments

SAFE

- $3 trillion AUM
- Several equity investments within BRI

100% owned

Government Loans

Policy Banks

- Mostly senior debt
- Mostly issue and hold
- Virtually no syndication

Increased by $93bn at BRF Conference (2017)

Mostly debt funds

AIIB (2016)
(26%)

New Development Bank
(2016)
(20%)

SCO Bank
(TBD)

- China owns only minority stakes in these banks
- AIIB syndicates 70% of loans it issues
- Collectively, to date provide less than 5% of all new BRI financing
- AIIB made its first equity investment in 2017

Equity funds

Silk Road Fund (2014)

- **$40bn at launch**
- **$15bn increase at BRF**

Regional

- CAD (2007)
- RCIF (2012)
- China-CEE Fund (2015)
- SINO –CEEF (2016)
- CAIC (2016)
- China Russia RMB Coop Fund (2017)

Strategic Upside – Reduction in Logistics Costs

Domestic Chinese Logistics Cost Saves (2017)

- In late December, China's Ministry of Transport announced that China reduced domestic logistics costs by more than 88 billion yuan (13.4 billion U.S. dollars) in 2017.
- The cuts were made through measures such as the removal of some road tolls in provincial-level regions and streamlined traffic services.
- Statistics from NDRC showed that the cost of logistics in China consumed 14.9% of GDP in 2016, down by 1.1 percentage points from the previous year. Although the ratio had dropped for four years in a row by 2016, it is still higher than some developing economies.
- Authorities have stepped up reform in the transport sector in 2017 to reduce the logistics burden of companies. Rail freight charges were canceled or lowered, while more means of financing were made available to companies in the logistics sector.
- The Minister of Transport said that China will continue to push supply-side structural reform in the transport industry and expand pilot programs in highway toll collection and streamline some charges in ports further lower domestic logistics costs in 2018.

Strategic Upside – Reduction in Logistics Costs

Global Container Traffic (TEUs)

Country	TEUs
China	181,635,245
European Union	105,895,724
United States	46,488,523
Singapore	34,832,376
Korea	23,796,846
Malaysia	22,718,784
Hong Kong SAR (China)	22,300,000
United Arab Emirates	20,900,567
Japan	20,744,461

Source: World Bank – Container port traffic 2014 (TEU: 20 foot equivalent units)

Strategic Upside – Reduction in Logistics Costs

CPEC Intermodal Trade Route Analysis

China Key Markets	Distance/Route (Miles)			Cost Savings (US$ - per Mile)		
	Traditional Route	CPEC Route	Miles Saved	Traditional Route	CPEC Route	Cost Saving
Europe - China	19132	9597	9535 (50%)	8026	4719	3307 (41%)
Middle East - China	9146	2546	6600 (72%)	6029	3309	2720 (45%)
Africa - China	9785	4464	5321 (54%)	6157	3692	2456 (40%)

US$1.80 Per Mile

US$0.20 Per Mile