Reshaping of Global Continents and Role of Infrastructure Connectivity

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Outline – Five Core Messages

1. **A wide range of regional initiatives have been instrumental in reshaping the geography of certain continental blocs**

2. **Scaling and reshaping infrastructure critical for competitively aligning and bridging global continents and ensuring global prosperity thru equitable and balanced development**

3. **21st century brings in new dynamics including emphasis on sustainable and climate friendly development, cross continental linkages, application of FIR technologies, and effective exploitation of sector interdependence and interoperability**

3. **Within this context, China's Belt and Road initiative (BRI) stands out for it large size and scope, its transcontinental connectivity across 3 continents (AEA) to resurrect and modernize Silk Route with game changing road and maritime linkages which are time and cost effective trading routes**

4. **Progress under BRI is well underway at different pace and sequencing. Early results point to its enormous potential, however, there is need strategizing to**
   - **To ensure effective due diligence of BRI strategy, its planning and execution**
   - **Manage the short and medium term associated macro and sector/projects risks**
   - **Strengthening governance and regulatory frameworks to effectively screen investments and procurements, terms and conditions of financing and trade, and instituting competition**

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Regional Cooperation and Integration – fostering linkages over the years

- A plethora of old and new geo-economic cum geopolitical initiative with unfolding consequences for global and regional connectivity – among these: scene setter has been
- EU Trans-European Networks (TENs) underpinned rules based laying down foundation of single market connected hub and now the European External Action Services (EEAS) and Commission Services has carried out Euro-Asia mapping exercise whose geographic scope stretches from the Atlantic Ocean to the Pacific Ocean, covering even China, Turkey etc. and ASEAN and ASEM. EU further launched Europe-Caucasus-Asia Transport Corridor (TRACECA) from Europe to China until 2016 via Black Sea, the Caucasus and the Caspian Sea and few other neighborhood initiatives.
- ASEAN has been pursuing master plan for regional connectivity
- SAARC and SPECA (covering CARs) characterized by political disputes has low connectivity and hence low intraregional trade
- Historically UNESCAP promoted mapping of Asian highway, Railways, and Dry Port Agreements to offer mutual recognition of standards
- Energy connectivity has lagged behind, mostly across the board except for EU, but now steps being taken for development of ASEAN and North East and Central Asia Grid interconnections and steps being taken to develop Asia Information SuperHighway through laying down cross border optic cable network
- Bilaterally driven initiatives include India's Look East Policy, Japan's Infrastructure Plan to foster infra- within South East Asia and with Japan, Eurasian Commission reviving historical

Scaling and Reshaping Infrastructure – key for connectivity

- **After 2008 global crisis, there has been growing recognition that economies cannot exploit fully their potential or pursue sustainable growth path unless both national and cross border infrastructure linkages are fostered – key to reshaping global continents and enhancing economic productivity and industrial and trade competitiveness.**

- **Large and growing infrastructure gaps (given the demographic pressures) are estimated to range between $3.7 trillion (World Economic Forum) to $5.5 trillion (for 48 countries; McKinsey and Company) per annum.1/ Gaps in infrastructure connectivity across countries and continents has generated not only economic, but social and environmental stress has complicated climate scenario.**

- **Connectivity makes sense for bridging and linking global continents but enhances geopolitical concerns:**

  - **As bilateral interests, driving cross border linkages, impinge on nation states sovereignty given the real and enhances threats surrounding contested territories and belts and geopolitical and regional dynamics of connectivity are complicated by real or perceived hegemonic designs of the larger and powerful continents and persisting age old borders disputes**

  - **Weak multilateralism nurtures unguarded geo-economic interests to tap investment, trading and resource sharing opportunities**

  - **Bilateral interests take over shaping of continental cross border linkages and lay out their preconditions for financing and execute projects without institutional rules and regulations nurture investment, trading and resource sharing opportunities.**

1/ Excludes investment needed for sustainable development of infrastructure.

21st New Dynamics of Connectivity

It requires, among other factors, recognition the

- **National infrastructure development is a prerequisite for regional and global connectivity**

- **Regional connectivity, despite border frictions, has gained momentum though in different forms and speed depending on how mature, structured and successful the regional cooperation and integration projects have been across continents**

- **Discontent with globalization has however fractured and weakened multilateralism as evident from the continued emphasis on bilateralism in both trade and finance, emergence of trade wars and establishment of competing regionally driven multilateral financial institutions**

- **Multipolarity has had a distinct impact in shaping regional connectivity driven by power of economics and trade and going forward it will also drive sustainable development and climate friendly infrastructure development**

- **4IR is now shaking up the interdependent set of critical physical infrastructure networks promoting efficient, cost effective design and modalities of connectivity. New technologies offer opportunity for more holistic and integrated infrastructure connectivity and catalyze energy transition, smart transportation systems and smart cities etc.**

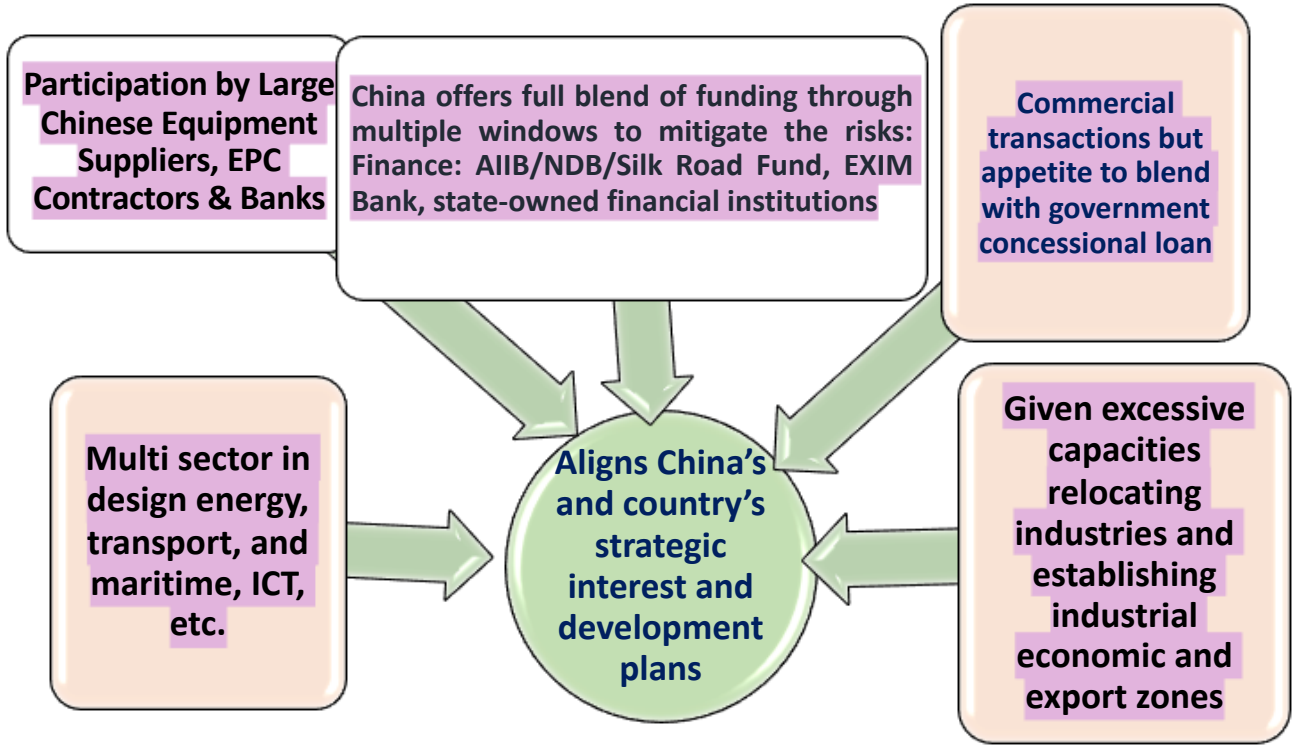
China's Belt and Road Initiative-- The Game Changer

Grand design to promote new structure of global connectivity – with large payoffs and high risks

Leverages geo-political ties to exploit geo-economic interest, deepens transcontinental cross border connectivity across Asia, Europe and Africa, and pursues economic corridors link road belt to 21st martime silk route

Harnesses regional investment, trade and other cooperative alliances

Serves Asia's 3 billion population



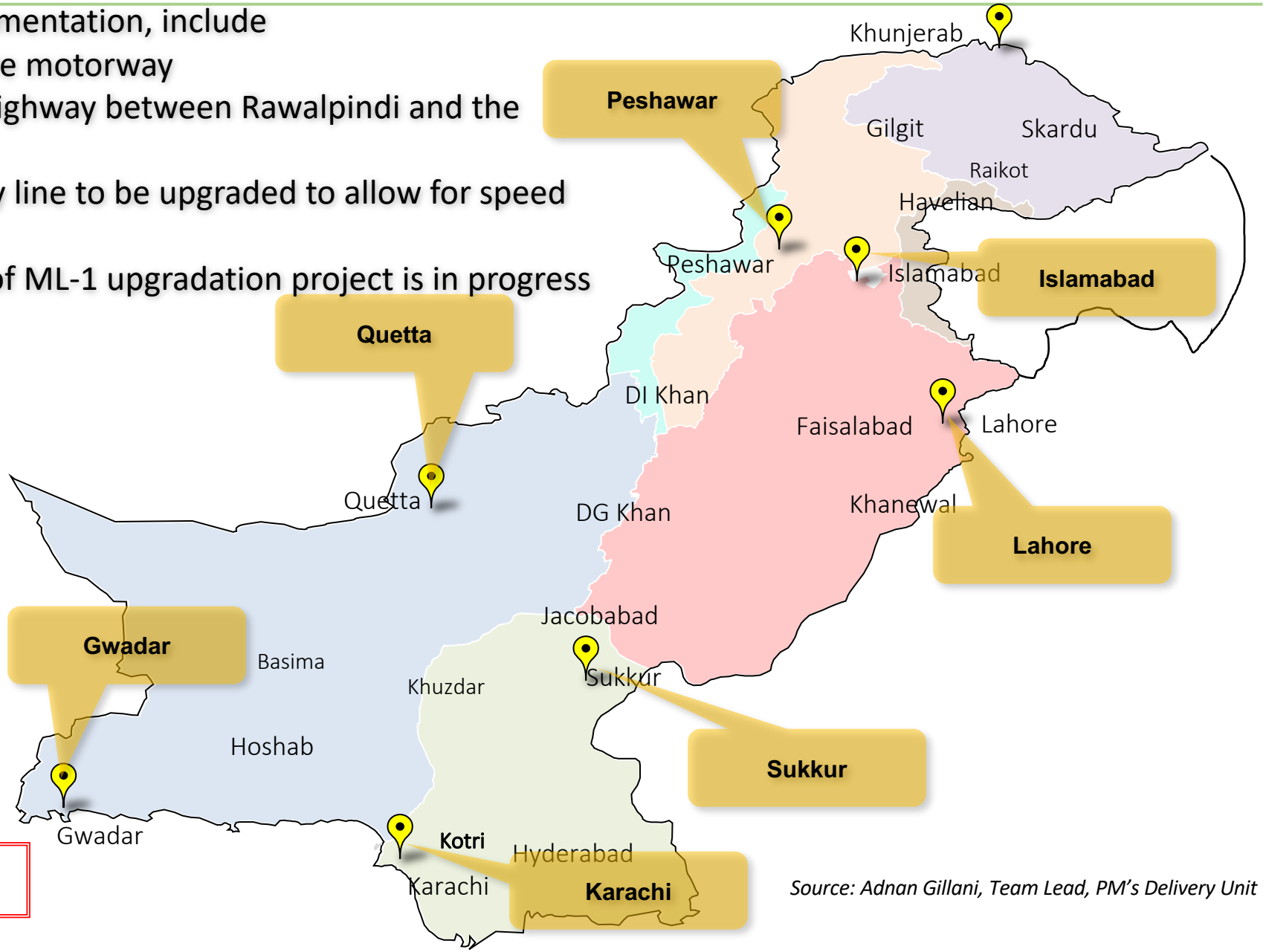
Two way trade between China and 65 BRI countries grew by 13.6% over 2017 level reaching over $1.1 trillion in 2017. While the rise in imports from China to BRI belt far exceeded the rise in export growth from the BRI countries, the encouraging outcome is the fall in trade surplus of China with BRI countries from $234.9 billion in 2016 to $189.1 billion. HSBC: Belt and Road Initiative Qauterly: Q1 2018

Bulk of financing for energy and other commercial projects are on commercial terms, with government concessional loans for selected projects and RMB currency swap arrangements

China Pakistan Economic Corridor – Regional Connectivity 7th pillar of the Vision 2025

infrastructure investments, under implementation, include

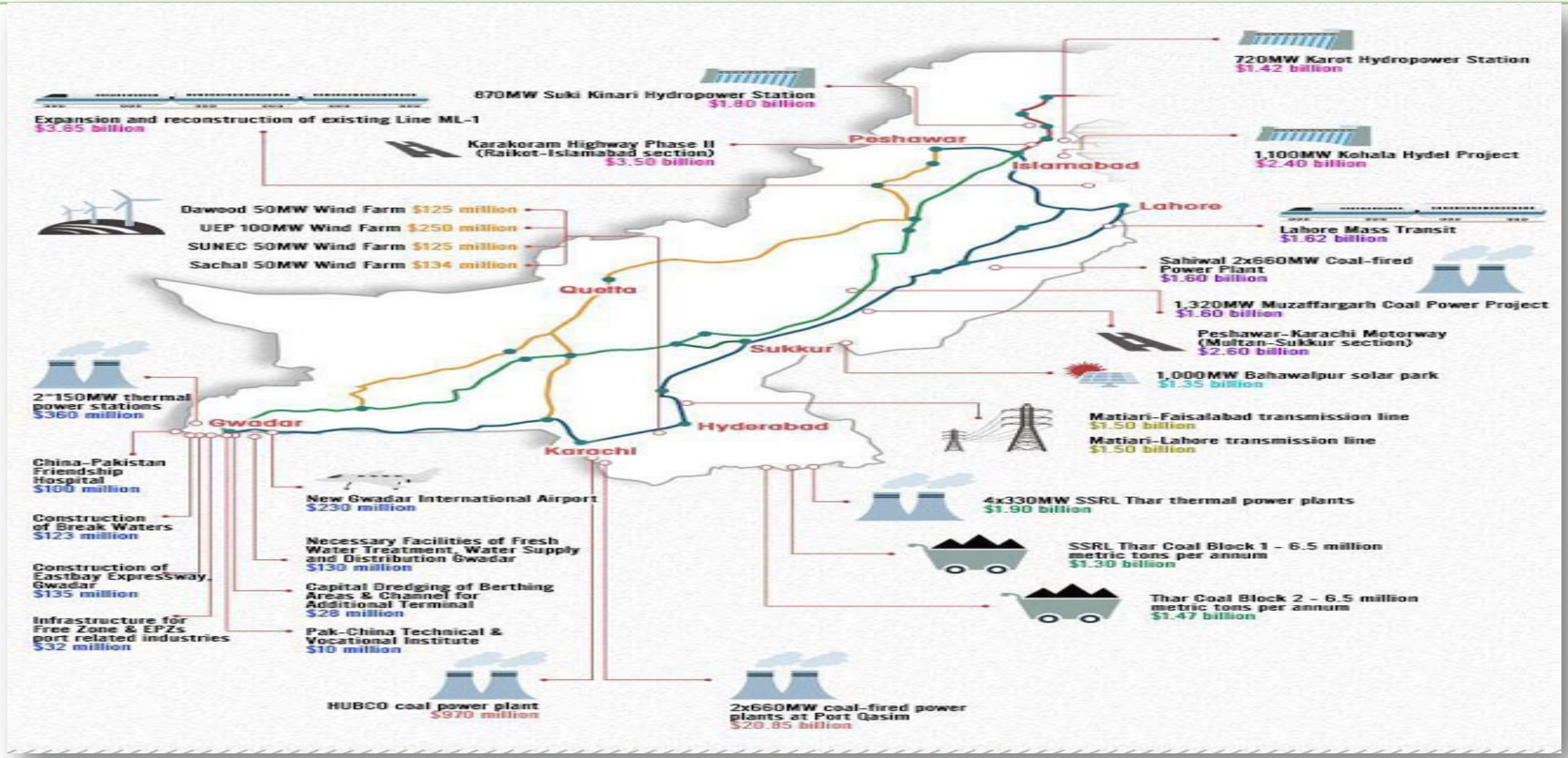
- 1,100-kilometer-long Karachi-Lahore motorway
- Reconstruction of the Karakoram Highway between Rawalpindi and the Chinese border
- The Karachi–Peshawar main railway line to be upgraded to allow for speed up to 160 kilometers per hour.
- The financial and technical aspect of ML-1 upgradation project is in progress stage.



Integrates/links Silk Road Economic Belt and 21st Century Maritime Silk Route

Source: Adnan Gillani, Team Lead, PM's Delivery Unit

China Pakistan Economic Corridor – Key Projects



Source: Chongyang Institute of Renmin University of China and Caijing Magazine, cpec.gov.pk, pc.gov.pk
Editors & graphics: Wang Danmeng, Yang Ruoyu/Globaltimes.cn

China Pakistan Economic Corridor – Key Projects

CPEC Projects	Size	Estimated Cost (USD M)
Energy Projects (Total 13,810MW)		
Priority Projects Coal Hydel Wind/Sola Transmission	 8,220 MW (10 Projects) 1,590 MW (2 Projects) 1,300 MW (6 Projects) (2 Project)	 14,190 3,222 1,961 3,000
Actively Promoted Coal Hydel Wind/Solar	 1,320 MW (1 Project) 1,100 MW (1 Project) 100 MW (2 Projects)	 1,600 2,397
Potential Energy Hydel	 180 MW (2 Projects)	
Infrastructure Projects		
Road	968 KM (5 Projects)	5,341
Rail Projects	1,830 KM (3 Project)	8,237
Gwadar Projects	12 Projects	796.6
Fiber Optic	3 Projects	44

Source: cpec.gov.pk, pc.gov.pk (list as of 19-05-2017)

UNDER IMPLMENTATION		No. of Projects	Total cost ($ billion)	Financing ($ billion)
Energy sector[1]	PPIB	9	16.07	Debt: 12.103 Equity: 3.968
	AEDB	6	1.19	Debt:0.90 Equity: 0.29
	Total	15	17.26	Debt: 13.01 Equity: 4.25
Infrastructure[2]		04	5.86	Buyer's Credit[3]: 0.76 Government Concessional Loan: 1.11 Preferential Buyer's Credit: 3.99
Total[4]		25	23.12	Debt: 18.87 Equity: 4.25

[1] All projects are expected to be completed by Dec 2023

[2] Projects are expected to be completed by April 2026

[3] BC (Buyer's Credit) is at 5.2% while GCL (Government Concessional Loan) and PBC (Preferential Buyer's Credit) is at 2% while an average rate on the entire CPEC loan is 2.39% with maturity of 20 years with a grace period of 5 years.

[4] These projects are signed in debt-equity ratio of 80:20. Average rate of return on equity on energy projects is anywhere from 27-29%, and 17% for few. For commercial foreign borrowings for energy projects, interest rate is LIBOR + 4.50. The maturity of these borrowings is 10-12 years including grace period of 3-4 years from Commercial Operation Date (COD)

Projects over USD 40B

China Pakistan Economic Corridor - Gwadar

- **Gwadar Port, a strategic warm-water deep-sea port, located in Arabian Sea occupies a key position between South Asia, Central Asia, and the Middle East and lies close to the Strait of Hormuz –a gateway for supply of around twenty percent of the world's oil.**

- **Before its development as a port city, the town was a small fishing village. In 2013, Gwadar Port was handed over to China for full-scale commercial operations under grant-based Built Operate Transfer (BOT) agreement until 2048.**

- **Gwadar is to become a gateway for Central Asian countries, including Afghanistan, Uzbekistan, linking Sri Lanka, Iran and Xinjiang to undertake marine transport.**

List of Gwadar Projects under CPEC

- ✓ Gwadar East-Bay Expressway
- ✓ New Gwadar International Airport
- ✓ Construction of Breakwaters
- ✓ Dredging of berthing areas & channels
- ✓ Development of Free Zone
- ✓ Necessary facilities of fresh water treatment, water supply and distribution
- ✓ Pak China Friendship Hospital
- ✓ Technical and Vocational Institute at Gwadar
- ✓ Gwadar Smart Port City Master Plan
- ✓ Bao Steel Park, petrochemicals, stainless steel and other industries in Gwadar
- ✓ Development of Gwadar University (Social Sector Development)
- ✓ Upgradation and development of fishing, boat making and maintenance services to protect and promote livelihoods of local population

Gwadar Projects and Gwadar-Chabahar Comparison

Sr. No	Projects	Cost (US $ Million)	COD
1	Eastbay Expressway	140.6	2020
2	Gwadar International Airport	230	Construction work to start in 2018
3	Construction of Breakwaters	123	-
4	Dredging of berthing areas & channels	27	-
5	Infrastructure for Free Zone & EPZs port related industries	32	1st phase in Jan 2018
6	Necessary Facilities of Fresh Water Treatment and Supply	110	-
7	Pak China Friendship Hospital at Gwadar	100	-
8	Technical and Vocational Institute at Gwadar	10	-
9	Gwadar Smart Port City Master Plan	4	Aug 2018
	TOTAL	776	

Gwadar	CHABAHAR
• Build-Operate-Transfer (BOT)	• $85 Million Lease Agreement with India
• 4 (3 Multipurpose) + 9 Berths • Current Depth: 11.5m • Target Depth: 14.5m • Max. Capacity (Planned): 300-400 Million Tons Per Annum	• 8 Berths (4 Multipurpose) • Depth: 12m • Max. Capacity (Planned): 10-12 Million Tons Per Annum
• 9% and 15% of Gross Revenue from Port and Free Zone	• Subject to Shipping and Transit Loads
• Geostrategic Location • Direct Access to Strait of Hormuz • Direct Access to Sea for Afghanistan	• Geostrategic Location • Direct Access to Strait of Hormuz • Direct Access to Sea for Afghanistan

China Pakistan Economic Corridor - SEZs

No.	Special Economic Zones (SEZ)
1	Rashakai Economic Zone , M-1, Nowshera
2	China Special Economic Zone Dhabeji
3	Bostan Industrial Zone
4	Punjab - China Economic Zone, M-2 District Sheikhupura
5	ICT Model Industrial Zone, Islamabad
6	Development of Industrial Park on Pakistan Steel Mills Land at Port Qasim near Karachi
7	Bhimber Industrial Zone
8	Mohmand Marble City
9	Moqpondass SEZ Gilgit-Baltistan

In Phase II of CPEC, 9 SEZs have been approved which would be completed in a period of two to three years

Incentives

- Long Term Lease for investors
- Tax Holiday for 20 years
- Exemption from Import Duties
- Complete suspension of trade union activities

Opportunities

- Packaging Businesses / Distribution Centers
- Container Freight Stations / Warehousing & Cold Chains
- Manufacturing / Oil Refineries
- Tourism

Fiscal Incentives of Pakistan Power Policy

- 15% – 20% USD indexed IRR
- Repatriation of equity and dividends freely allowed
- Exemptions from Corporate Income Tax, and various other taxes
- Withholding Tax on dividends capped at 7.5% (No WHT in case of Thar Coal Projects)
- For Thar coal based electricity generation companies, certain services exempt from Provincial Services Taxes

Availability of GoP Guarantee and Protection:

- Under the Power Generation Policy, 2015, PPIB issues the GOP Guarantee (Sovereign Guarantee) backing up the payment obligation of the Power Purchaser

Supplemental Agreement Facility to CPEC Projects:

- A supplemental agreement to be signed between IPPs and Power Purchaser
- A Revolving Account (Equal to 22% of Monthly CPP) especially for the CPEC Power Projects to be opened and maintained by the Power Purchaser
- Ministry of Finance will provide a guarantee to fund the revolving account in case the power purchaser fails to maintain the required funds

Risk Coverage for Exchange Rate Variation:

- In order to cover exchange rate variation risk, various components as per the Tariff are indexed for any variation in the Pak Rupee and US$ exchange rates

Considering its significance for the country's economic growth, GoP has set-forth an investor friendly policy with unmatched guaranteed returns and fiscal concessions to attract investment in the Power Sector

Pakistan's Macroeconomic Setting – past trends and FY17-18 complications

- Pakistan faced a range of economic vulnerabilities compounded by strong private consumption and investment growth
- Low investment levels
- Endemic problems of resource mobilization and low export base
- Lack of economic and industrial diversification
- Growing infrastructure deficits in Pakistan
- Drying up of foreign investment flows
- Weak infrastructure linkages both domestically and regionally hurt Pakistan's competitiveness
- Power sector crisis (see next slide)– hurting growth prospects and compounding off budget liabilities

Pakistan's Macroeconomic Setting – past trends and FY17-18 complications

Frequent rise in twin deficits i.e. fiscal and current account deficits further reached to a more unsustainable level: 6.6% of GDP and 5.7% of GDP – slippages were 2.5% and 2.7% of above targeted level, respectively

Underlying these trends, imports were more than double the export level -- between FY13-FY18 there has been close to $16 billion increment in imports reaching close to $56.9 billion in FY18, while exports were $24.7 billion, close to FY13 level.

Part of the growth in imports capture rising consumption trends, but two factors are distinct: Oil and petroleum products given rise in their international prices from $55 to 75 barrels per day in FY18 and the rise in machinery, metal and intermediate goods. There is no doubt aggregate demand pressures drove imports part of which were CPEC energy related some financed from China's investments in Pakistan or payments settlement overseas by EPC contractors

Under current scenario, the foreign exchange reserves were to deplete to $4 billion by June 2019 or three fourths the June 2018 FX level

If the reserves are to be kept at the level of 3 months of import cover by June 2019, than Pakistan needs around $16 billion – implying a funding gap of upto $12 billion in FY2019

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Genesis of Power Crisis

Inappropriate Fuel Mix – High Cost of Power Generation

Minimal Growth in Net Power Generation Capacity

Addressed for Medium Term

Energy Losses at Each Level of the Value Chain

Focus Required

Inadequate Recoveries

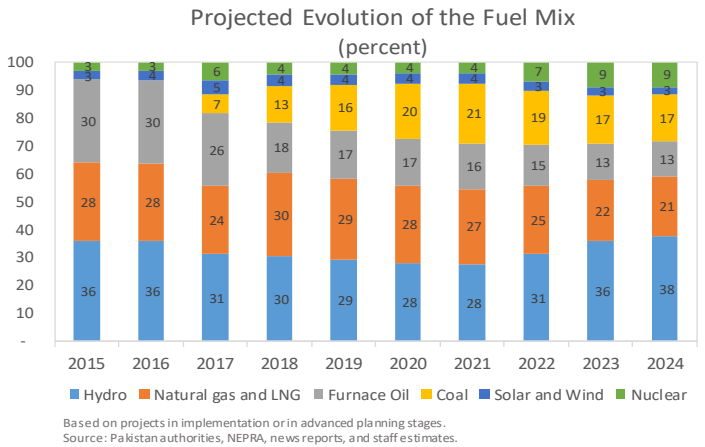
Power Shortage

Unaffordable Electricity

Circular Debt

- High reliance on most expensive imported fuel source - Oil (32%) with no power generation from coal (vs. 41% world average)
- Oil and LNG import totaling US$ 11BN in FY2017 (22% of entire import bill)
- Only 4000 MW Power Capacity added during 2004 – 2013 and a peak demand shortfall of 5,000 to 7,000 MW experienced in the years 2013 to 2016

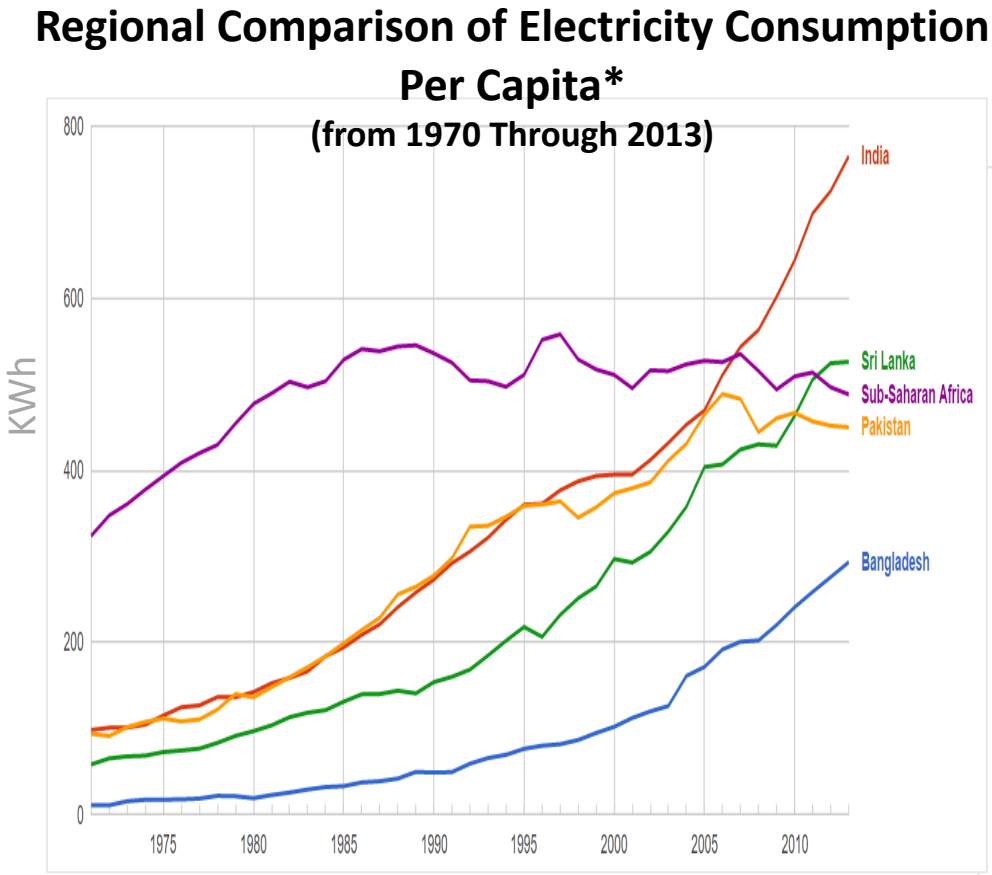
- After 2013 installed capacity planned was 10,000 MW by 2018 which are to grow to 24,000 MW by 2025
- Pakistan's power T&D losses stand at 19.6% and Pakistan's weighted average consumer power tariff @ 12.51 Cents/kWh (13.05 Rs./kWh),
- Discos shortfall in recoveries Rs80 b vs bills
- Circular debt has ballooned to Pkr570 b



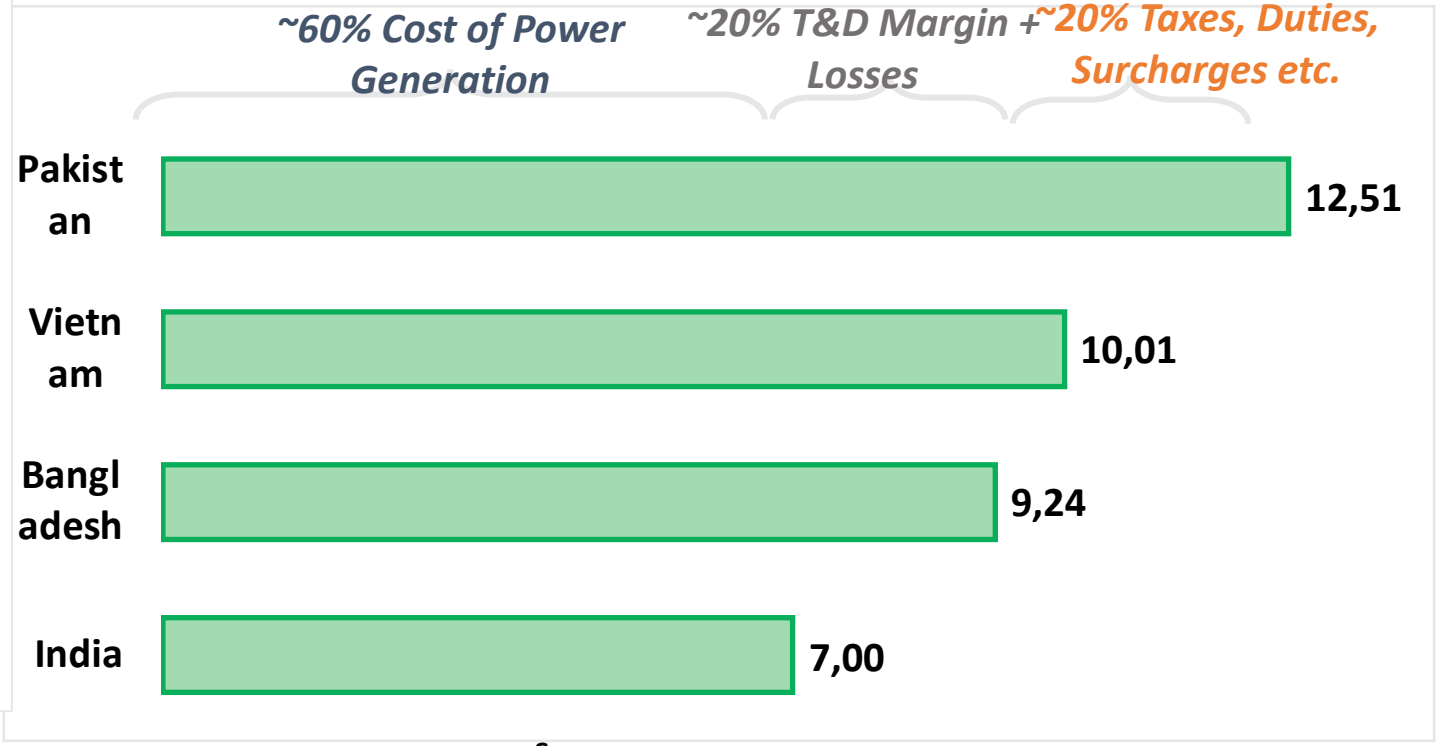
Based on projects in implementation or in advanced planning stages.
Source: Pakistan authorities, NEPRA, news reports, and staff estimates.

New coal, RLNG and Hydel plants (either commissioned or under construction) will significantly improve the fuel mix resulting In lower marginal generation cost

Regional Comparison of electricity consumption and weighted average consumer tariffs



Pak electricity tariff highest USDc/kwh



Sources:

1. NEPRA State of Industry Report, 2015-16
2. Central Electric Agency Government of India, 2014
3. Vietnam Electricity Prices, Thomson Reuters, 2011
4. The Bangladesh Energy Regulatory Commission, 2014

Conclusion – Impact of CPEC

CPEC is China's flagship project of BRI and its been strategically designed to support

- **Development of Western-Eastern Europe trading route – the most competitive route both in terms of time and costs**
- **Develop China's Western Region which has lagged behind**
- **Deploy China excessive state-owned productive and financing capacities on commercial basis**

CPEC is anchored in Pakistan development vision 2025 and has potential to promote

- **Regional economic corridors through development of three cross country routes to reach the new Gwadar Ports**
- **Foreign investment inflows which had almost dried up –**

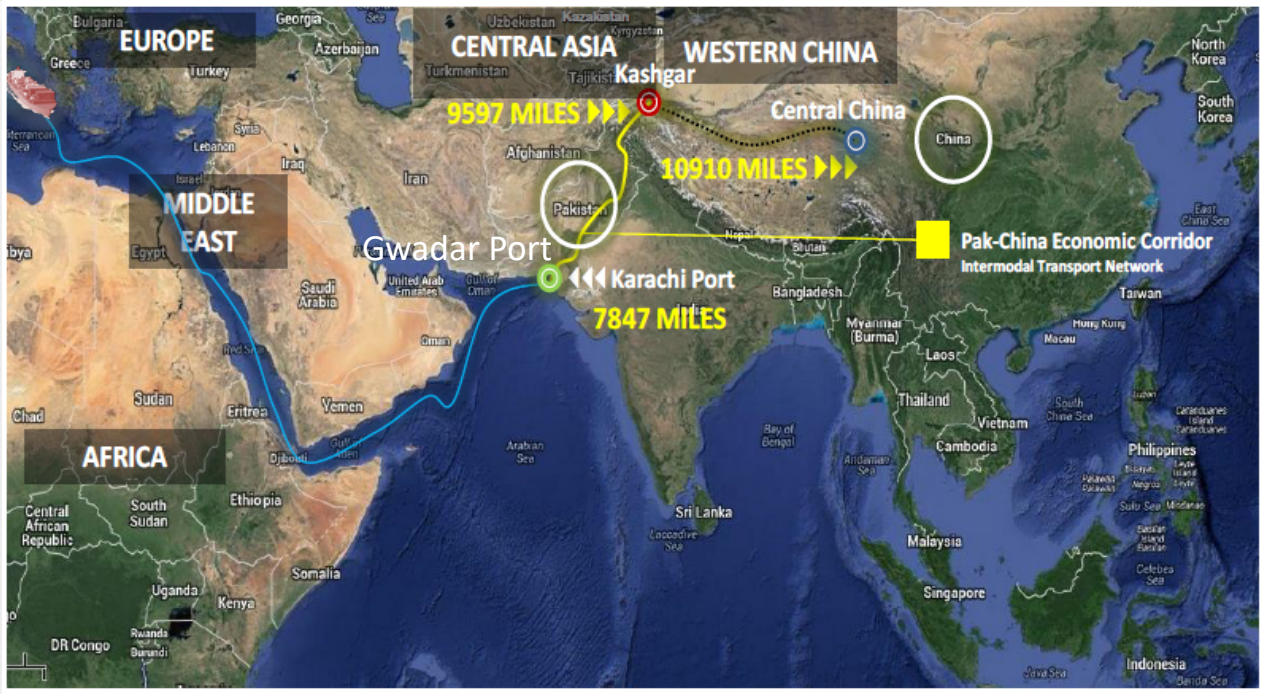
Macroeconomic implications of CPECs need to be carefully evaluated

- **CPEC is high payoff and high risk venture for Pakistan**
- **China's willing to take Pak risk has helped brought in need FDI and infrastructure development– but cost of CPEC is reflected in lease of sovereign assets, pricing of contracts and finance and edge in trade surplus with Pak**

China Pakistan Economic Corridor – Benefits for China

Western China to Eastern Europe
Existing Distance: 19,132 Miles

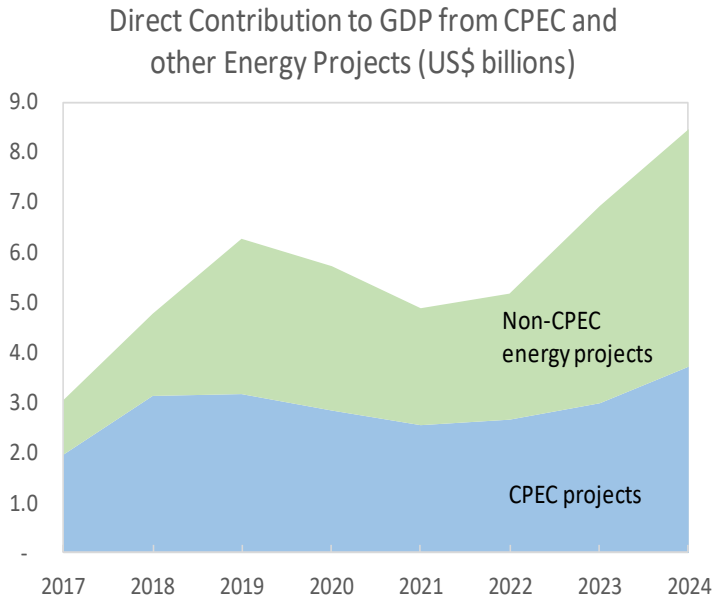
Western China to Eastern Europe
New Distance: 9,597 Miles – Distance Saved: 9,535 Miles



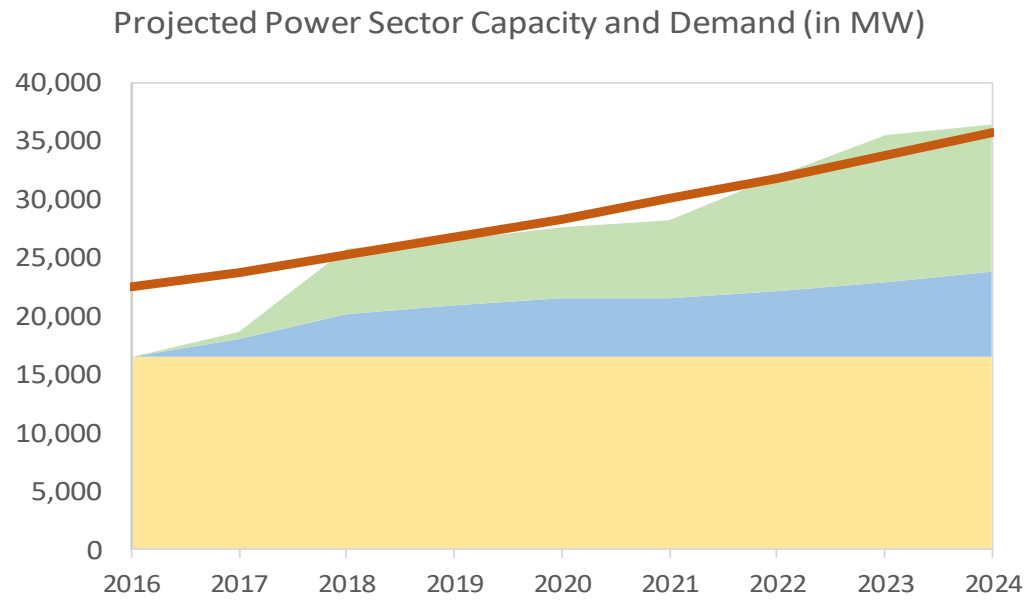
Europe- Western China	Existing Route	Post CPEC	Savings to China
Total route	By Sea = 16,507 By Land = 2,625 Total Route = 19,132 miles	By Sea = 7,847 By Land = 1,750 Total route = 9,597 miles	Distance is reduced by 50%
Freight charges and time for a unit (40 ft container) from Hamburg to Shanghai range	Cost = 2500-3000 USD Time = 50 days	Cost= 1000 USD (Approx. Impact) Time = 25 days (Approx. Impact)	Cost of transportation are lowered by 50-65%. Time is cut by 50%

Source: Adnan Gillani, Team Lead, PM's Delivery Unit

Illustrative Trajectory: CPEC-Non-CPEC Future Power Capacity and its contribution



Based on projects in implementation or in advanced planning stages. Direct contribution includes impact from construction phase as well as value added in electricity generation (using NEPRA-determined tariffs), and does not include potential second-round effects. Assumes 70% import content during construction. Value added is estimated by subtracting the import content of investment, and the cost of imported fuel.
Source: Pakistan authorities, NEPRA, news reports, and staff estimates.

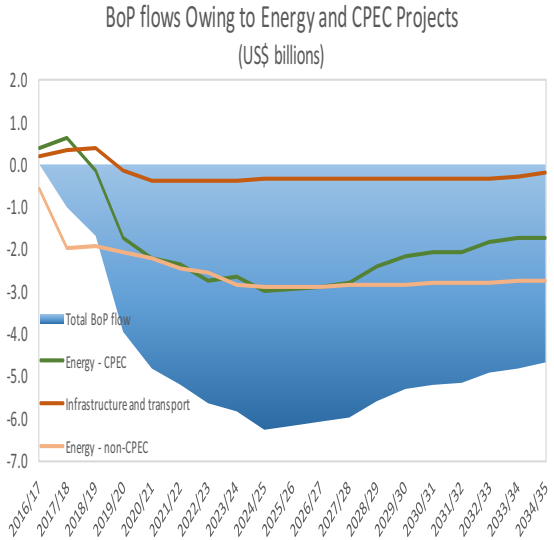


Based on projects in implementation or in advanced planning stages.
Source: Pakistan authorities, NEPRA, news reports, and staff estimates.

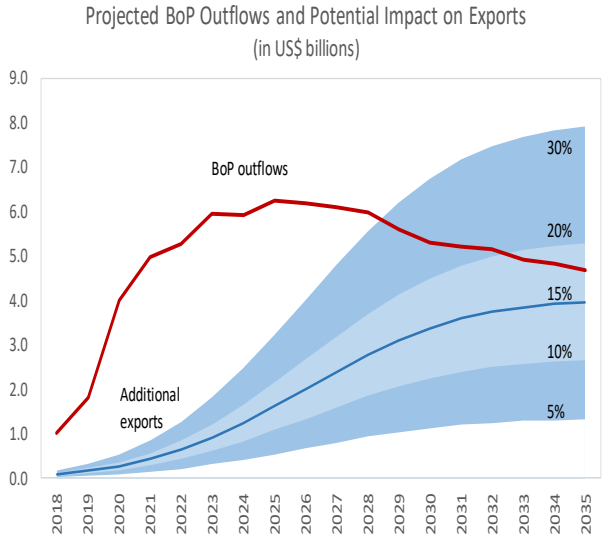
Pakistan plans to generate 24 GW in installed capacity over next 7 yrs: of which 8.5GW from CPEC. Assuming 7% energy demand and an average capacity utilization of 85%, this expansion will generate energy surplus by 2018 and halve reliance on furnace oil by 2023

This boost will likely come in three stages: construction, power generation once the installed capacity becomes operational which could add $11 billion to Pak-GDP over next 7 yrs (3.8% GDP of FY2016)—second-round effects will be gradual as productivity rises, costs fall, and infra-connectivity improves

Illustrative Trajectory: CPEC-Non-CPECFuture Power Capacity and its contribution



Based on projects in implementation or in advanced planning stages. Calculations are based on tariffs and financing terms in or similar to NEPRA determinations, 70% import content during construction, and 50% profit repatriation.
Source: Pakistani authorities, NEPRA, news reports, and staff estimates.



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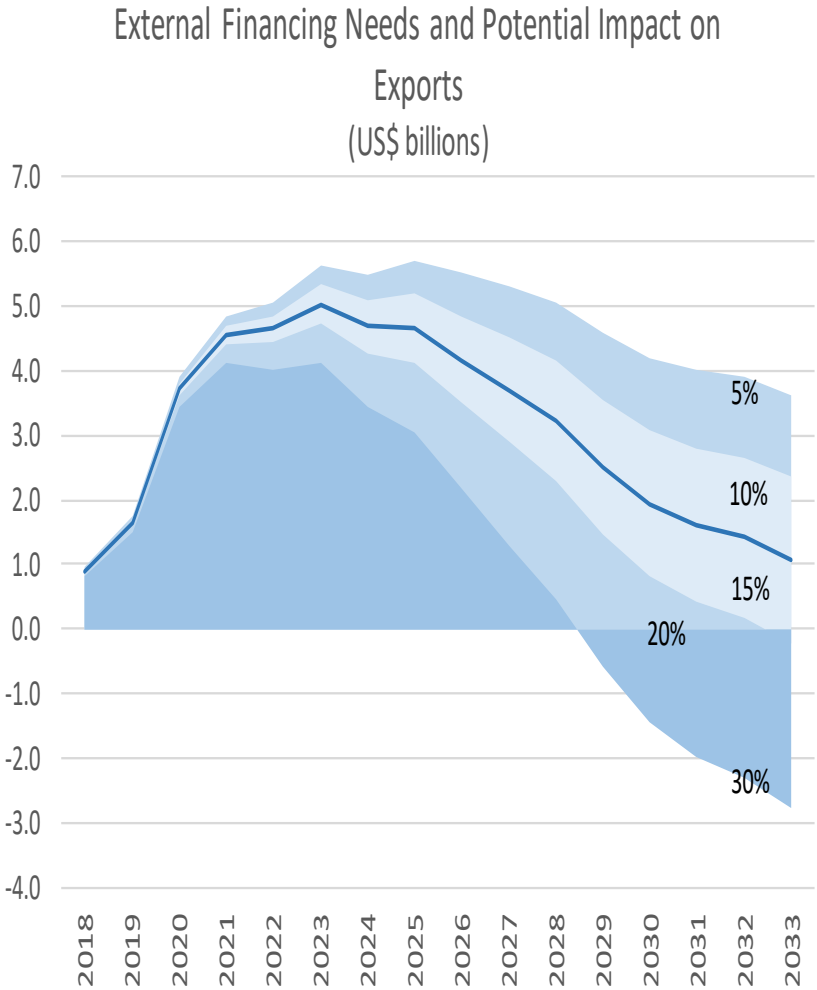

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Bulk of energy is for domestic; export surpluses can only emerge over long term: Illustratively, energy exports if in the range of 5 to 30% of the total exports during 2018-35 will generate a potential BoP need of $3 to $5.5 billion between FY2019/20 and FY2024/25 (0.8 to 1.5% of the projected FY2019/20 GDP) and thereafter decline

Fuel mix change and strengthening T&D network critical

Construction of Thar Coal Mine and Mine Mouth Power Plants has been initiated

Expansion of Mine Mouth Power Projects
Dependant on Scalability of Coal Mine and related infrastructure including water and transmission line

Thar Mine in Block II envisaged to Expand to 30 MN Tons per annum to Support 5,000 MW of Power Generation in 7-8 Years
Import coal from South Africa
Adopt state of art technology and environmental standards

New transmission Line Projects Under CPEC

- Matiari to Lahore +600kV HVDC Bipole - 878 Km (under IPP mode)
- Project is part of Early Harvest CPEC Projects
- Expected completion date is by March 2020

ADB and IFC funding also in progress for transmission and distribution projects

- Central Asia South Asia (CASA – 1000) project between Pakistan, Afghanistan, the Kyrgyz Republic and Tajikistan sponsored by The World Bank
- Expected completion date is June, 2020
- Loan from ADB for Power Distribution Enhancement Investment Program

ADB financed project for implementing Advance Metering Infrastructure (AMI) in various DISCOs

- Feasibility study to identify possibilities to enhance existing transmission capacity under way by NTDC
- K-Electric has panned USD 400M investment into its transmission system including the installation of new substations, transmission line equipment and grid stations
- Transmission Line Policy 2015 allows for private sector investment
  - Project on BOOT basis for 25 years, 17% USD indexed IRR
  - Land acquisition and security right of way to be the responsibility of NTDC
  - GOP to provide guarantee for payment obligation to NTDC
  - Exemption from Corporate Income Tax/Turnover tax for 10 years
- Privatization of Distribution companies also in pipeline

Conclusion – Way Forward

Upfront commitment to macroeconomic stability has to be a prerequisite for countries pursuing an aggressive national and regional infrastructure development

Short term stabilization will only be sustainable if accompanied by long term structural reforms

Fast tracking next phase of BRI and CPEC is critical but should be pursued by drawing some key lessons learnt

Offer renewed impetus to leveraging domestic resources to finance this large scale ambitious

BRI and CPEC has good potential to support country's energy transition aligned to its needs and resource strengths

Industrial and trade policy needs to be synchronized and complement the regional corridor development

Generating industrial capacities critical to help in producing exportable surpluses to finance imports is critical for the future infrastructure development program and reversing trends in balance of payments. In this context, upfront operationalization of the industrial economic and export zones and establishment of joint ventures among Pakistan, China and other players will augur well.