

CSAIL Hydro Power Projects in Pakistan: 720 MW Karot Project – Success Story



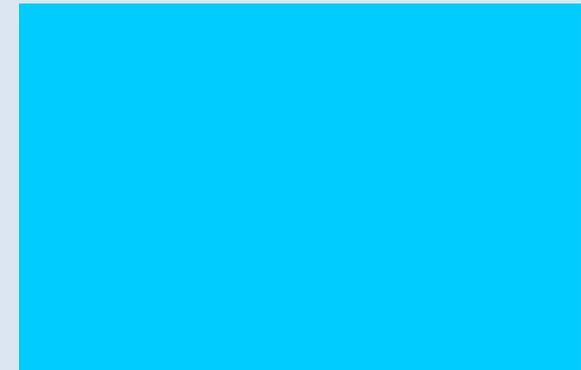
Aug 25, 2020



中国三峡南亚投资有限公司
China Three Gorges South Asia Investment Limited

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China Three Gorges Corporation (CTG)

Owner, developer, and operator of the world's largest Three Gorges Dam (22,500 MW installed capacity).

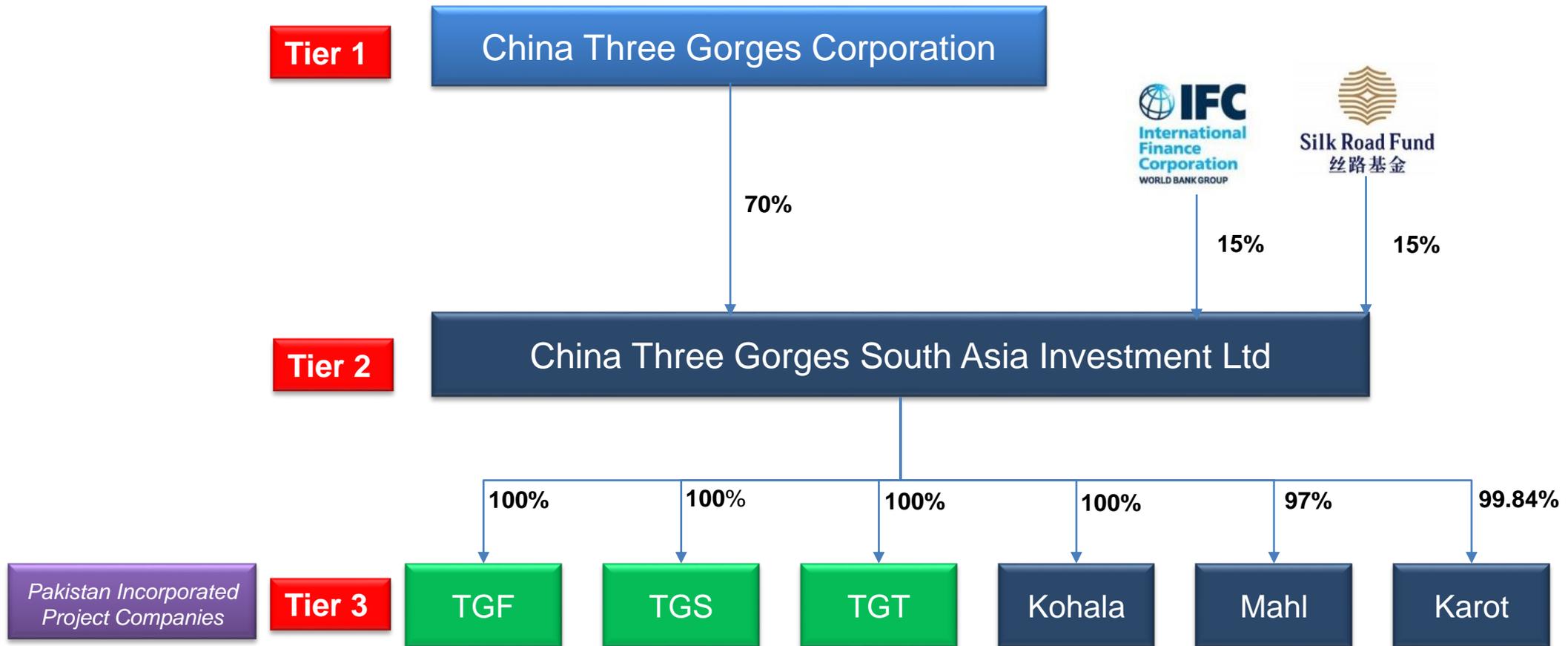
The world's largest hydropower developer with the installed and under-construction capacity of 128,000 MW, Annual Energy Generation of over 290 TWh

A wholly state-owned enterprise with operation in over 40 countries.

Total Assets of around US\$ 100 Billion and Annual Profit of around US \$ 5 Bln and having more than 37,000 employees around the world.



Shareholding Structure

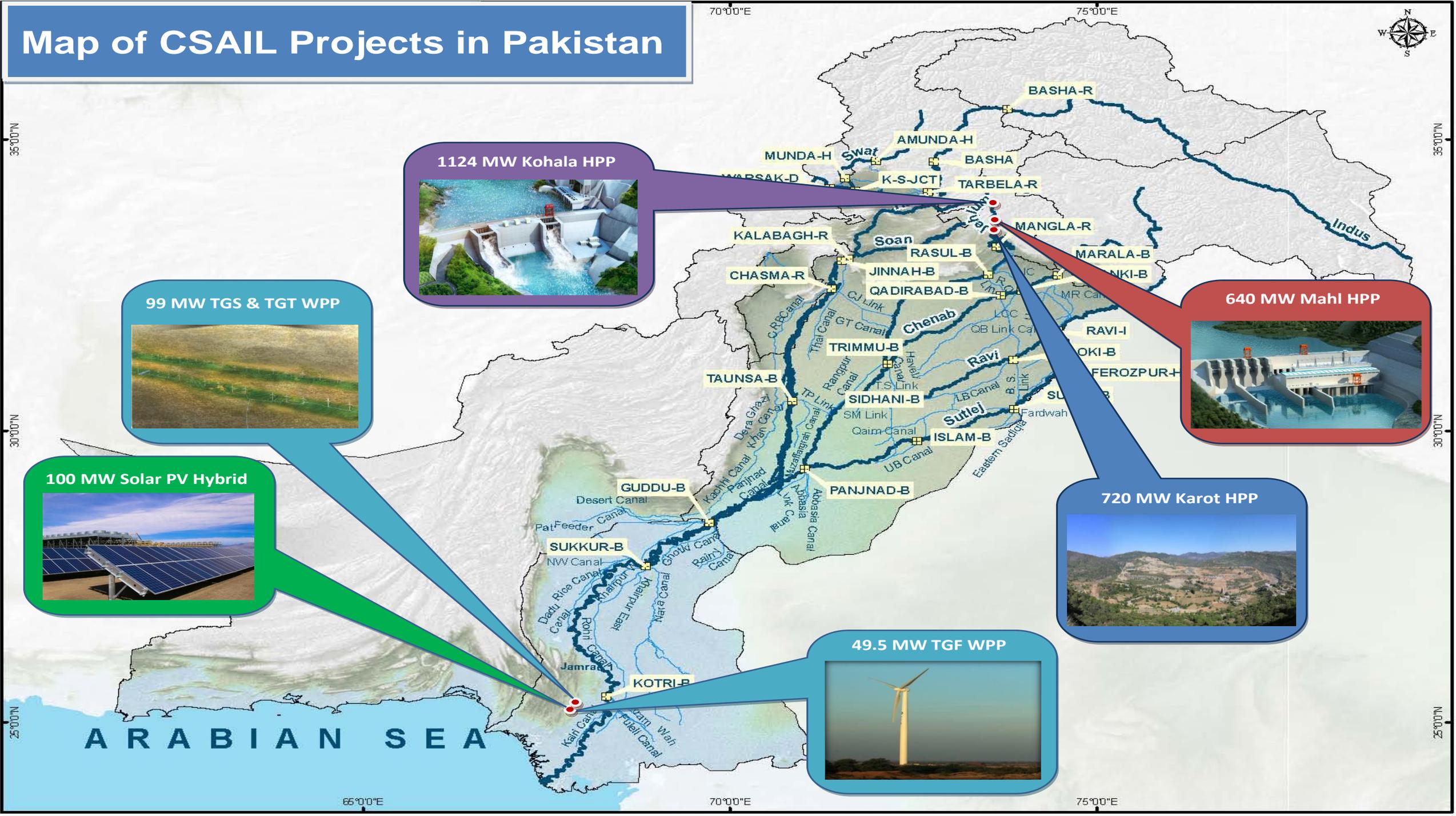


CSAIL's Current Portfolio in Pakistan

Greenfield Hydro, Wind and Solar Power Projects

Sr. No.	Project Name	Capacity (MW)	Project Cost (US\$ million)	Targeted Completion	Status / Progress
1	First Wind	49.5	130	Achieved	Commissioned in Nov 2014
2	Second & Third Wind	99	224	Achieved	Commissioned: TGS: Jun 20, 2018 TGT: Jun 9, 2018
3	Karot HPP	720	1,740	2021	Construction ongoing. Overall construction progress: more than 80%
4	Kohala HPP	1,124	2,700	2026	NEPRA determined EPC Stage Tariff, all agreements initialed. TPA and TPPA signed on Jun 25, 2020
5	Mahl HPP	640	1,478	2029	PPIB has approved extension of the LOI for updation of the Feasibility Study
Total		2,632.5	6,272		

Map of CSAIL Projects in Pakistan



1124 MW Kohala HPP

This inset shows a large concrete dam with multiple spillways, situated in a mountainous region with a river flowing through it.

99 MW TGS & TGT WPP

This inset shows a wide expanse of solar panels installed in a flat, open field under a clear sky.

100 MW Solar PV Hybrid

This inset provides a closer look at the solar panels, showing their arrangement in rows and the supporting structure.

640 MW Mahi HPP

This inset shows a dam with several spillways, with water cascading over them. The surrounding area is hilly and green.

720 MW Karot HPP

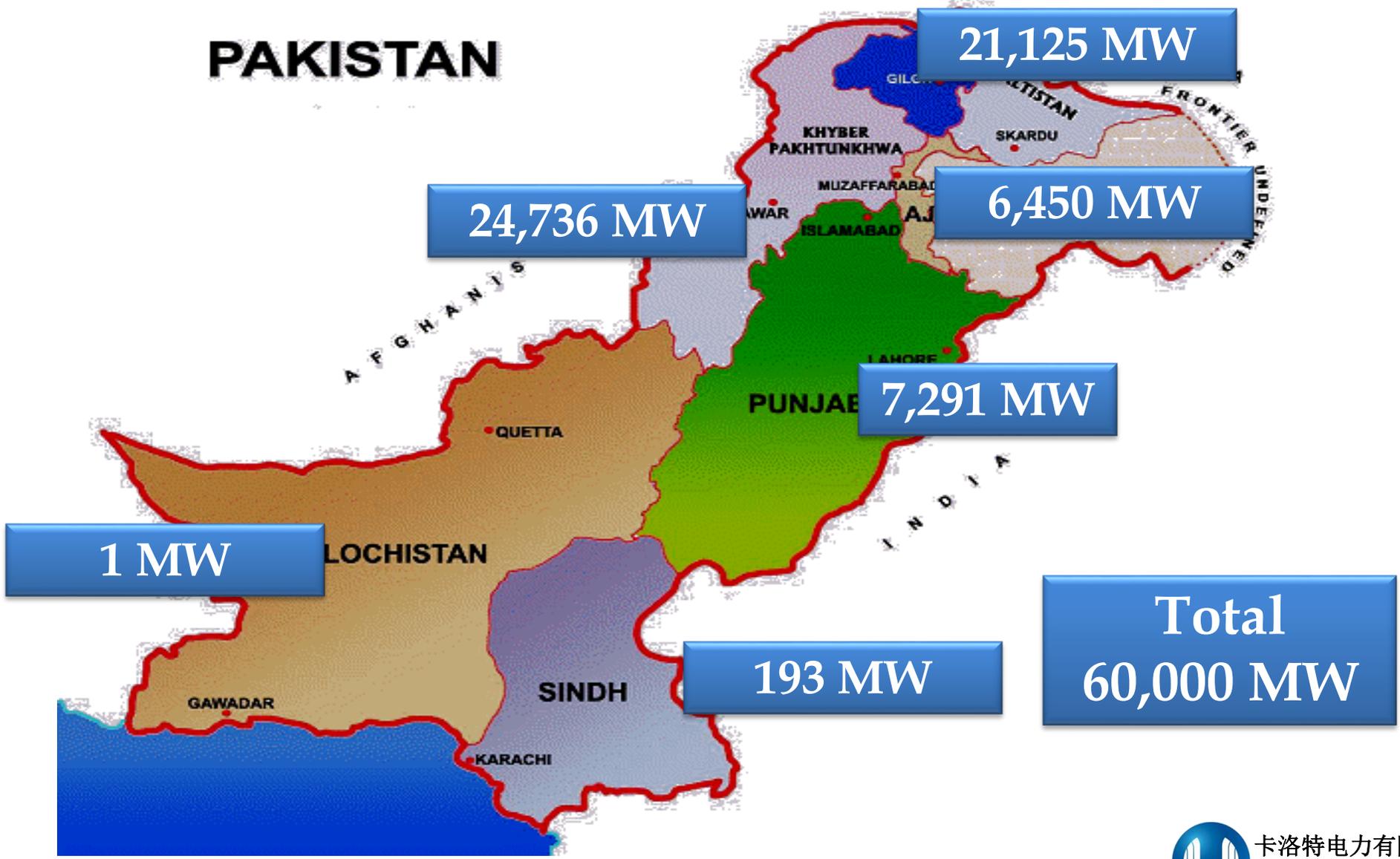
This inset shows a dam in a valley, with a large reservoir behind it. The landscape is a mix of green fields and brown hills.

49.5 MW TGF WPP

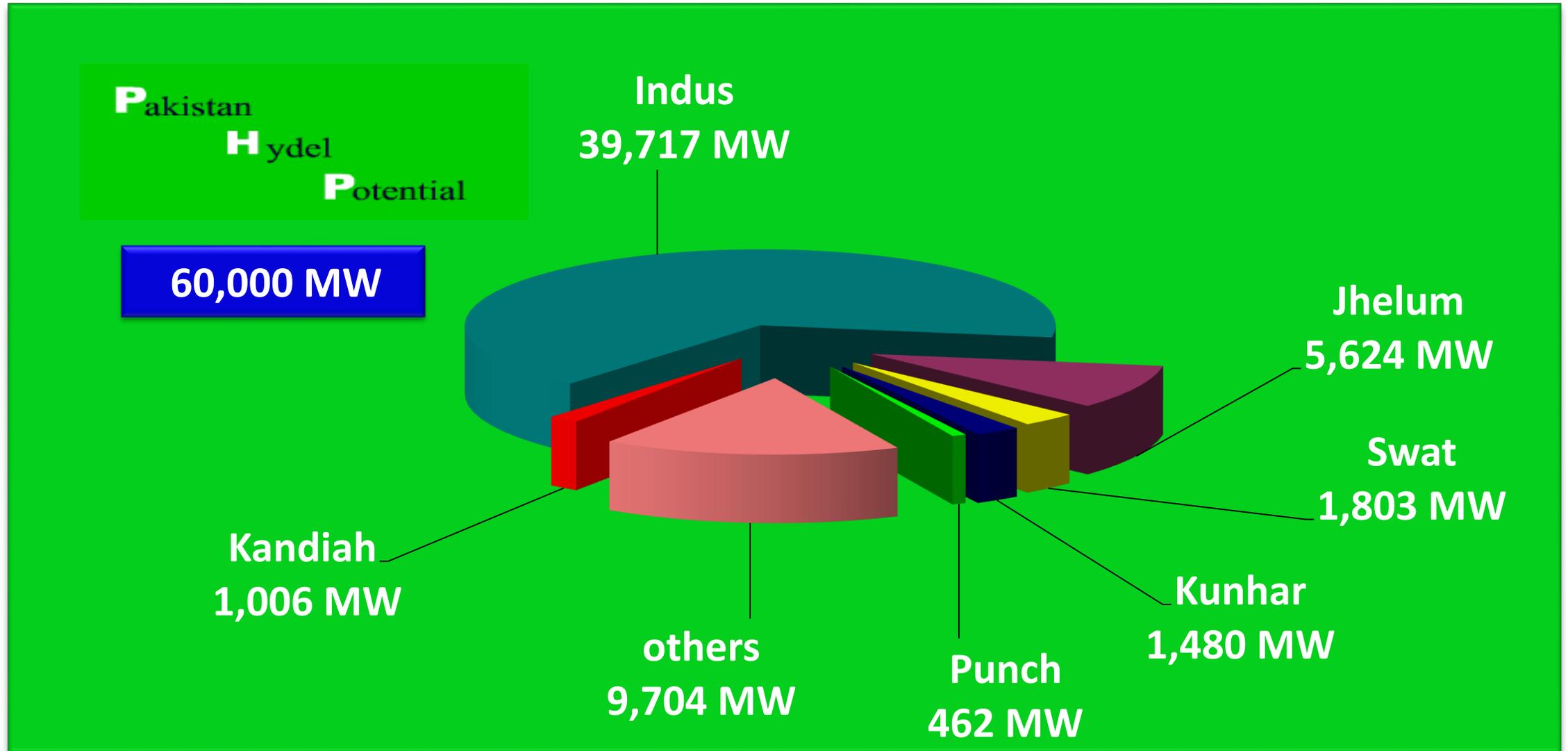
This inset shows a single wind turbine standing in an open field, with a clear sky in the background.

ARABIAN SEA

Pakistan Hydropower Potential



Hydropower Potential - Rivers



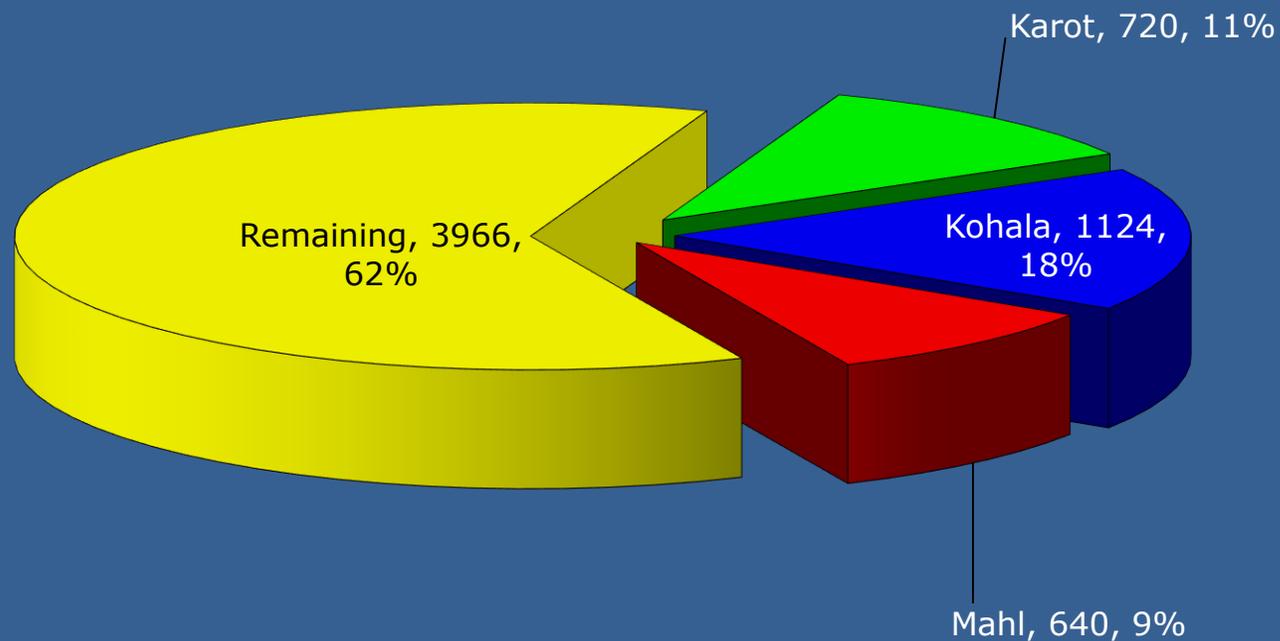
Share of CTG / CSAIL in AJK Hydropower Potential

Total AJK Hydropower Potential

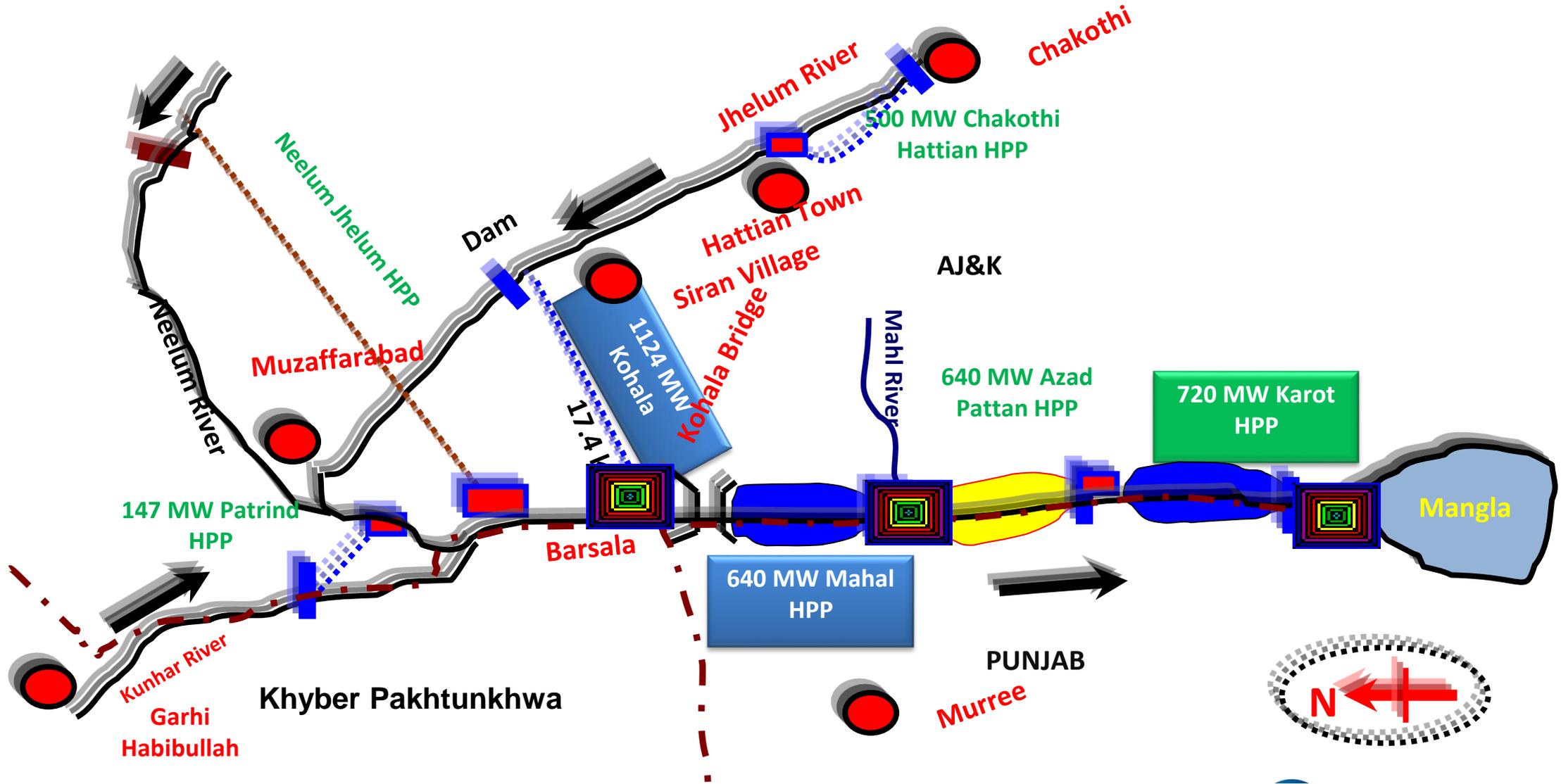
	MW	%
CSAIL Share	2,484	38
Remaining	3,966	62
Total	6,450	100

CSAIL Share

	MW	%
Karot	720	11
Kohala	1,124	18
Mahl	640	9
Total	<u>2,484</u>	<u>38</u>



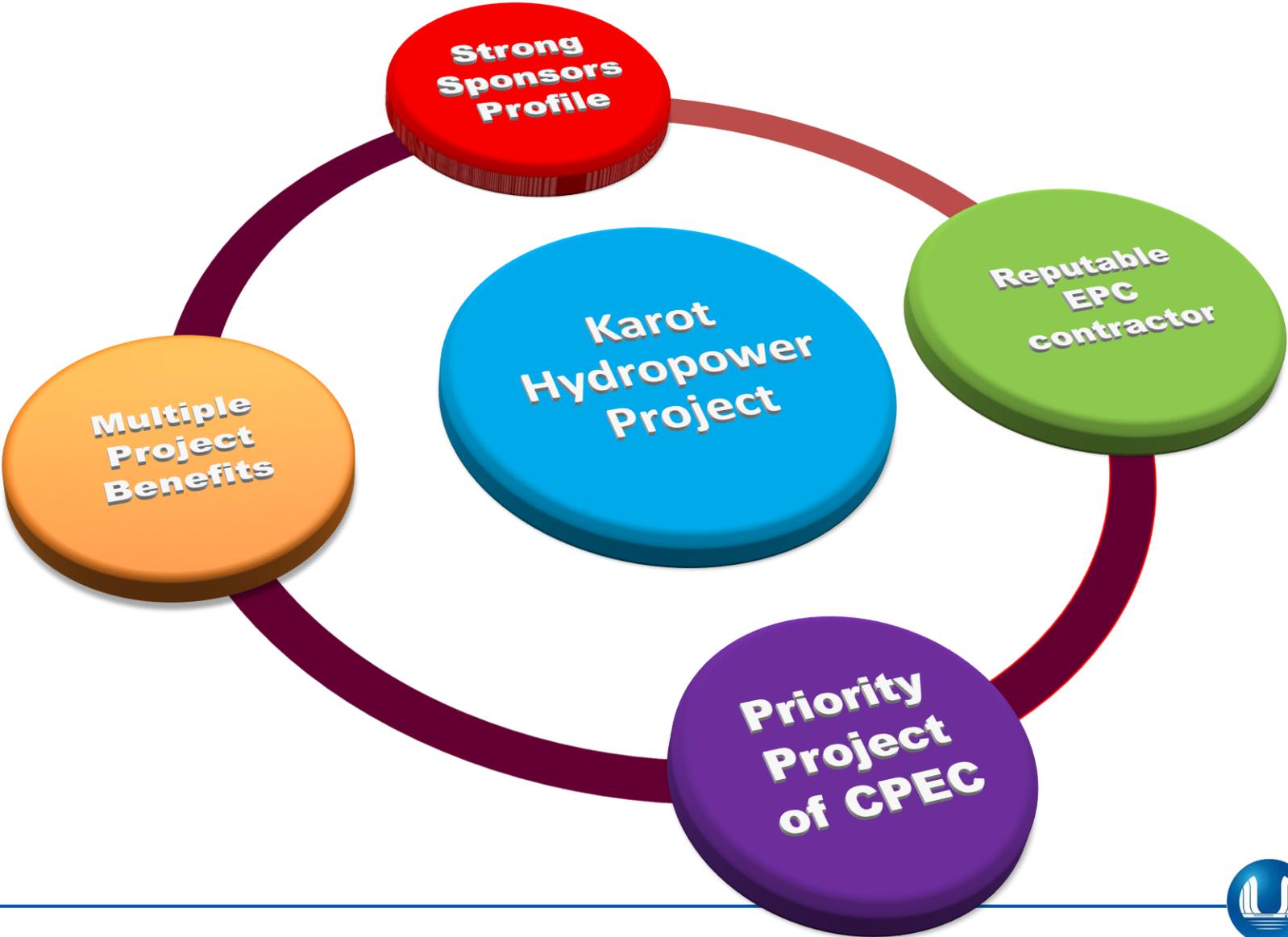
Location Map of Kohala, Karot & Mahl HPPs



Karot Hydro Power Project Progress



Karot Project Key Strengths



Unique and Distinctive Features

- Located in the Province of Punjab and AJK.
- Project is under CPEC Framework.
- Located very close to Load Center :
 - Islamabad 76 km
 - Gujjar Khan 65 km
- The Project is very close Nation Grid and will require only 2.2 km of Transmission Line.
- No major Environmental Issues.
- Project being developed by well experienced company having technical and Financial strength – CTG.
- Fool proof security of the project is provided by Pak Army.
- Under CSR the Company is constructing hospitals, schools, bridges, roads, and scholarships (Electrical Engineering) are being provided to students of the Project Area.

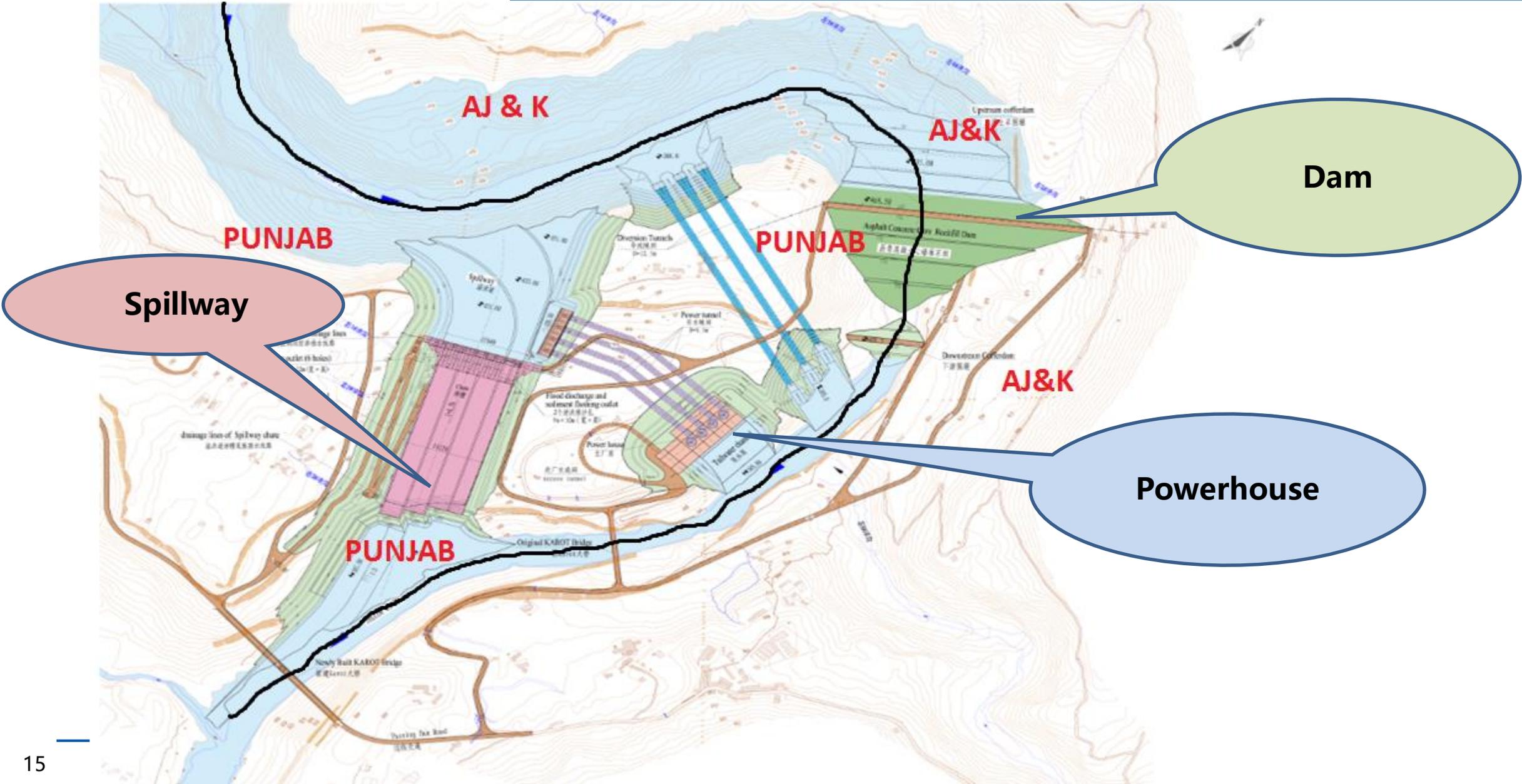


Benefits of Karot Project

- At the end of the operation period, the Karot Company will **transfer the Complex to the Government of Punjab for Rs 1.**
- The **Government of the Punjab and the AJK Government** each are going to receive **Rs. 675 Million annually for 30 years as WUC.**
- The **Government of the Punjab and the AJK Government** would get **PKR 0.676 billion proceeds a year respectively in 30 years' operation.**
- **Federal Government of Pakistan** would gain about **PKR 1.5 billion in tax revenues** over five years of construction period.
- **Job opportunities** to locals during construction and operation of the Karot Project, **about 3000 people** are already working at Karot site.



Karot Project Layout



Stakeholders of Karot Project

Sponsors



中国三峡南亚投资有限公司
China Three Gorges South Asia Investment Ltd.

Lenders



中国进出口银行
THE EXPORT-IMPORT BANK OF CHINA



IFC International Finance Corporation
WORLD BANK GROUP



国家开发银行
CHINA DEVELOPMENT BANK



SilkRoadFund
丝路基金

Employer



卡洛特电力有限责任公司
Karot Power Company (Pvt) Ltd.

Employer's Engineer



上海勘测设计研究院
SHANGHAI INVESTIGATION, DESIGN & RESEARCH INSTITUTE



上海东华工程咨询公司

EPC Contractor

长江三峡技术经济发展有限公司(TGDC)

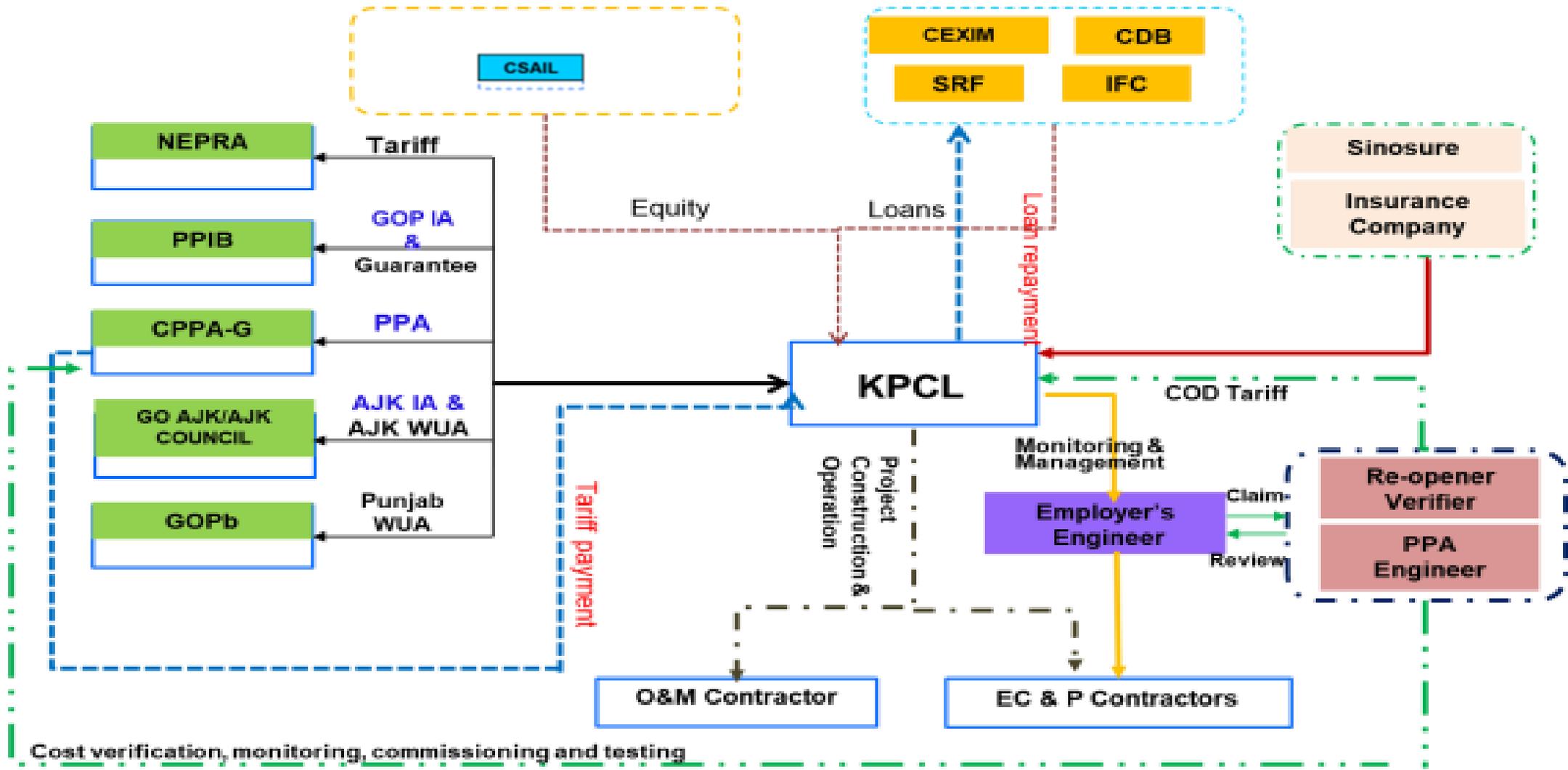


中国机械设备工程股份有限公司
China Machinery Engineering Corporation



卡洛特电力有限责任公司
Karot Power Company (Pvt) Ltd.

Karot Project Framework



Project Key Features



720 MW Karot Hydropower Project

Project Features

- **Location** : Distt. Rawalpindi, Punjab & AJK
- **River** : Jhelum River
- **Project Importance** : The Project is under CPEC
- **Capacity** : 720 MW
- **Av. Annual Energy** : 3206 GWh
- **Design Discharge** : 1200 m³/s
- **Gross Head** : 79 m
- **No. and Type of Units** : 4 Francis Turbine Units
- **Project Cost** : US\$ 1740 million
- **FS Tariff** : US cents 6.5005 kWh (Term 30 Years) approved by NEPRA
- **EPC Stage Tariff** : US cents 7.6152 kWh (Term 30 Years)
- **EPC Project Cost (Proposed)** : US\$ 1277.80million



720 MW Karot Hydropower Project

Key Milestones

- Issuance of LOI : 2007.05.19
- Approval of Feasibility Study : 2009.10.07
- Feasibility stage Tariff : 2012.12.12
- Issuance of Letter of Support (LOS) : 2013.08.29
- Construction Start Date : 2016.04.02
- Financial Close : 2017.02.22
- Expected COD : Dec 2021



720 MW Karot Hydropower Project

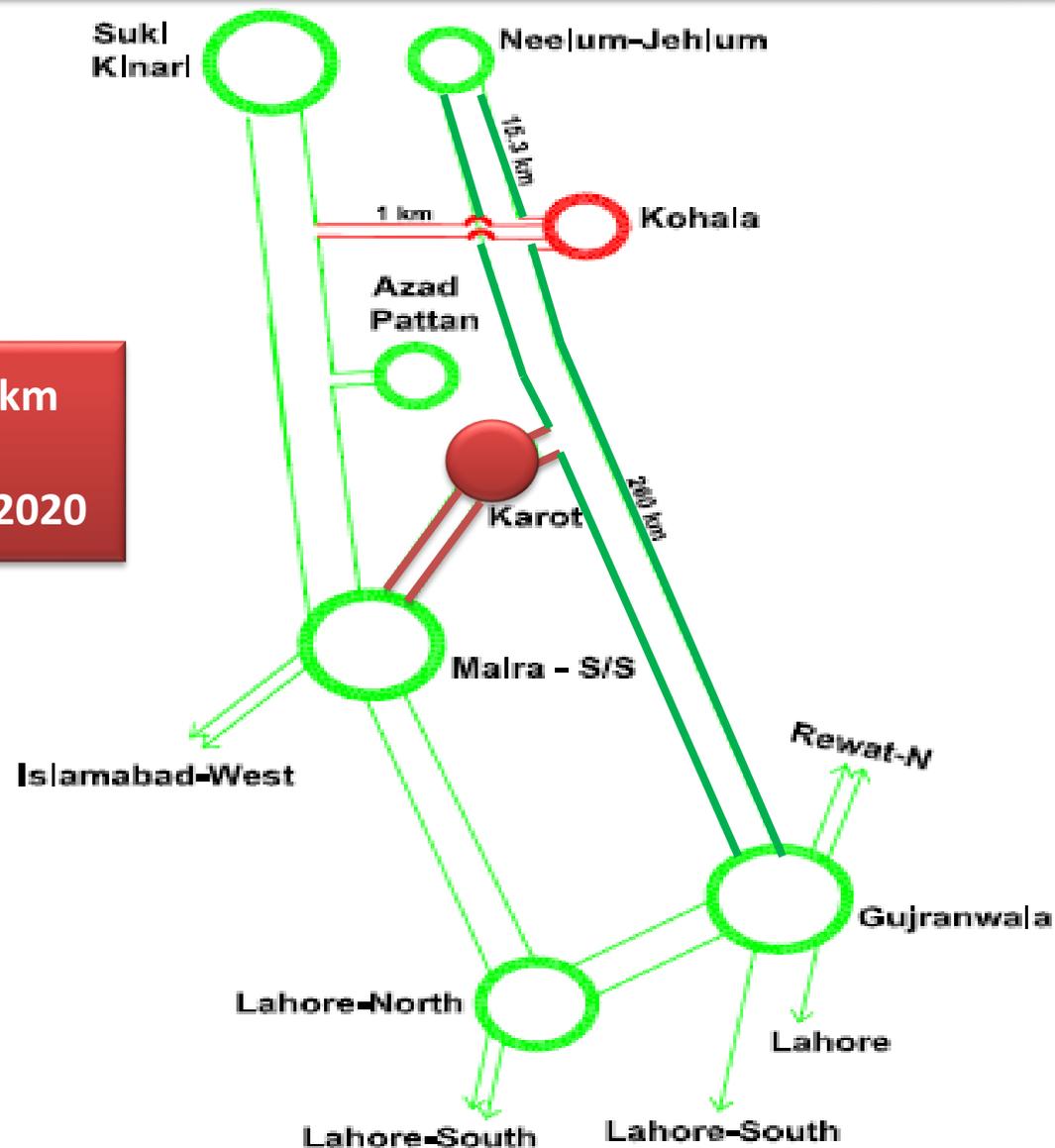
Key Events

- PPA signed : 2016.08.30
- GOP IA and SA signed : 2016.09.08
- AJK IA and AJK WUA signed : 2016.09.28
- GOPb WUA signed : 2016.10.25
- CTA signed : 2016.11.25
- Notice to Proceed : 2016.12.01
- PPA DA and RAA signed : 2016.12.14
- GOPIA DA, AJKIA DA, AJKWUA DA,
GOPBWUA DA signed : 2016.12.15
- Financial Closing : 2017.02.22



Latest Transmission Line Interconnection Arrangements for Karot Hydro Power Project

Transmission Line Length 3 km
Number of Towers 10
Expected Commissioning Dec 2020



Legend
500 kV 
Proposed 500 kV 

Overall Construction Progress

720 MW Karot Hydropower Project

Sr. No.	Activity	Progress
		Actual
1	Overall Construction	80.20%
2	Diversion tunnel	100%
3	Rock fill dam	50.46%
4	Spillway	66.10%
5	Powerhouse	82.46%
6	Head race tunnels	93.96%



Karot Project Human Resources

Details of Workforce at Karot HPP

	Chinese	Foreigners	Pakistani	Total
Work Force	1260	03	3316	4579
Percentage	27.5 %	0.65 %	73 %	100 %



Corporate Social Responsibility of Karot Project

KPCL has developed and implementing a **community investment plan (CIP)** under Corporate Social Responsibility for the social uplift of local community. It will be implemented during the period of **five years of construction phase** to improve the **community's living conditions**.

KPCL is committed to work and bring improvement in the following areas:



Health facilities



Drinking water facilities



Educational facilities



Recreational facilities



Overview of CSR Activities of Karot Project

Completed

- School facility in Kannad (Karot)
- School facility in Kahuta (Punjab)
- Rehabilitation of BHU Hollar (AJK)

In Progress

- New buildings Boys & Girls Schools Hollar (AJ&K) (**100% Completed**)
- Construction of Rest House building at Beor (Punjab) (**100% Completed**).
- Construction activities under progress for emergency block at THQ Hospital Kahuta, Punjab.
- Construction started for government dispensary and provision of water supply at Brohi Azad Pattan (Punjab)

Planned 2019/2020

- Provision of water supply at Hollar (AJ&K) (Bids Received, Evaluation in progress)
- Repair and construction of 04 (First Batch 10 Km) access roads in Hollar (AJK) (Evaluation Completed, Contract Approval is in progress)
- Establishment of Public Park at Hollar. (Evaluation Completed, Contract Approval is in progress)
- Alternate proposal for Access roads project in Kahuta Punjab finalized with AC Kahuta

Planned 2020/2021

- CIP activities for year 2021 will be finalized with the consultation of District Administration Kotli, Sudhnuti. Correspondence continued with Administration of Kotli and Sudhnuti for the progress

Kannad school



BHU Hollar



Livelihood Restoration



Financial Training Session in village Hollar, AJK



Female Participants in village Hollar, AJK



Female Participants with Certificates



Infrastructure Development and Improvement



Construction of New bridge to Connect Punjab and AJK

CSAIL involvement in Public infrastructure development initiative aims towards participation in integrated value chain and providing opportunities for communities



The Construction of infrastructure and rehabilitation of roads has improved the capacity of public and the affected communities to Health, Education, Economic hubs



The completion of roads had substantial constructive impact and developed the good repute for the KPCL as well as strengthens CSAIL's publicity in Pakistan



Infrastructure Development and Improvement



Construction of New Rest House Building Kahuta:

CSAIL involvement in Public infrastructure development initiative aims towards participation in integrated value chain and providing opportunities for communities



Construction of New Rest House Building Kahuta:

The Construction of infrastructure development has improved capacity of available infrastructure in the area



Education



CSAIL recognizes education as one of the building blocks of any nation and consider it as a priority area for its CSR activities



The scholarship program is designed to enhance the educational level of the populations affected by the construction of Hydropower Projects



Aim to sponsor the high school graduates who intend to apply for the Electrical Engineering discipline at University of Punjab and JXUST (2+2 mode) in the above areas



Up - Gradation of Schools – Hydropower Projects



KPCL completed third project i.e. **construction of the new building of government** primary school at Channii Awan in Kahuta city on 19 June 2019



The education is most important for the development of the nations; improvement in educational facilities is **CSAIL's first priority**. The construction of Government Boys Primary School was the first project under Corporate Social Responsibility (CSR).



The new **building of Government Boys Primary School in Kinnand Village** was consisted of school building and boundary wall with necessary facilities like furniture, drinking water and toilet facility



The KPCL's Chinese staff **distributed school bags and small gifts** among the students to show good gesture towards the local community



Up - Gradation of Schools – Hydropower Projects



KPCL completed third project i.e. **construction of the new building of government** primary school at Channii Awan in Kahuta city on 19 June 2019



Improvement in educational facilities is **CSAIL's first priority**. KPCL constructed new building of Government Middle School for girls in Hollar village of AJK.



The new staff room at Girls Middle School at Hollar.

Provision of facilities such as furniture, drinking water and toilet facility have been ensured in new Girls Middle School at Hollar.



The new **building of Government Boys Middle School in Hollar Village.**

With basic facilities of furniture and drinking water



Health



The Rehabilitation and improvement of Basic Health Unit (BHU) in village Hollar, AJK is the second project under Corporate Social Responsibility (CSR) of KPCL



The rehabilitated BHU consists of improved medical facilities for the local community



The completion of BHU has created good gesture between the local community and project management



Project Progress



Construction Management

- **Construction Progress Overall**



Karot Hydropower Project Overall Progress Image 1



Construction Management

- **Construction Progress Overall**



Karot Hydropower Project Overall Progress Image 2

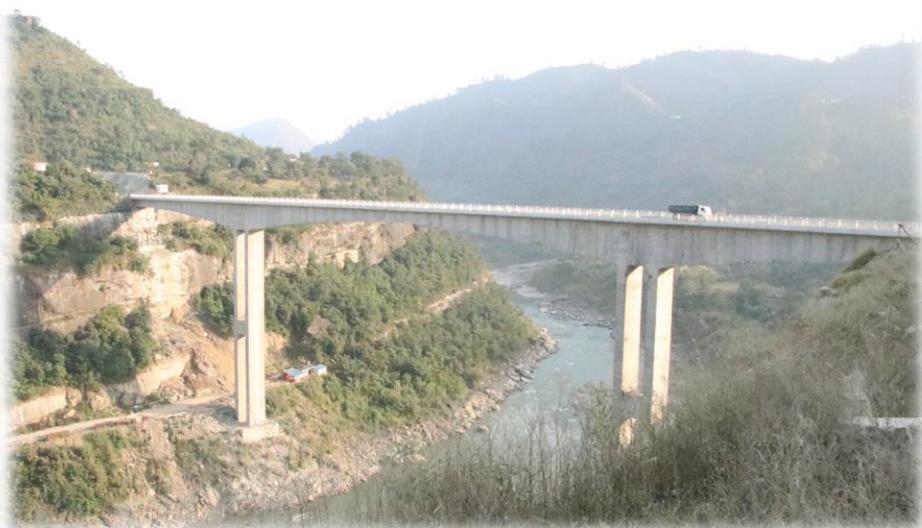


Pictures of Project Activities

720 MW Karot Hydropower Project



Karot New Bridge

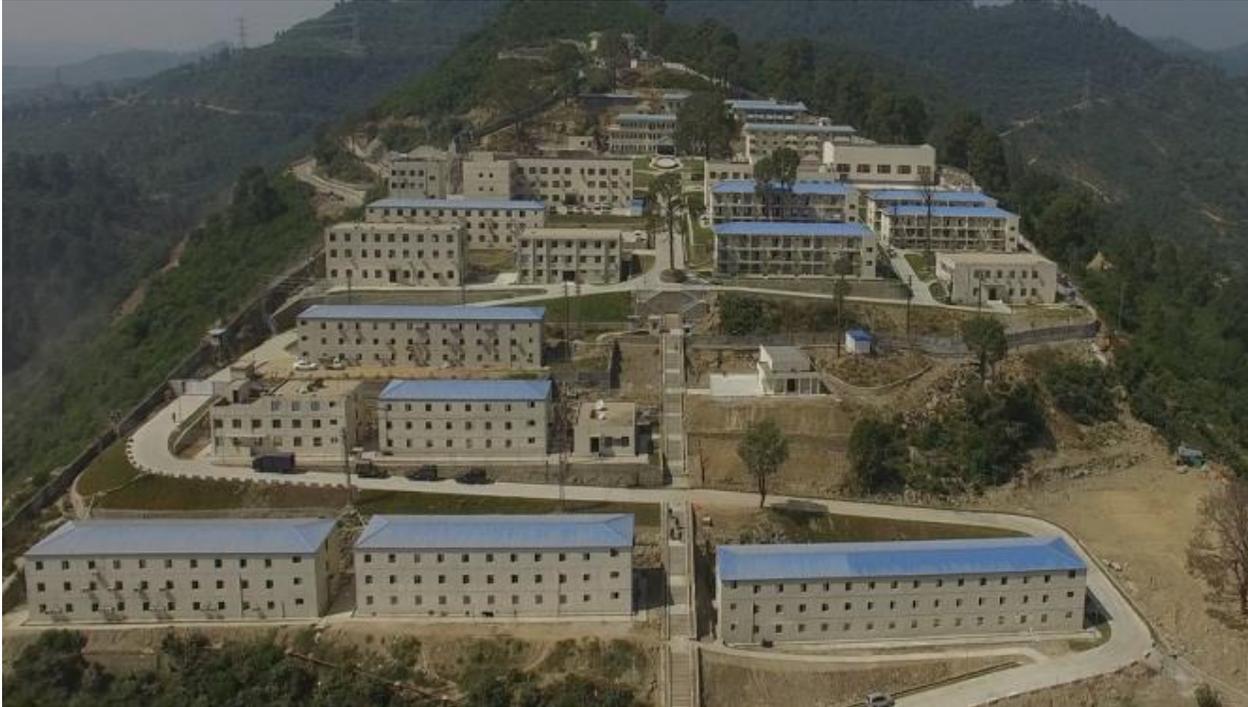


Pictures of Project Activities



Azad Pattan Bridge

Construction management camps





Stay ring for unit 1



Water storage at site



Spillway



Dam site



Penstock installation in progress



Power house cranes installed



Power House



Intake hydraulic structures



Concrete Temperature Check



Quality Tests Inspection



Retaining Wall



Rest Area and Training under COVID-19



Weekly Meetings at KPCL Office



Waste Disposal Area

Karot Project Key Successes



720 MW Karot HPP – Key Successes

- **24,261 Kanal of land acquired without much hassle.**
- **Resettlement of the local population in the project area undertaken with full satisfaction of local people and in shortest possible time.**
- **Achieved Financial Close in time.**
- **Sought timely approvals from GOP / GOAJK for IA, PPA, WUA, Tariff determination by NEPRA, ESIA Study NOC, etc.**
- **Mechanism for tax sharing between Federal, Punjab and AJK Governments developed with consensus of all.**
- **Resolved 16 % sales tax on Construction Contractor levied by Government of Punjab and GOAJK amicably.**



720 MW Karot HPP – Key Successes

- Resolved the issue of seeking consent for the design of seven bridges, constructed / under construction by KPCL from Governments of Punjab and AJK.
- Handled the worker and Labour Union issues very effectively at Karot Project Site
- All issues with NTDC resolved for timely completion of the Transmission Line and its Construction started in first week of Jan 2020.
- Technical issues during construction resolved in timely manner.
- Project Construction Progress according to schedule.
- The success of the Project encouraging local and international investors.
- Effectively handled COVID 19 , so far there is not a single case of Corona at Karot site



Corporate Awards





A Pakistani employees of KPCL was awarded the Pakistan excellent employee award of the China-Pakistan Economic Corridor (CPEC) project



720 MW Karot Hydropower Project won the Asia Pacific Hydro Deal of the Year (2017), awarded by IJ Global, the global energy infrastructure authority

Communicating CSR among Stakeholders



Conclusion

The success of the 720 MW Karot Project is the first steps toward development of other mega Hydro Power Projects in Private Sector in Pakistan by CTG Group and has inculcated interest of the investors and lenders in development and implementation of Hydro Power Projects.



A photograph of a sailboat on the ocean. The view is from the deck looking forward towards the mast. A large white sail is partially visible on the right side. The deck is made of dark wood with several circular portholes. The water is a deep blue, and the sky is a lighter blue. The text "THANK YOU" is overlaid in the center of the image.

THANK YOU

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