

# **THE INSTITUTION OF ENGINEERS PAKISTAN**

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## **PRESENTATION ON NECESSITY OF PRIVATE POWER GENERATION IN PAKISTAN**

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# **C O N T E N T S**

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- **Timeline Journey of Pakistan Power Sector**
- **Need and Merits of Private Power Projects**
- **Private Power Projects a Win-Win Situation for All**
- **Government Initiatives to Encourage Private Sector**
- **Stages in the Development of Private Power Generation**
- **Response of Private Sector in Pakistan Power Generation**
- **Role of Private Sector in Total Generation of Pakistan**
- **Conclusions**

# **TIMELINE JOURNEY- PAKISTAN POWER SECTOR**

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## **UPTO 70s**

- : Performance of KESC and WAPDA was remarkable – financing available from donors**

## **IN 80s**

- : Some deterioration observed in KESC and WAPDA**
- : Demand-Supply shortfall of about 30%**
- : Shortfall resulted in annual economic loss of 10 billion**

## **IN 90s**

- : Budget constraints lead the government to seek involvement of private sector in power generation projects**

## **1992**

- : Government chalked out a strategic plan to reform Pakistan's power sector**

## **1993**

- : Energy Task Force was created, which lead to formulation of Power Policy**

**1994**

# **TIMELINE JOURNEY- PAKISTAN POWER SECTOR**

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**1994**

**: Announcement of Power Policy 1994 & creation of PPIB**

**1997**

**: Autonomous regulatory body , NEPRA was created, through an Act**

**: 1<sup>st</sup> batch of IPPs started commissioning.**

**2001**

**: WAPDA Vision 2025 prepared**

**2002**

**: Power Policy 2002 announced**

**2005**

**: Medium Term Development Framework (MTDF) prepared**

**: KESC privatized**

**2009**

**: Second batch of IPPs started commissioning**



# NEED OF PRIVATE POWER PROJECTS

- Country started experiencing power shortages from 80's.
- There was tremendous load shedding from 1989 to 1994.
- Exponential increase in power demand
- Power sector was consuming substantial Government resources
- Additionality of resources
- To increase efficiency and competition in Pakistan Power Sector.
- Focus of donors shifted from power sector to social sector

## Power Load Shedding (MW)

	Peak Demand (MW)	Load Shedding (MW)	(%)
1989	5440	2151	39
1990	5680	1666	29
1991	6090	879	14
1992	6532	1393	21
1993	7522	1616	21
1994	8067	2577	31

## Power Sector Share in PSDP (%)

	Total PSDP (Bln. Rs.)	WAPDA Allocation (Bln. Rs)	(%)
1989	48.00	13.9	29
1990	57.81	15.8	28
1991	83.11	16.1	19
1992	95.52	24.6	26
1993	119.9	24.7	21
1994	137.4	26.67	20

# **RATIONALE FOR INDUCTION OF PRIVATE SECTOR IN POWER GENERATION**

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- **Deterioration in the performance of public sector utilities**
  - **Insufficient cash flow to invest in new power generation**
  - **Inadequate maintenance of power projects**
  - **Cost and time over-runs in constructing power projects**
  - **High system losses**
- **Lack of funds available with Government to invest in new power projects**
- **Shift of donors from power sector to social sector**
- **To solve immediate problems of power shortages**
- **International trend of developing power projects through private sector**
- **Introduction of new technologies such as combined cycle & diesel generator eliminated the requirements of large central generation stations**
- **To meet exponential load growth and supplement Government resources**

# MERITS OF PRIVATE SECTOR

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- **Private Sector can complement & supplement public sector.**
- **Limited Public Sector funds can be utilized in sector such as health, education, agriculture, roads etc.**
- **Private sector can introduce efficiency, reliability and additionality of resources.**
- **Private power companies are bound by Project Agreement to provide power at committed efficiency and availability for 25-30 years.**



# **PRIVATE POWER PROJECTS (FINANCING STRUCTURE)**

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- **Private Power Projects are normally based on BOO - BOOT.**
- **Financing is made through a mix of equity and loan.**
- **Private Sector is responsible for arranging loan for the projects without any Government Guarantee.**
- **Private sector fully responsible for arranging equity for the projects from its own resources.**



# **PRIVATE POWER PROJECTS**

## **RISKS INVOLVED**

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- **Development Risk – Cost, reputation**
- **Construction Risk – time delays, cost overruns**
- **Operating Risk – Efficiency & availability**
- **Financing Risk – failure in arranging financing results in encashment of guarantee**
- **Fuel Availability Risk – non-availability of fuel invites penalties**

# **PRIVATE POWER PROJECTS (WIN – WIN SITUATION FOR ALL)**

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## **GOVERNMENT**

- **Additionality of financial resources.**
- **Addition of power generation to achieve target growth.**
- **Creation of jobs.**
- **Utilization of indigenous resources like hydro/coal/gas.**
- **Private sector projects are a step forwarded towards competitive power market.**
- **Catalyst for institution building such as PPIB, WPPO at Federal level and other institutions at provincial level.**
- **Encouraged local investors to venture for power projects.**

## **POWER PURCHASER**

- **Meeting of Valuable power demand.**
- **Availability of Reliable capacity.**
- **Capacity add-in without internal cash generation for investment.**
- **Induction of projects with better efficiencies and availabilities**

# **PRIVATE POWER PROJECTS (WIN – WIN SITUATION FOR ALL)**

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## **INVESTORS**

- Assured returns on investment made by private power companies.
- Revenue gains through efficiency improvements & cost reduction.
- Major risks covered by Government & power purchaser.
- Compensation in case agreements are terminated due to Government/ power purchaser defaults.

## **PROVINCIAL GOVERNMENT**

- Development of Local infrastructure.
- Improvement in provincial/local employment.
- Generation of Economic activity at local level.
- Encouragement of provincial governments to make policies and institutions at provincial level – hydro & coal.



# **PRIVATE POWER PROJECTS (WIN – WIN SITUATION FOR ALL)**

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## **FINANCIAL MARKET**

- **Add-in market capitalization of local markets.**
- **Flourishing of local banks providing working capital and other credit lines.**
- **Awareness of local banks to handle projects based on project finance techniques.**
- **Access to international capital market.**

## **INDIGENOUS RESOURCE UTILIZATION**

- **Skilled manpower being used.**
- **Utilization of indigenous gas, coal & hydro.**
- **Business opportunities for legal, financial firms, consultants, Advisors.**
- **Learning opportunities for professionals and exposure to international experience.**



# **ACTIONS TAKEN BY GOP TO ENCOURAGE INVESTMENTS IN PRIVATE POWER PROJECTS**

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- **Formulated private power policies from time to time to encourage investors to participate in Power Generation.**
- **Creation of PPIB – A pioneer institution handling IPPs.**
- **Created regulatory body NEPRA to ensure level playing field for investors, utilities, operators and consumers to provide comfort to investors.**

# STAGES IN DEVELOPMENT OF PRIVATE SECTOR IN POWER GENERATION

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- Private Sector Development in Power Generation is spanned on four stages

1. Stage One:	HUBCO Project	1985
2. Stage Two:	- IPPs under Policy 1994 - Creation of PPIB/WPPO	1994
3. Stage Three:	Privatization of KAPCO	1997
4. Stage Four:	Second batch of IPPs under Power Policy 2002	2002

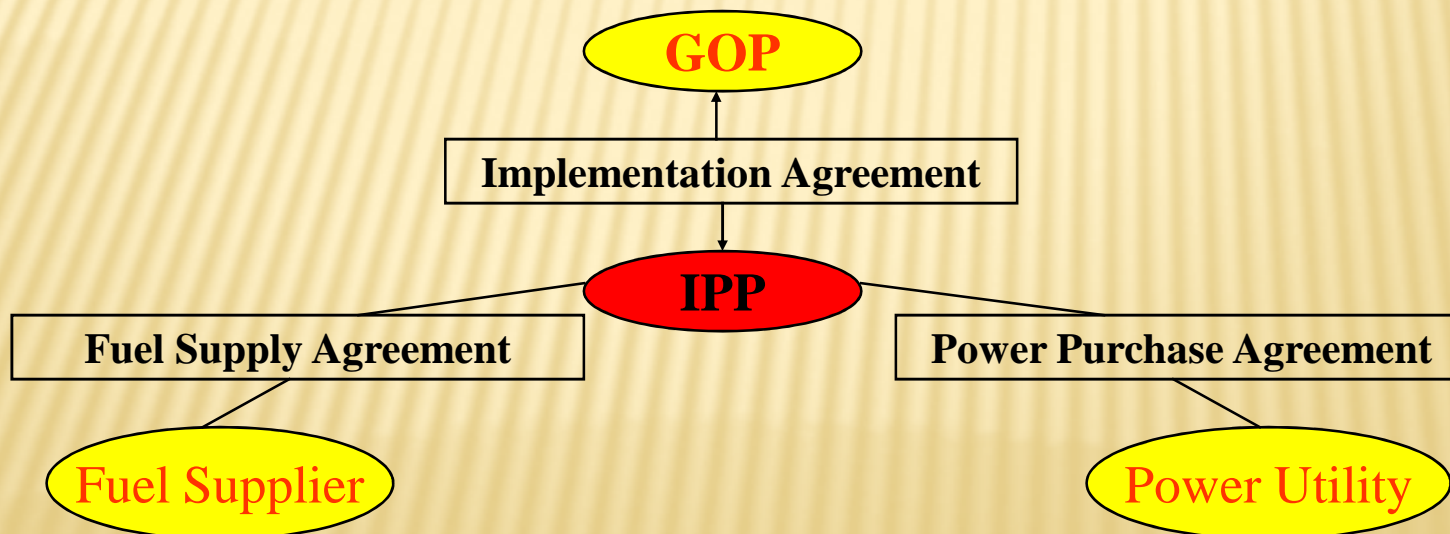
# **STAGE ONE: HUBCO PROJECT**

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- **First Initiative 1200 MW thermal power project.**
- **Pioneering project fraught with uncertainties and complexities**
- **No institutional set up available**
- **Hardly any expertise available with the Government to handle such huge project in private sector**
- **International banks had relatively modest credit limits for Pakistan Debt raising from too many sources requiring extensive coordination**
- **Domestic banks had limited lending capacity and no previous experience of limited recourse financing**
- **No standardized agreements available**

# STAGE TWO: 1994 POWER POLICY (MAJOR INGREDIENTS)

- *Upfront Bulk Power tariff*
- *Freedom to select fuel, technology and site*
- *GOP Guarantee for payment obligations of public sector power utilities (WAPDA/KESC) and fuel supplier (PSO/OGDC)*
- *Standardized Security Package available for execution*
- *PPIB created to provide one window facility*



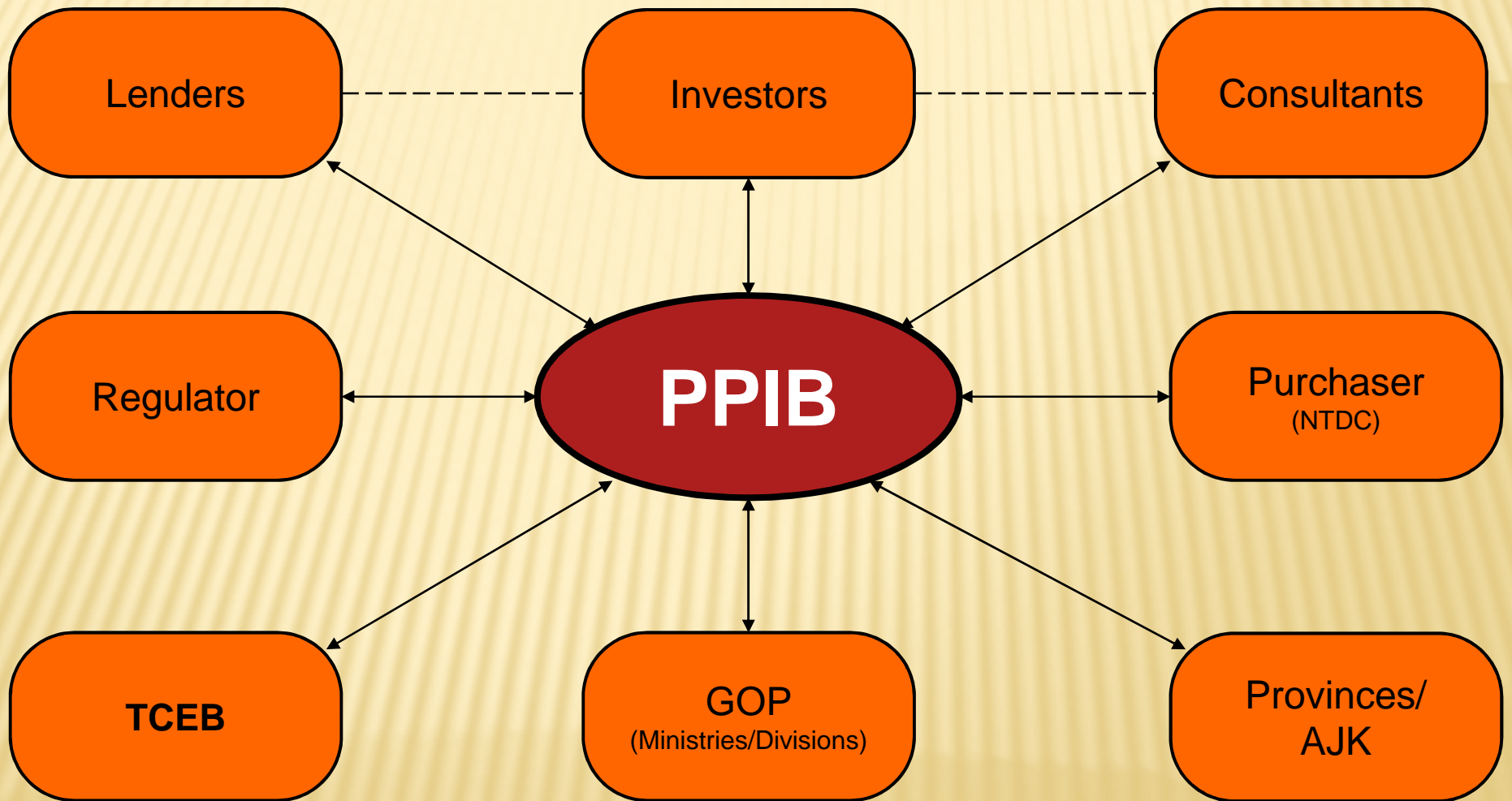


## **STAGE TWO - PPIB CREATION / PURPOSE**

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- **Created in August 1994 to promote private investments in power sector.**
- **Act as One-Window facilitator on behalf of GOP, its Ministries/ Departments.**
- **Execute IA and provide GOP guarantees on behalf of President of Pakistan.**
- **Monitor and facilitate IPPs in executing PPA, WUL with relevant GOP agencies.**
- **Provide technical, financial and legal support to Ministry of Water & Power, Provinces / AJK.**
- **Coordinate/Liaison with local and multilateral development Finance Institutions.**

## PPIB A PROFESSIONAL FACILITATOR



# **1994 POLICY FRAMEWORK – A SUCCESS**

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- **Fourteen Projects reached the stage of commissioning and operations**
- **Foreign Direct Investment (FDI) of more than three (3 billion) US Dollars in 3 years**
- **Attracted world-renowned players: AES, EL-PASO, TENAGA, General Electric, SIEMENS, Wartsila, Coastal Technologies etc.**
- **Emergence of Pakistan as pioneer in IPPs on the world map of private power generation**

# IPPs ESTABLISHED UNDER 1994 POLICY

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- **362 MW**     AES Lalpir Limited
- **365 MW**     AES Pak Gen. (Pvt) Limited
- **14 MW**       Altern Energy Limited
- **157 MW**     Fauji Kabirwala Power Company
- **136 MW**     Gul Ahmed Energy Ltd. (GAEL)
- **140 MW**     Habibullah Coastal Power (Pvt) Co.
- **120 MW**     Japan Power Generation (Pvt) Limited
- **131 MW**     Kohinoor Energy Limited
- **235 MW**     Liberty Power Project
- **412 MW**     Rousch (Pakistan) Power Limited
- **114 MW**     Saba Power Company Limited
- **115 MW**     Southern Electric Power Company Limited
- **126 MW**     Tapal Energy Limited
- **586 MW**     Uch Power Limited



# FINANCIAL INSTITUTIONS INVOLVED IN PRIVATE POWER PROJECTS

<b>Lenders</b>	<b>Loan Amount Mln.\$</b>	<b>Projects</b>
▪ <b>World Bank</b>	<b>445</b>	<b>Rousch, Uch and Southern Electric</b>
▪ <b>IFC</b>	<b>333</b>	<b>Uch, Kohinoor Energy, AES Lalpir AES PakGen, Gul Ahmed Energy</b>
▪ <b>J-Exim Bank</b>	<b>538</b>	<b>AES Lalpir and AES PakGen</b>
▪ <b>US-Exim Bank</b>	<b>236</b>	<b>Uch and Saba Power</b>
▪ <b>Asian Dev. Bank</b>	<b>32</b>	<b>Fauji Kabirwala</b>
▪ <b>Commonwealth Dev. Corporation</b>	<b>57</b>	<b>Liberty</b>

## **STAGE THREE – RIVATIZATION OF KOT ADDU**

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- **Privatized 1600 MW Kot Addu Power Plant in 1996**
- **Government transferred KAPCO management to International Power along with 26% shares**
- **Ten (10) percent additional shares were divested to International Power in 1996**
- **The Government realized proceeds worth Rs 9 billion**
- **KAPCO is now highly profitable company with good operational record indicated by share market price of about Rs. 43**

# **STAGE FOUR**

## **SECOND BATCH OF IPPS UNDER POWER POLICY 2002**

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### **STRENGTHS**

- **Pakistan now a Tested Market (No fear of unknown for investors, lenders & contractors)**
- **Plenty of experience: (sponsors, lenders, government officials, power purchaser understands the Business norms and Language)**
- **Verifiable Track Record**
- **Government evolved the Power Policy 2002 after consulting all stakeholders.**
- **Improvement in Power Policy 2002 – dynamic process**

# **POLICY FOR POWER GENERATION, 2002 INCENTIVES/SECURITIES**

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## **INCENTIVES**

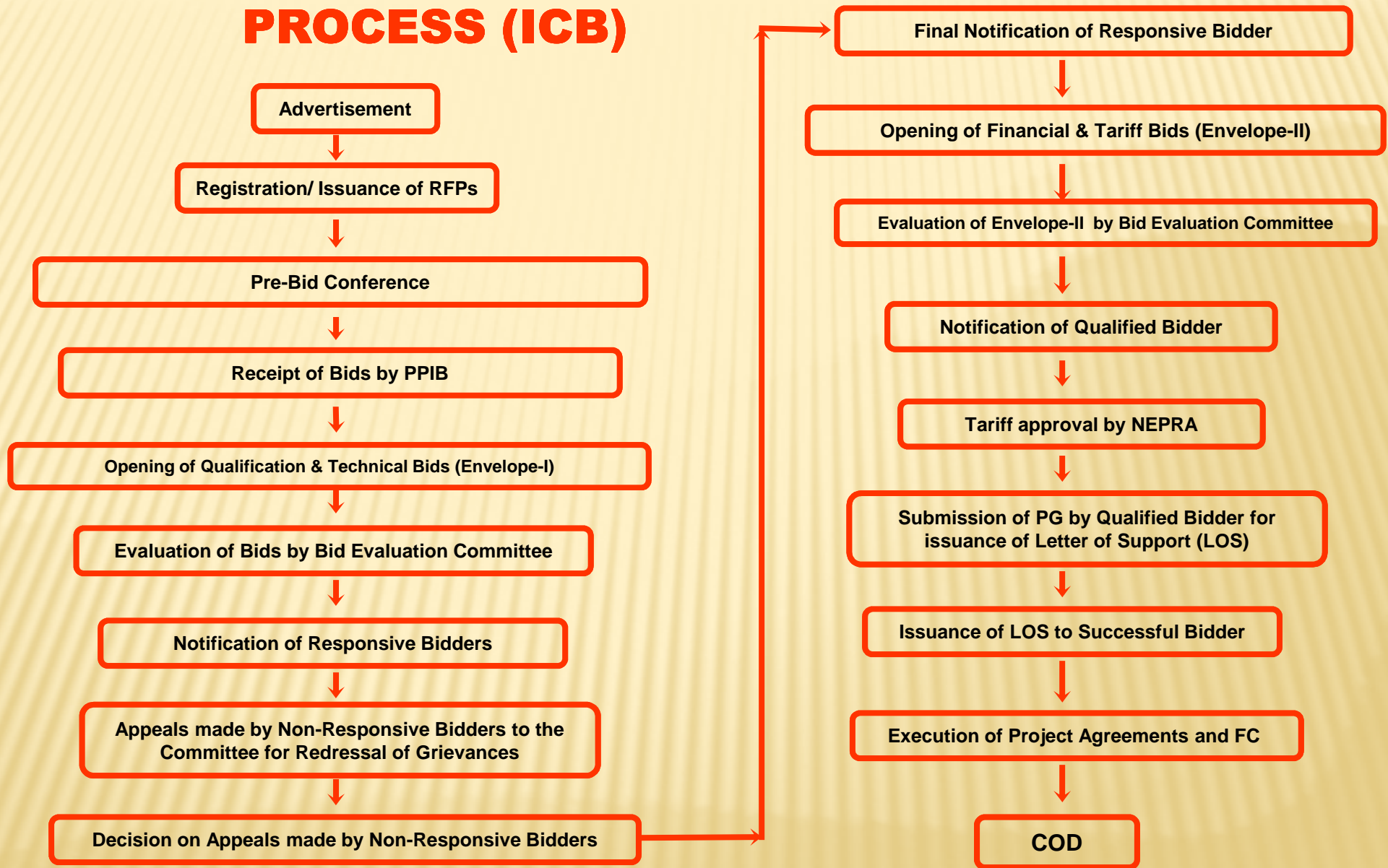
- **Only 5% Customs Duty on the import of plant & equipment not manufactured locally.**
- **Exemption from payment of income tax, sales tax, import licence fee etc.**

## **SECURITIES**

- **Protection against Political Force Majeure Risk.**
- **Protection against risks associated with change in law.**
- **Protection against hydrological risk.**
- **Protection against risk associated with convertibility/remitability of currency.**
- **Protection against currency devaluation & inflation.**

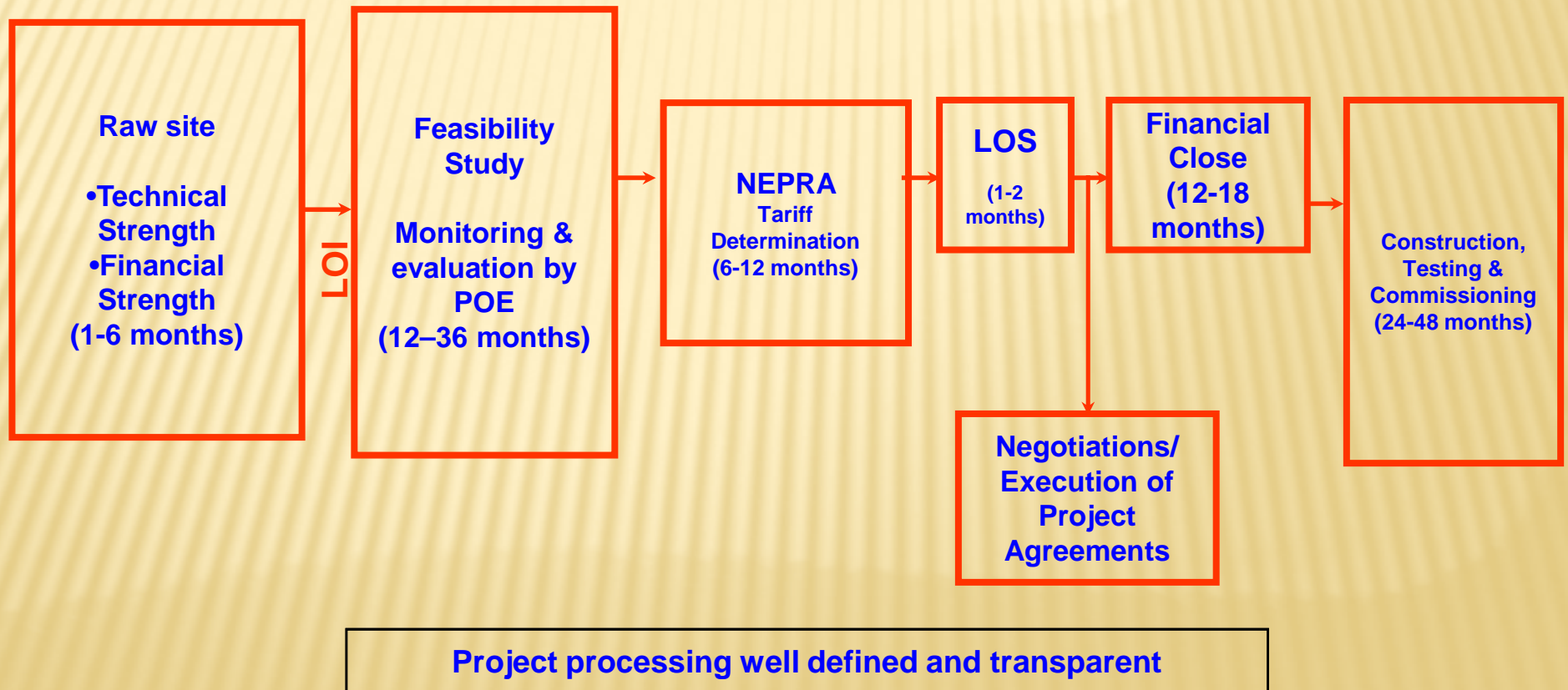


# POWER POLICY 2002 PROCESS (ICB)



**Project processing well defined and transparent**

# POWER POLICY 2002 PROCESS (UNSOLICITED PROJECTS)



# **PPIB'S EFFORTS IN DEVELOPMENT OF HYDRO POWER PROJECTS IN PRIVATE SECTOR**

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- **Compiled and published comprehensive brochure on Pakistan Hydel Power Potential**
- **Ranking (prioritization) of Hydel Power Projects (50-1000 MW)**
- **Award of top ranked projects through the solicitations under international competition**
- **Preparation of Standardized Terms of Reference for a Bankable Feasibility Study**
- **Completion of feasibility studies for seven projects in private sector**
- **Preparation of Standardized security documents i.e. IA, PPA and WUA for hydropower projects in coordination with all stakeholders**
- **Successful negotiation of Security documents for New Bong Hydropower project (1995 Hydel Policy Project)**
- **Prepared Mechanism for Tariff Determination for Hydel Projects**
- **Cascade Study for Swat River and Jhelum River Hydropower Projects**



## **PPIB's EFFORTS IN DEVELOPMENT OF COAL POWER PROJECTS IN PRIVATE SECTOR**

- **Compiled and published Brochure on Pakistan Coal Power Generation Potential.**
- **Published comprehensive Brochure on Pakistan Thar Coal Power Generation Potential.**
- **Provided full assistance to GOS in the initial establishment of the Thar Coal Energy Development Board (TCEB)**
- **Provided full support to TCEB on development of 1200 MW Integrated Coal Power Project by Sindh Energy Coal Mining Company.**
- **Prepared Standardized Security documents i.e. IA, PPA for Coal based Power Projects.**
- **Started initial work on development of RFP documents for 1200 – 2400 MW Imported Coal based Project near Karachi through ICB.**



## RESPONSE OF POWER POLICY 2002

	Number of Projects	Capacity (MW)	Investment (Million US\$)
▪ Oil Based	8	1,465	1,693
▪ Gas	9	1,858	2,098
▪ Coal	1	1,200	2,011
▪ Hydel	17	5,110	8,434
▪ Total	<u>35</u>	<u>9,633</u>	<u>14,236</u>

# PRIVATE POWER PROJECTS IN OPERATION

	Number of Projects	Capacity (MW)	Investment (Million US\$)
▪ Project prior to 1994 Power Policy	1	1,292	1,608
▪ Projects under 1994 Power Policy	14	3,048	3,479
▪ Projects privatized from public sector	1	1,638	1,583
▪ Projects under 2002 Power Policy	9	1,900	1,879
▪ Total	25	7,878	8,549

# IPPs IN OPERATION

## PUNJAB

Altern Energy Ltd, Attock	29	Jun 2001
Japan Power Generation, Lahore	120	Jan 2000
Kohinoor Energy Ltd., Lahore	131	Jun 1997
Southern Electric Co., Lahore	135	Jul 1999
Saba Power Company, Lahore	114	Dec 1999
AES Lalpir Ltd., Multan	362	Nov 1997
AES Pak Gen, Multan	365	Feb 1998
Fauji Kabirwala Co., Multan	157	Oct 1999
Rousch Power, Multan	412	Dec 1999
KAPCO, Muzaffargarh	1638	Jun 1996
Attock Gen, Rawalpindi	165	Mar 2009
Atlas Power Ltd., Sheikhpura	225	Nov 2009
Nishat Power Ltd., Lahore	200	Nov 2009
Saif Power Ltd., Sahiwal	229	Apr 2010
Orient Power Ltd., Balloki, Kasur	229	May 2010
Nishat Chunian Power Ltd., Lahore	200	Jul 2010
Sapphire Electric Co. Ltd., Muridke	225	Oct 2010
Liberty Power Tech Ltd.	200	Jan 2011

**Tot. Capacity: 7878 MW**

## BALUCHISTAN

Hub Power Project, Hub	1292	Mar 1997
Uch Power Ltd., Uch	586	Oct 2000
Habibullah Coastal, Quetta	140	Sep 1999

## SINDH

TNB Liberty Power Ltd., Dharki	235	Jun 2001
Tapal Energy Ltd., Karachi	126	Jun 1997
Gul Ahmed Energy Ltd., Karachi	136	Nov 1996
Engro Energy Ltd., Qadirpur, Sindh	227	Mar 2010



# INTERNATIONAL & LOCAL INTEREST IN PRIVATE POWER PROJECTS

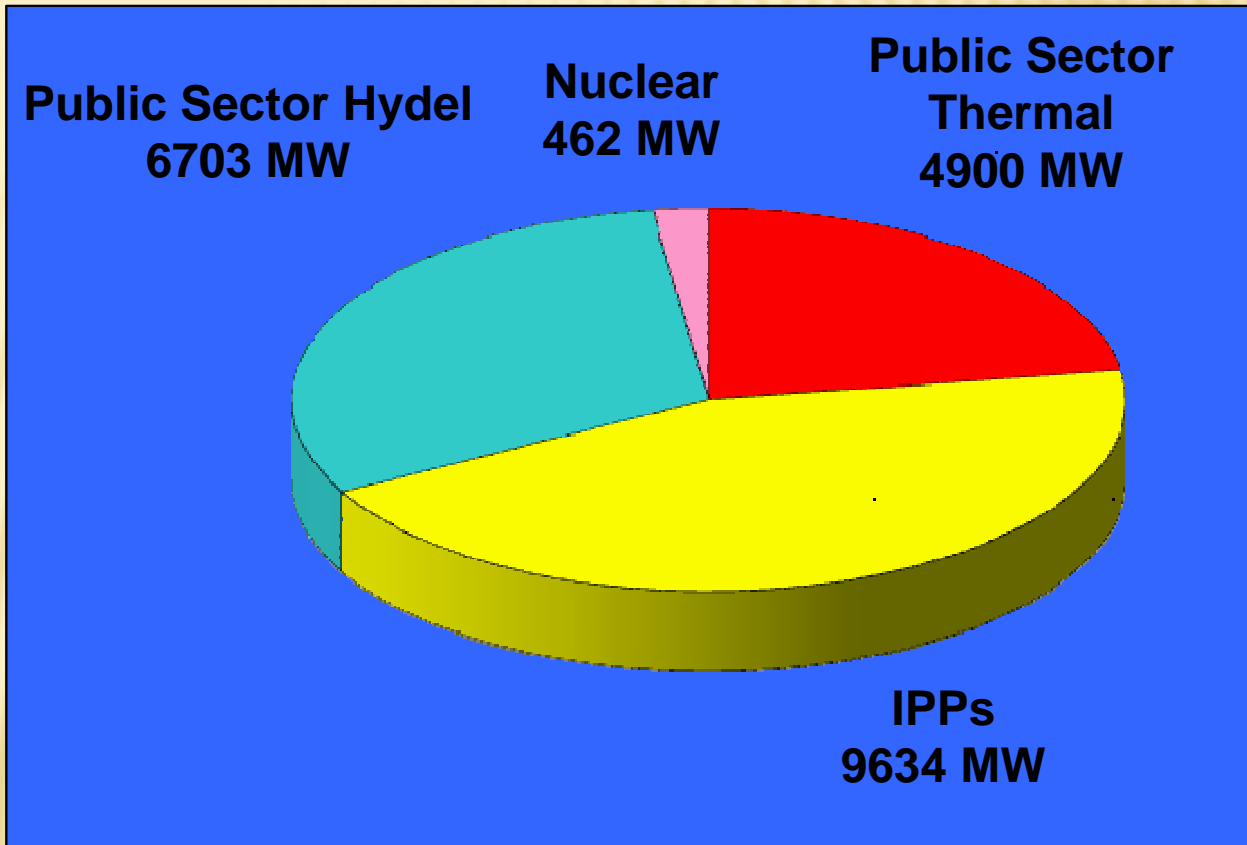
## IPPs IN OPERATION

SPONORS		LENDERS	
Foreign	Local	Foreign	Local
<ul style="list-style-type: none"> <li>▪ International Power (UK)</li> <li>▪ Congen Technology</li> <li>▪ El Paso (USA)</li> <li>▪ Tenaska (USA)</li> <li>▪ Mitsui (Japan)</li> <li>▪ Xenel (KSA)</li> <li>▪ TNB (Malaysia)</li> <li>▪ AES Corporation</li> <li>▪ AEB</li> <li>▪ IFC</li> <li>▪ Oman Oil</li> <li>▪ DEG Germany</li> <li>▪ GE Capital</li> </ul>	<ul style="list-style-type: none"> <li>▪ Nishat Group</li> <li>▪ Sapphire Textile Ltd.</li> <li>▪ Attock Refinery Ltd.</li> <li>▪ Engro Chemical</li> <li>▪ Shirazi Investment</li> <li>▪ Fauji Foundation</li> <li>▪ Saif Group</li> <li>▪ Liberty Mills</li> <li>▪ Descon Group</li> </ul>	<ul style="list-style-type: none"> <li>▪ IFC</li> <li>▪ World Bank</li> <li>▪ ADB</li> <li>▪ IDB</li> <li>▪ US Exim Bank</li> <li>▪ AIDEC</li> <li>▪ CDC (UK)</li> <li>▪ EDC (UK)</li> <li>▪ SACHE (Italy)</li> <li>▪ ANZ Banking Group (Australia)</li> <li>▪ ABN Amro Bank</li> <li>▪ Jexim (Japan)</li> <li>▪ Bank of Tokyo Mitsubishi</li> <li>▪ Toronto-Dominion Bank</li> <li>▪ DEG (Germany)</li> <li>▪ EMO (Netherlands)</li> <li>▪ PROPARCO (France)</li> <li>▪ SWEDFUND (Sweden)</li> </ul>	<ul style="list-style-type: none"> <li>▪ National Bank of Pakistan</li> <li>▪ Habib Bank Ltd.</li> <li>▪ United Bank Ltd.</li> <li>▪ Muslim Commercial Bank</li> <li>▪ Allied Bank Ltd.</li> <li>▪ Askari Bank Ltd.</li> <li>▪ Faysal Bank Ltd.</li> <li>▪ Meezan Bank Ltd.</li> <li>▪ Bank Al Habib</li> <li>▪ Habib Metropolitan Bank Ltd.</li> <li>▪ The Bank of Punjab</li> <li>▪ Soneri Bank Ltd.</li> <li>▪ NIB Bank Ltd.</li> <li>▪ Pak Oman Investment Co.</li> <li>▪ Pak China Investment Co.</li> <li>▪ Sauki Pak Industrial and Agricultural Investment Co.</li> </ul>



# PAKISTAN POWER SECTOR - TOTAL INSTALLED CAPACITY

	MW	%
<u>Public Sector</u>		
WAPDA/SHYDO		
/NA/AJK	11603	54
PAEC	462	2
Sub-Total	12065	56
<u>Private Sector</u>		
IPPs	7878	36
KESC	1756	8
Sub-Total	9634	44
G. Total	21699	100

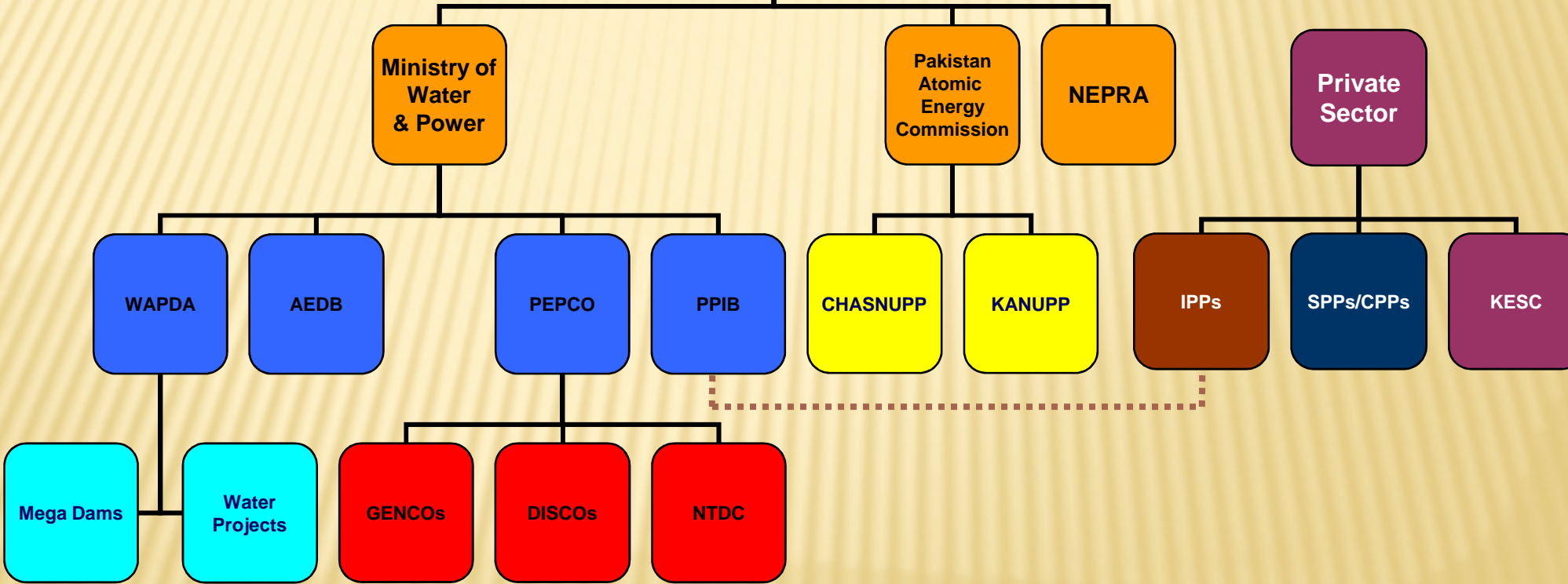


Private power generation now playing dominant role in power sector

# PAKISTAN POWER SECTOR – KEY PLAYERS



GOVERNMENT OF PAKISTAN



New institutions handling private power projects

# CONCLUSIONS

- Power demand growing at a very fast pace – 186,228 MW demand by year 2035.
- Public sector has limited funds and is being restructured.
- Private sector to come forward to meet fast growing demand:
  - Pakistan has successfully attracted investment worth billions of dollars from private sector for power generation.
  - World renowned power players are already operating in Pakistan.
  - One-Window facility provided at Federal level by PPIB for projects above 50 MW.
  - Federal Government guarantees the performance of the power purchaser and provinces.
  - Federal Government provides protection against Political Force Majeure and change in law.
  - Concessionary import duties and tax free regime for power plants developed under the policy.

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**I H A N K S**

The image features the word "I H A N K S" in a bold, blue, 3D sans-serif font. Each letter is positioned as if it were floating on a surface of water, with a clear reflection of the letter below it. Concentric ripples emanate from the base of each letter, suggesting a recent splash or drop. The background is a light yellow with a subtle, repeating pattern of thin, parallel lines. A thin, solid yellow horizontal line is located near the top of the image, above the text.