



BUSINESS OPPORTUNITIES FAIR



Asian Development Bank Headquarters, Manila, Philippines

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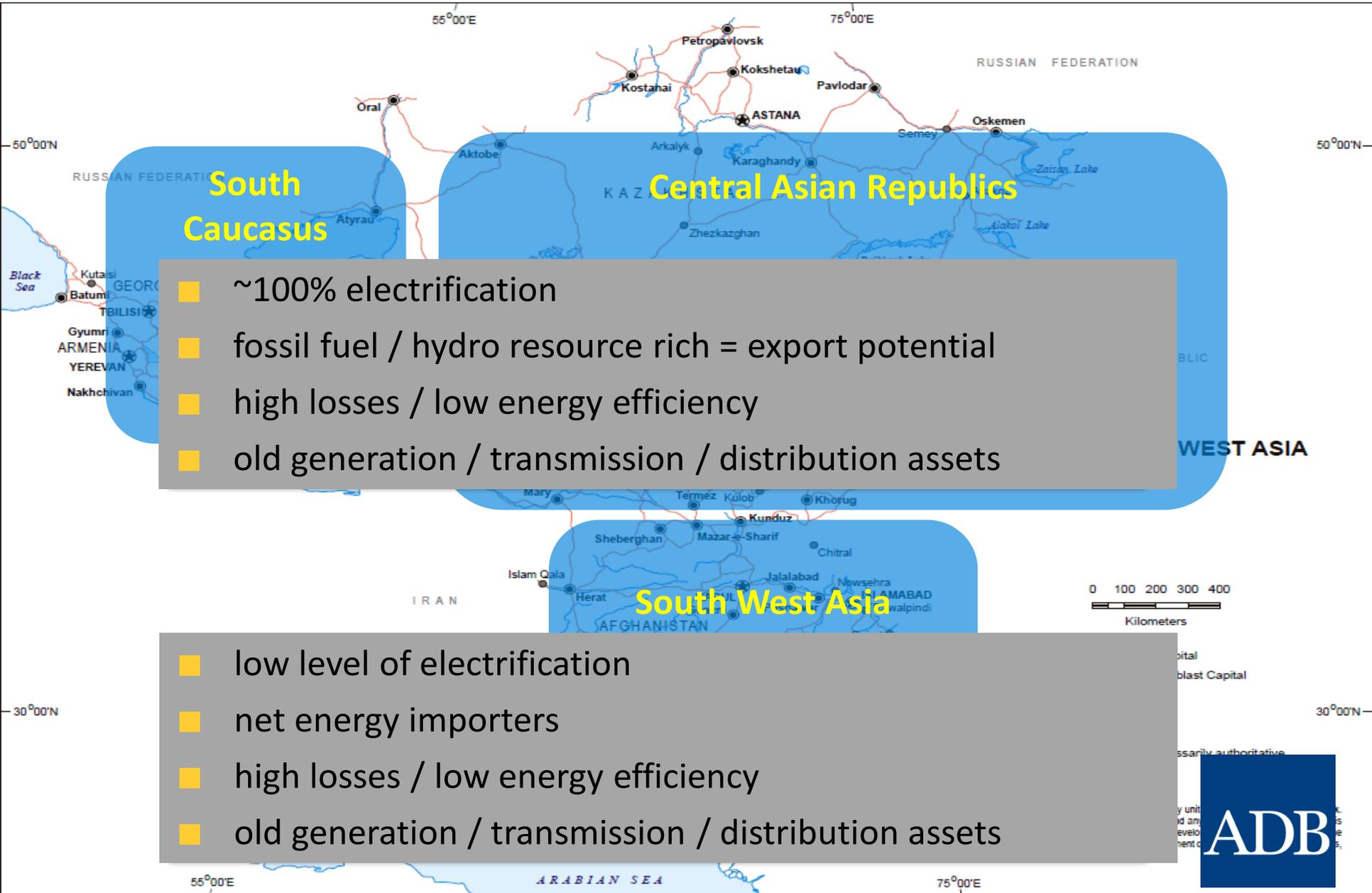


Central and West Asia Region

- Highly diverse group of 10 countries widely varying in resource endowment and development
- Crossroads between Asia and Europe characterized by diverse social and institutional structures
- Rich natural resources makes region strategically important to global economy
- Physical connectivity and trade facilitation critical for cost-effective market access
- **New Technologies – Better, Faster, Cheaper**



CWRD Countries



South Caucasus

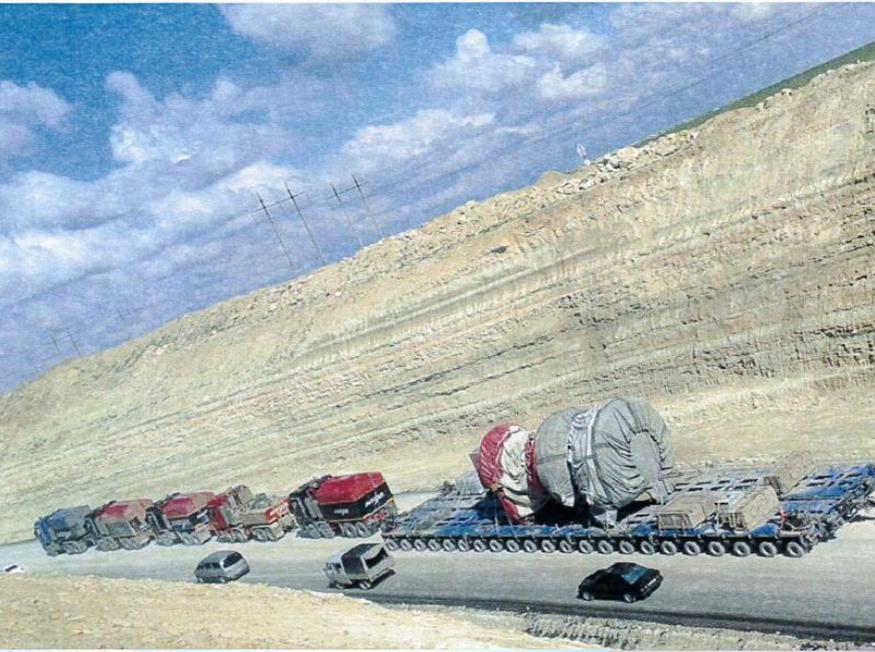
- ~100% electrification
- fossil fuel / hydro resource rich = export potential
- high losses / low energy efficiency
- old generation / transmission / distribution assets

Central Asian Republics

- low level of electrification
- net energy importers
- high losses / low energy efficiency
- old generation / transmission / distribution assets

South West Asia

Physical Challenges



Broken tower of AFG-UZB 220 kV line.jpg (2048 x 1365)

Technical Challenges



CWEN Business Lines

- Infrastructure Development
 - Power generation / transmission / distribution
 - Renewable energy (wind / solar / hydro + storage)
 - Energy efficiency / loss reduction (supply / demand)
 - Gas well rehabilitation / pipeline
 - Supervisory Control and Data Acquisition (SCADA)
 - Energy Management Systems (EMS)
 - Smart Metering
 - **Access to Energy Kits (micro-hydro, solar, battery)**
- Sector Reform / Modernization
 - Sector Restructuring-Unbundling and/or bundling
 - Financial Sustainability
- Regional Cooperation
 - Central Asia Regional Economic Cooperation (CAREC) – **new tech, energy efficiency**
 - Power Master Plan



Lending Pipeline, 2017-2018

Project Name	Country	Type	Amount (US\$ M)	Contact
2017				
MFF Energy Supply Improvement Investment Program (Solar) Tranche 3	Afghanistan	Grant	29.76 (cofinancing) 15.00	S. Tumiwa
MFF Energy Supply Improvement Investment Program (Transmission) Tranche 4	Afghanistan	Grant	(cofinancing) 60.00	A. Aleem
Sustainable Energy Reform Program Subprogram 3	Pakistan	Loan	300.0	L. Mtchedlishvili
MFF 2 Power Transmission Enhancement Investment Program Tranche 2	Pakistan	Loan	200.0	Z. Lei
Power Generation Efficiency Improvement Project (Combined Cycle Gas Turbine [CCGT])	Uzbekistan	Loan	450.0 (cofinancing) 450.0	S. D. Kim
2018				
MFF Power Distribution Enhancement Investment Program Tranche 2	Azerbaijan	Loan	250.0	A. Tareen
MFF Hydropower Development Investment Program Tranche 1 (300 MW Hydro)	Pakistan	Loan	350.0 (cofinancing) 180.0	A. Tareen
MFF 2 Second Power Distribution Enhancement Investment Program Tranche 2 (Smart Meter)	Pakistan	Loan	200.0 (cofinancing) 100.0	A. Tareen
Power Sector Development Project (Sector Loan)	Tajikistan	Grant	65.0 (cofinancing) 10.0	L. Mtchedlishvili
Power Sector Development Project (Transmission)	Turkmenistan	Loan	300.0 (cofinancing) 150.0	S. Hasnie
Second North West Region Power Transmission Line Project	Uzbekistan	Loan	200.0	J. Hwang

Note: Projects are indicative, pending ADB Management and Board approval, and approval timelines are subject to change.



Nonlending Pipeline, 2017-2018

Project Name	Country	Type	Amount (US\$ '000)	Contact
2017				
Power Transmission Rehabilitation Project, Phase 2	Armenia	PPTA	1,000	A. Tareen
Preparing Sustainable Power Transmission Development Project	Georgia	PPTA	1,000	M. Wolf
Uch Kurgan Hydropower Plant Modernization Project	Kyrgyz	PPTA	1,100	P. Koh
Update on Energy Sector Plan	Pakistan	PATA	500	A. Aleem
Developing Smart Grid Plan for Pakistan	Pakistan	PPTA	700	A. Tareen
Second North West Region Power Transmission Line Project	Uzbekistan	PPTA	1,000	J. Hwang
Energy Efficiency Improvement Project	Uzbekistan	PPTA	(cofinancing) 1,000	C. Tiangco
Second Power Generation Efficiency Project (CCGT)	Uzbekistan	PPTA	(cofinancing) 2,000	TBD
Promoting Private Investment in Clean Energy in Central Asia	Regional	CDTA	(cofinancing) 2,000	S. Tumiwa
Regional Cooperation on Renewable Energy Integration to the Grid	Regional	CDTA	(cofinancing) 2,000	A. Sakai
2018				
District Heating Project	Uzbekistan	PPTA	1,000	TBD

Note: Projects are indicative, pending ADB Management and Board approval, and approval timelines are subject to change.



Upcoming Major Contracts, Energy (1)

- Ongoing ADB Financing
 - Loans and Grants: \$7.0 billion, 39 projects
 - Technical Assistance: \$33 million, 26 projects

Afghanistan (2)				
Project	Description	Amount (\$Mn)	Contract Type	Projected Contract Award Date
G 0464/465-AFG	500 kV TL from Sheberghan to DA	150.00	ICB	Q2 2017
	220 kV TL from Sheberghan to Andkhoy	50.00	ICB	Q2 2017
	Prog Mgmt Consult Services for T1 & T2	20.00	Consultancy	Q2 2017
	Analytical Studies	18.00	Consultancy	Q2 2017
	Preparation of Future Projects	0.15	Consultancy	Q2 2017
	External Monitoring Agency (Safeguards)	0.08	Consultancy	Q4 2017
	External Auditor	0.05	Consultancy	Q1 2018
G 0521-AFG	220 kV Transm Line fr Doshi to Bamyan	75.00	ICB	Q4 2018
G 0522-AFG	220/20 kV substation in Bamyan	20.00	ICB	Q2 2018
G 0523-AFG	20,000 connections distribution network in Bamyan	25.00	ICB	Q4 2018
	HVDC B2B Convertor Station at DA	240.00	ICB	Q4 2018
Azerbaijan (1)				
L3407-AZE Distribution	Audit	0.13	Consultancy	Advertised in CSRN until 7 Apr17
	35/10 kV substations(Markazi/Shimal&Garb)	16.20	Turnkey	Q2 2017
	Supply of 108,409 meters for 110 kV/35 kV/10 kV distribution lines and 0.4 kV self-supporting insulated wires	8.67	Goods	Q3 2017
Kyrgyz (4)				
L2869/G0294-KGZ	KESC Settlement Center	3.00	Consultancy	Q4 2017
	Toktogul HEPP Switchyard Rehabilitation	5.00	Turnkey	Q1 2018
L3212/G0419/L8306-KGZ	Gate and hydraulic steel structure rehabilitation	12.14	Civil work	Q2 2017



Upcoming Major Contracts, Energy (2)

Project	Description	Amount (\$Mn)	Contract Type	Projected Contract Award Date
L3212/G0419 /L8306-KGZ	Toktogul powerhouse rehabilitation	126.82	Turnkey	Q2 2017
	EPP business process improvement	3.50	Turnkey	Q2 2017
	Asset inventory and revaluation	2.00	Consultancy	Q4 2017
	EPP business process improvt consultant	1.50	Consultancy	Q4 2017
	Power Sector Master Plan	1.75	Consultancy	Q4 2017
	External Audit	0.40	Consultancy	Q2 2017
L3422/G0494 -KGZ	Toktogul turbine-generator units replacement (including associated auxiliary equipment)	97.20	Turnkey	Q4 2017
	Civil structure refurbishment	7.50	Turnkey	Q4 2018
	Dam Monitoring system	1.70	Goods	Q1 2019
	Project Management Consultant	3.70	Consultancy	Q4 2017
	Bus. process assessment & mgt modnztn of Electric Power Plants (EPP)	5.00	Consultancy	Q1 2019
	Corporate financial audit	1.20	Consultancy	Q4 2018
	Public information campaign (tariff)	0.40	Consultancy	Q4 2018
Pakistan (9)				
L2553-PAK	Design, supply and install of CFL lamp waste management facility	2.00	Turnkey	
	Supply of operations vehicles	0.20	Goods	Q2 2018
L2972-PAK	Under Ground Copper Conductor Cable 1000mm ² between 220kV GIS Shalamar Grid Station – 132kV Shalamar-II Grid Station	2.00	Turnkey	Q2 2017



Upcoming Major Contracts, Energy (3)

Project	Description	Amount (\$Mn)	Contract Type	Projected Contract Award Date
L3090/3091-PAK	Soil Remediation	2.90	Works	Q4 2017
Jamshoro	Site remediation, L1 to L3	4.50	Works	Q2 2017
Power Plant	Site remediation, L4	0.85	Works	Q4 2017
	Site remediation (lot 5 waste water management treatment)	0.30	Turnkey	Q4 2017
	Construction of 1 Supercritical coal-fired unit with 5-year O&M including environmental remediation and FGD for existing unites (with site preparation and O&M)	840.00	Turnkey	Q4 2017
L3092-PAK	Capacity building	10.00	Consultancy	Q1 2018
L3096-PAK	Procurement of Material Grid for Power Transformers and Grid Station Equipment	0.20	Goods	Q3 2017
L3203-PAK	Grid Station Hardware	1.12	Goods	Q4 2017
	Control & Relay Panels	4.53	Goods	Q3 2017
	Gantries	0.88	Goods	Q3 2017
	220 & 132 kV Surge Arrestors	0.21	Goods	Q3 2017
	Earthing Material	0.11	Goods	Q3 2017
	Battery Banks & Battery Chargers	0.29	Goods	Q4 2017
	11 kV Transformers & Generators	0.16	Goods	Q1 2018
	220 kV & 132 kV Post Insulators	0.21	Goods	Q1 2018
	220 / 132 kV, 250 MVA Auto Transformers	8.99	Goods	Q3 2017
	500 & 220 kV Surge Arrestors	0.19	Goods	Q4 2017
	Control & Relay Panels	0.81	Goods	Q4 2017
	Gantries	0.98	Goods	Q4 2017
	Substation Grounding system	0.06	Goods	Q4 2017
	Shunt Reactors	5.65	Goods	Q3 2017
	Grid Station Hardware	1.02	Goods	Q3 2017
	Aluminum Conductor, Alum. Pipe Copper	0.44	Goods	Q3 2017
500 & 200 kV Post Insulators	0.22	Goods	Q3 2017	
Chakdara and DI Khan G/S and assoc T/L	1.14	Goods	Q4 2017	



Upcoming Major Contracts, Energy (4)

Project	Description	Amount (\$Mn)	Contract Type	Projected Contract Award Date
L3203-PAK	Spacer Dampers for Rail Conductor, Stock Bridge Dampers for OPGW	0.60	Goods	Q1 2018
	Nowshera and Lalian G/S and assoc T/L	1.19	Works	Q4 2017
	Guddu Muzaffargargh Multan DG Khan G/S	1.25	Works	Q4 2017
	Neelum J. Rewat Nokhar G/S & assoc T/L	0.80	Works	Q4 2017
L3328/3329-PAK	Advanced metering systems, IESCO	120.80	Turnkey	Q4 2017
	Advanced metering systems, LESCO	201.20	Turnkey	Q1 2018
	Project implementation consultant, IESCO	3.25	Consultancy	Q3 2017
	Project implementation consultant, LESCO	4.20	Consultancy	Q3 2017
	Project preparation consultant, T2	0.50	Consultancy	Q3 2017
	Project implementation consultant/s, T2	3.00	Consultancy	Q2 2018
	Project preparation consultant, T3	0.50	Consultancy	Q2 2018
	Project implementation consultant/s, T3	3.00	Consultancy	Q1 2019
	Project preparation consultant, T4	0.50	Consultancy	Q1 2019
	Project implementation consultant/s, T4	4.50	Consultancy	Q4 2019
L3419/3420-PAK	Extns at Lahore South & Sahiwal Substations	15.04	EPC	Q2 2018
	Extension & Augmentation works at 500/200 kV Rewat substation	4.08	EPC	Q2 2018
	Supply of 500 kV shunt reactors in Dadu SS	1.28	Goods	Q1 2018
	Protection relays, fault recorders, fault locators in south area	2.92	EPC	Q3 2018
	500 kV & 220 kV line bays for Faisalabad West & Lalian SS	1.94	EPC	Q4 2017
	500 & 200 kV D/C TL at Multan-Gatti & Faisalabad West to Lalian	21.69	EPC	Q1 2018
	CW Installation for TL - 500 kV Guddu-Muzaffargargh S/C T/L (261 km)	17.92	Works	Q2 2017
	CW Installation for TL - 500 kV Guddu-Muzaffargargh S/C T/L (261 km)	10.10	Works	Q1 2018
	IT equipment and systems for project mgmt	0.08	Goods	Q3 2018



Upcoming Major Contracts, Energy (5)

Project	Description	Amount (\$Mn)	Contract Type	Projected Contract Award Date
Uzbekistan (2)				
L3141-UZB	Risk profile assessment consultant	0.20	Consultancy	Q4 2017
L3285-UZB	Substation equipment Lots1-5	39.50	Goods	Q2 2017
Technical Assistance Projects				
TA No.	Name of Project	Amount (\$ thousand)	Contract Type	Expected Advertisement Period
TA 9168-REG	Access To Electricity W/ New Off-grid Solar Tech In Central Asia	0.40	Consultancy-Firm	March 2017
TA 9299-REG	Leapfrogging Of Clean Tech In CAREC Countries Thru Market Transformation	0.50	Consultancy – Firm	Apr – May 2017
TA 9168-REG/ TA 9299-REG	Individual technical experts on: (i) battery, (ii) solar, (iii) lighting, (iv) energy efficiency, (v) electric cars, (vi) off-grid systems, (vii) micro-payments	0.70	Consultancy - Individual	March – Aug 2017

Technology Leapfrogging...



Project Number: 49413-001
Regional Capacity Development Technical Assistance (R-CDTA)
27 September 2016

Leapfrogging of Clean Technology in CAREC Countries through Market Transformation



Opportunities for new technologies in CWRD' energy sector

No.	Potential New Technology Projects	Central and West Asia
	A. Power Generation Technology	
1	• Geothermal power generation	
2	• Power form biomass and municipal waste	✓
3	• Off-shore and compact wind power (Air-dolphin)	
4	• Higher efficiency solar power: (on-grid and rooftop)	✓
5	• Floating and modular systems for remote areas	✓
6	• Modernization of existing power plants	✓
	B. Power distribution systems	
7	• Remote mini and micro-grid (solar and hybrid)	✓
8	• Off-grid DC solar kit (with efficient DC appliances)	✓
	C. Energy Conservation and Energy Efficiency	
9	• Demand responses: improved sensors, smart meters	✓
10	• Super efficient lighting, appliances and HVAC	✓
11	• Robotics and automation (small industries)	✓
	D. Storage	
12	• On-grid batteries for system optimum system design	✓
13	• Batteries for better integration of wind and solar	✓
14	• Hydrogen as seasonal storage and fuel cell vehicles	✓
	B. Electric Vehicles and	
15	• Government fleet and public transport	✓
16	• Public fleet: buses, trucks and tricycles or auto-rickshaws	✓
17	• Electric boats and ferries with on the bank solar charging	

Opportunities

A. Direct with CWEN

1. Consulting services for project preparatory and advisory technical assistance
 - Firms
 - Individuals
2. Consulting services for project implementation
 - Usually firms
3. Individual consultants, for example, for:
 - Diagnostic studies
 - Expert Panel/ Advisor on reform
 - Procurement assistance



Opportunities

B. Direct with CWEN Countries

1. Design
2. Civil works
3. Equipment supply
4. Installation
5. Supervision consultant



Issues for your consideration

1. Unique, challenging countries
 - Experts with regional experience (incl. **language**)
 - Keep up with developments in the region
2. Weak planning, implementing capacity
 - Project preparation at times start from scratch
 - Comprehensive support required
 - Need to be flexible
3. Diverse needs and dynamic changes
 - Keep in touch with project officers
 - Check CSRN



Country and Thematic Focal –Who are we?

Country Focal	
Afghanistan	Asad Aleem
Armenia	Adnan Tareen
Azerbaijan	Adnan Tareen
Georgia	Megan Wolf
Kazakhstan	Levan Mtchedlishvili
Kyrgyz Republic	Pei Ling Koh
Pakistan	Adnan Tareen
Tajikistan	Levan Mtchedlishvili
Turkmenistan	Sohail Hasnie
Uzbekistan	Seung Duck Kim (Alternate)

Thematic Focal	
Transmission	Atsumasa Sakai
Distribution	Adnan Tareen
Clean Technology/Off-Grid	Sohail Hasnie
Renewable Energy/Energy Efficiency	Cindy Tiangco
Thermal Generation	Seung Duck Kim
Hydro Generation	TBD



Looking for New Ideas New Solution to be Better, Faster, Cheaper



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