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South Asia Cross-Border Electricity Trade and role of SARI/E

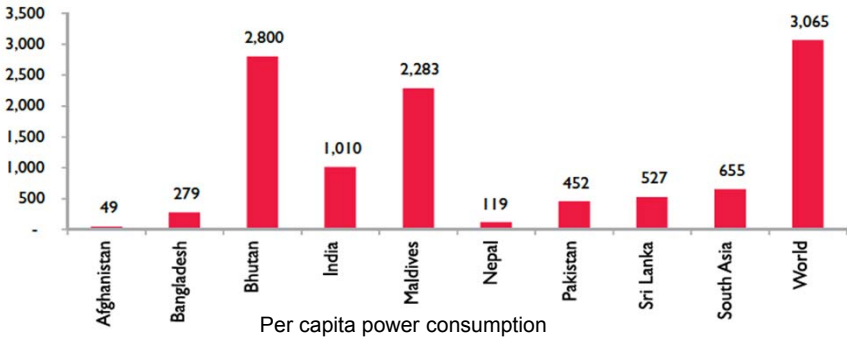
Monali Zeya Hazra, Regional Energy Manager, USAID/India



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Context: Challenges and Barriers

- South Asia (SA) home to 23% of global population and half the world's poor. Growth impaired by lack of electricity.
- Regionally integrated electricity grid can overcome the shortages and make SA energy secure



Country/Region	Per capita power consumption (kWh)
Afghanistan	49
Bangladesh	279
Bhutan	2,800
India	1,010
Maldives	2,283
Nepal	119
Pakistan	452
Sri Lanka	527
South Asia	655
World	3,065


Per capita power consumption

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Context: Complementarities in resource


- Govt. of India has set aggressive RE targets: 175 GW RE by 2022
 - National Solar Mission – 100 GW (40 GW solar rooftop)
 - New National Wind Mission – 60 GW
- By 2022 targets, the share of RE in generation could reach 20% exacerbating the challenges of integrating it within the Indian grid.
- South Asia (Bhutan and Nepal) has large hydro-power potential (349 GW) that could potentially help to balance the RE in India (in case of integrated grid)
- South Asia also complement each other in terms of load (peak time), time of usage (difference in the weekends), etc.

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South Asia Regional Initiative for Energy (SARI/E): Background


- Started in 2000
- Focused on promoting energy security through:
 - Cross border energy trade
 - Energy Markets formulation
 - Clean Energy Access



8 SAARC Countries

Four Phases of the Program

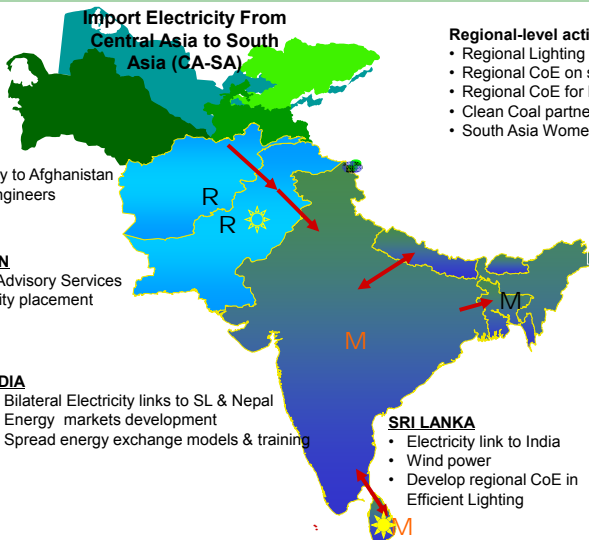
Phase I (2000-03) Building Trust and Confidence	Phase II (2004-06) and III (2007-12) Investigations	Phase IV (2012-17) Implementation
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SARI/E: Past Regional Activities

Import Electricity From Central Asia to South Asia (CA-SA)



Regional-level activities include:

- Regional Lighting Center of Excellence (CoE)
- Regional CoE on small hydro-power
- Regional CoE for Rural Energy
- Clean Coal partnership
- South Asia Women In Energy

AFGHANISTAN

- Import Electricity to Afghanistan
- Train Afghan Engineers
- CASA

PAKISTAN

- CASA Advisory Services
- US Utility placement

INDIA

- Bilateral Electricity links to SL & Nepal
- Energy markets development
- Spread energy exchange models & training

SRI LANKA

- Electricity link to India
- Wind power
- Develop regional CoE in Efficient Lighting

NEPAL


- Small hydro fund
- Electricity link to India
- Develop regional CoE in small hydro-power

BANGLADESH

- Electricity link to India
- Develop regional CoE in rural power distribution

Legend:


- M = replicating models
- ☀ = wind & solar work
- = cross-border trade
- R = rural electrification




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SARI/EI: Current Phase Overview


- Launched in October 2012.
- Five year Cooperative Agreement with IRADe, an Indian research think tank.
- Supported by USEA (through a separate mechanism).
- Goal: To support regional grid integration through three key components.
- SARI/EI facilitates in setting rules for cross-border electricity trade (CBET) through three Task Forces



Advance transmission interconnections

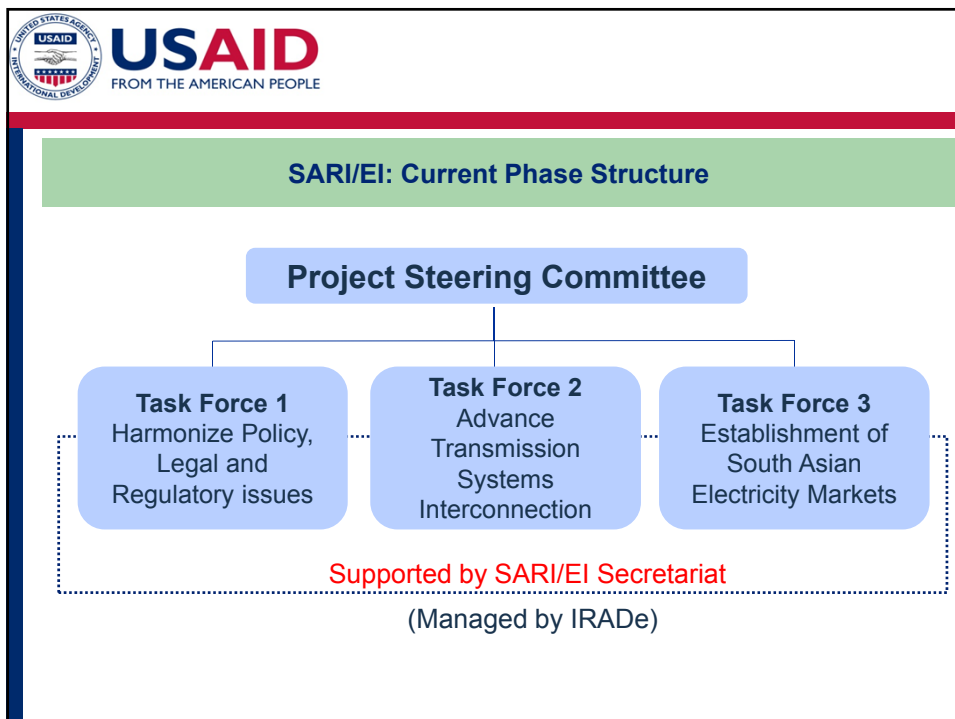
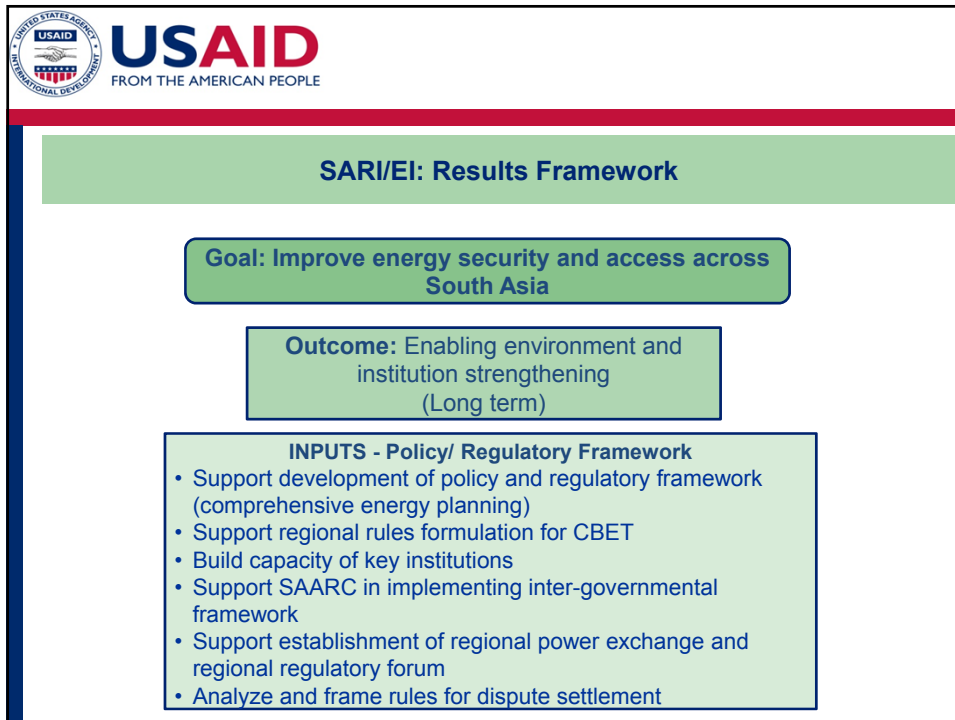



Coordinate policy, legal and regulatory issues



Establish regional electricity markets




Cross Border Electricity Trade






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SARI/EI: Focused Studies


<p>Task Force 1</p> <ul style="list-style-type: none"> • Harmonization of electricity laws, regulations, policies and legal structure • Investor friendly policies/guidelines for SA power sector 		<p>Coordinated policies and legislations with investor guidelines for enabling environment for CBET</p>
<p>Task Force 2</p> <ul style="list-style-type: none"> • Electricity trading potential assessment in SA • Harmonization of grid codes, operating procedures and standards for CBET 		<p>Uniform grid codes for transmission inter-connections that support transmission master plans</p>
<p>Task Force 3</p> <ul style="list-style-type: none"> • Assessment of commercial terms and conditions for CBET & model of Power Exchange in SA • Market Rules and Pilot Market design 		<p>Capacity to operate regional Energy Market and rules/commercial terms for its operations</p>




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SARI/EI: Regional Rule Making

- Developed **Regional Regulatory Guidelines (RRG)** and roadmap for each South Asian country for coordination of policies/legislation.
- Engaging regional institutions such as SAARC and SAFIR for RRG's adoption and institutionalizing a regional forum of regulators (SAFER)
- Developed specific recommendations for changes in policies/regulations for each SA country




South Asia Forum of Electricity Regulators (SAFER)





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SARI/EI: Engaging Regional and Other Agencies



SECOND MEETING OF SAARC ENERGY REGULATORS
08TH FEBRUARY 2016
COMBODIA

- SARI/EI team engaging with SAARC secretariat and SAARC Energy Centre (SEC)
- SARI/EI to provide technical assistance to SAARC forum of energy regulators
- Partnering with SEC on building capacity and awareness. Organizing conference and training workshops including one in August 2016 in Pakistan.
- Collaborating with ADB and World Bank to ensure complementarities and avoid duplications.



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Increased Sub-Regional Focus – Nepal, Bangladesh and Bhutan



Govt. of Nepal signed PDA with two Indian developers for developing export oriented power plant

Nepal-India sign Power-Trade Agreement focused on regional power trade.

India-Bangladesh increasing transmission capacity to 1000 MW; Bangladesh also plans to import 100 MW

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SARI/EI: Support to Nepal to Advance India-Nepal Power Trade

Two Design Missions to Nepal to scope out activities to support under SARI/EI	Key Findings: Need to build institutional capacities on power trading, power finance and regulatory functions	Skills Development Program: Hands on training on power trading and techno-economic appraisal of large hydro power plants	Transactional Advisory Support to Investment Board of Nepal
Technical Assistance to Nepal Electricity Authority with long-term expert	Analytical Study to quantify macro-economic benefits of cross-border electricity trade between India-Nepal		


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SARI/EI: Proposed support to Bangladesh on power exchange

A Design Mission in March 2016 to Bangladesh to scope out activities to support under SARI/EI	Key Findings: Need support to develop regulatory guidelines and capacities on short-term power market and power trading,	Skills Development Program: Hands on training on short-term day ahead market - power exchange (under development)	Sponsor Bangladesh senior officials for study tour to advanced power market.
Technical Assistance to BERC on development of regulatory guidelines for in-country power trading	Analytical Study to quantify macro-economic benefits of cross-border electricity trade between India-Bangladesh		

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SARI/EI: TRACK 2 DIPLOMACY

- SARI/EI is engaging civil society in advocating the role of cross-border electricity trade in economic development.
- Establishing a Think Tank Forum (TTF) with leading civil society organizations in each SA country.
- The TTF will work with the policy makers, media and civil society to promote CBET and create hard evidences on its role in improving economic role.
- Small grants will be provided to support the partner institutes/think tanks in activities such as policy briefs, workshops, impact assessments, etc.

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SARI/EI: Activities Accomplished

- Three Study Tours on power pools
- One Executive Exchange Program on bilateral power market
- Customized training on power trading and due-diligence of large hydro-power projects.

Three International Conferences:

- Inaugural Conference
- South Asia Investor Workshop
- Regulators Workshop

- Four Background Papers/Publications
- Two regional workshops



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*Thank
You!*

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