USAID
FROM THE AMERICAN PEOPLE

SARI/EI

IRADe Integrated Research and Action for Development

South Asia Regional Initiative for Energy Integration (SARI/EI)

February 2014

South Asia Regional Initiative for Energy Integration (SARI/EI)

Over the last two decades, South Asia (SA) has been one of the fastest growing regions in the world, with an average annual GDP growth rate of six per cent. The region has a variety of energy resources with major potential for hydro power. This potential offers a huge scope for tapping clean energy and meeting the region's energy needs. Yet, despite the potential and the macroeconomic growth in this region, the power sector has not been able to keep pace with the demand. The region continues to experience chronic problems of shortage of electricity supply and its quality. Cross-border transmission interconnections and trading transactions are taking place to a limited extent. The systematic deployment of this potential, along with an investment in infrastructure build-up and a market-based trade system, can help harness untapped sources of clean energy. This would benefit a vast population.

There is a need *to plug the increasing gap between demand and supply through the development of additional resources*

Resources and Energy Scenario in the South Asia Region

Large untapped hydro power resources exist in Bhutan, India, Nepal, and Pakistan. More than 100GW of hydro potential in Bhutan and Nepal are waiting to be tapped out of the combined hydro potential of the region, which is approximately 350GW. There are healthy reserves of wind power resources in India, Sri Lanka, and other parts of the region. There is a need to plug the increasing gap between demand and supply through the development of additional resources. This is possible by the optimum and efficient utilization of available energy resources, creating a level playing field, assuring returns to investors, and providing affordable electricity to consumers, thereby making the region energy secured and self-sustainable.

Against this backdrop, the US Agency for International Development (USAID) initiated the South Asia Regional Initiative for Energy (SARI/E) program covering eight countries of the region: Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka. Started in 2000, the program has consistently strived for the promotion of energy security in the South Asian nations by working in three focus areas:

- cross-border electricity trade;
- energy market formation; and
- regional clean energy development.

The SARI/E program of USAID has now entered its fourth and final phase, South Asia Regional Initiative/ Energy Integration (SARI/EI), which aims to advance regional energy integration as well as increase cross-border electricity trade.

SARI/E Phases

Phase I (2001–2004) and Phase II (2004–2007)

Phase I focused on capacity building and information exchange. Some of its highlights are:

- Reached 1,500 participants on clean energy trade/efficiency, rural power supply, and regulatory issues;
- Offered opportunities for exchanging information and building skills in analysis/negotiation with a view to enhance the understanding of the energy sector and create a pool of aware stakeholders;
- Planned pre-feasibility studies to identify opportunities for private sector investments in energy infrastructure; and
- Focused on the socio-economic aspects of regional energy cooperation, reaching stakeholders who can act as change agents—the media, public leaders, scholars, industrial energy consumers, and trade unions.

In Phase II, SARI/E laid the foundation for increased clean energy access and improved market structures to facilitate regional investment in energy trade. It focused on improving policy, legal, and regulatory framework for cross-border energy trade. It identified, assessed, and promoted four of the five cross-border energy trade and investment projects between India and its neighboring countries. The program also supported bilateral energy projects in Afghanistan to encourage power imports from Central Asia to Afghanistan and the long-term transit of energy to South Asia. It spread awareness of best practices to promote environmentally sound and sustainable energy systems.

Cross-border *energy trade has been significantly advanced by a series of technical assistance activities for the development of transmission infrastructure*

Phase III (2007–2012)

This phase has enhanced regional energy security through mutual cooperation. It was marked by several tangible accomplishments. Cross-border energy trade has been significantly advanced by a series of technical assistance activities for the development of transmission infrastructure. The regional energy market formation was supported through programs that helped energy planners and policy-makers in understanding the key energy market trends, latest modeling techniques, and ways to hedge risk. The details of activities on cross-border electricity trade, major cross-border infrastructure, and key energy market formation activities are explained in the figure below.

Phase III: SARI/Energy's Major Cross-Border Infrastructure and Key Energy Market Formation Activities

= INFRASTRUCTURE ACTIVITIES
= MARKET FORMATION ACTIVITIES

REGIONAL
- SATURN Network Formation and Induction of POWERGRID as SATURN Member
- Clean Coal Partnership

B BILATERAL TRADE
M MULTILATERAL TRADE

AFGHANISTAN
- CASA 1000 Advisory Services
- GEMT Programs, Wind Energy Support

PAKISTAN
- CASA 1000 Advisory Services
- GEMT Programs, Wind Energy Support

INDIA
- Bilateral Electricity Links to Bangladesh, Sri Lanka, and Nepal
- Spread Energy Exchange Models and Training
- GEMT Programs, Power Markets Training, Wind Energy Exchange with MDRE and CWET

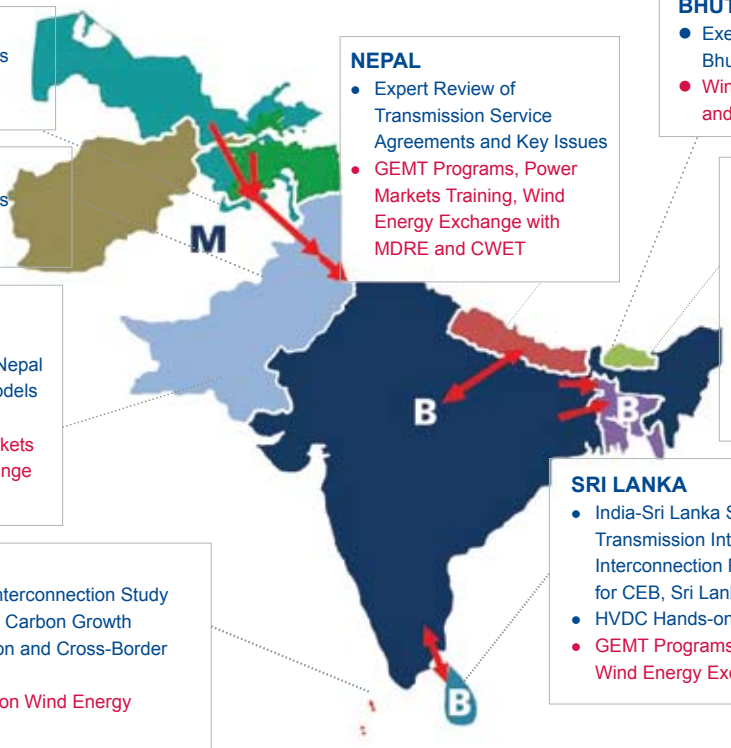
MALDIVES
- Maldives Submarine Cable Interconnection Study
- Workshop on Advancing Low Carbon Growth Through Regional Cooperation and Cross-Border Energy Trade
- GEMT Programs, Workshop on Wind Energy Exchange with MDRE

NEPAL
- Expert Review of Transmission Service Agreements and Key Issues
- GEMT Programs, Power Markets Training, Wind Energy Exchange with MDRE and CWET

BHUTAN
- Executive Exchange to Bhutan Power Corp.
- Wind Energy Exchange and MDRE

BANGLADESH
- HVDC Training at PGCIL Sub-station
- Senior Level Exchange Program to Indian Energy Exchange, PTC, and CERC
- GEMT Programs, Indian Power Markets Training, Wind Energy Exchange, and MDRE

SRI LANKA
- India-Sri Lanka Submarine Power Transmission Interconnection Interconnection Reliability and Stability Study for CEB, Sri Lanka Wind Power Development
- HVDC Hands-on Training at PGCIL Sub-station
- GEMT Programs, Power Markets Training, Wind Energy Exchange with MDRE and CWET



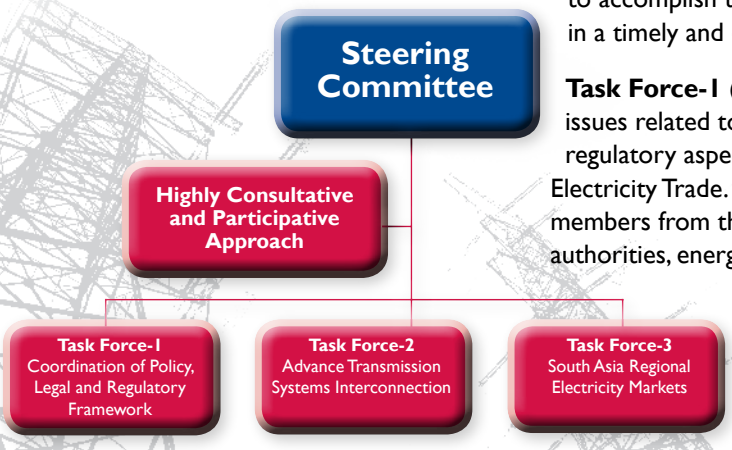
SARI/EI: Phase IV (2012 onwards)

Integrated Research and Action for Development (IRADe) is the implementing partner for the fourth phase of the SARI/EI program through a cooperative agreement with USAID. IRADe acts both as the secretariat and technical input provider, and will work towards consensus building among member countries for the program objectives. Some of the key enablers would be coordinating policy, legal, regulatory issues, and physical interconnections.

The program entered its fourth phase in October 2012. Here, the project goal is to advance regional energy integration, thus increasing cross-border electricity trade. The project will focus on three components:

- Coordination of Policy, Legal and Regulatory Framework;
- Advancement of Transmission Systems Interconnection; and
- South Asia Regional Electricity Markets

The program will catalyze enabling systemic conditions for regional integration through three Task Forces (TFs). The representatives of regional stakeholders such as national governments, national power transmission utilities, national electricity regulatory commissions, power market institutions, and other in-country organizations will be the members of the TFs. These TFs will showcase examples of the benefits of regional cooperation, leverage counterpart funding and resources, provide unbiased support for regional initiatives, present a platform to discuss cross-border electricity trade, and promote infrastructure interconnections. TFs will also help create markets and mechanisms for transparent trade practices, clean energy access, efficiency, conservation, and renewable sources.



The Project Steering Committee (PSC) is the program's apex body and provides the overall strategic direction. The PSC comprises senior representation from the governments of SARI/EI countries, independent energy experts/diplomats, representatives from regional institutions such as the SAARC Energy Center, and multilateral donors such as the Asian Development Bank. The PSC provides direction and guidance for the creation of a South Asia Regional Electricity Market, strategic 'buy-in' and successful implementation in favour of the SARI/EI program. The Steering Committee will provide the vision, credibility, and high profile support for the program. The members will also offer technical, political, regulatory, and legal guidance and advice to accomplish the vision of the program in a timely and efficient manner.

Task Force-1 (TF-1) will deal with issues related to the policy, legal, and regulatory aspects of Cross Border Electricity Trade. It comprises nominated members from the country, regulatory authorities, energy/power ministries, and other policy-making bodies. It will work on the harmonization of policies and regulations, framework for licensing, open access, tariff and trade negotiations, dispute resolution mechanism, and so on, thus creating conditions for a sustainable market for investment and the implementation of cross-border electricity trade projects.

Task Force-2 (TF-2) will focus on the Advancement of Transmission Systems Interconnection. It comprises nominated members from the country, transmission utilities, and the planning authorities' system operators. TF – 2 will identify import-export points for technically and economically feasible cross-border interconnections over the next 20 to 30 years. It will also formulate the required coordination procedures for stable regional/national grid operations.

Task Force-3 (TF-3) will focus on electricity trading/exchanges and markets. It will comprise members from the utilities, energy trading companies, power exchanges, and so on. TF – 3 will explore market-driven, commercial practices in the trading of power, including long-term contractual instruments and medium/short-term trading exchanges. It covers matters relating to agreements on guarantee mechanisms, tariffs, wheeling changes, attribution of transmission losses, and transmission pricing.

The Task Forces are the main drivers of the program to achieve the desired objectives of SARI/EI. The Task Force meetings will be focused, structured, and demand-driven, with tangible outcomes. The members will be assisted in their decision-making process in order to make informed recommendations on the issues of cross-border electricity trade through need-based, demand-driven research and analysis.

Program's Progress

- 2nd Project Steering Committee Meeting of SARI/EI was held on 8th January, 2014 at New Delhi. The meeting updated members on the progress of the program so far. Activities of the year 2012-2013 were reviewed by the members. The progress of the task forces and outcome of the South Asian Inaugural conference were shared with the members. The Terms of Reference of Task Force -3 was also discussed. The guidance and direction received from honorable members of Project Steering Committee will go a long way in promoting the cause of Cross Border Electricity Trade.

2nd Project Steering Committee Meeting of SARI/EI

- The South Asia Regional Inaugural Conference of SARI/EI on 'Cross-Border Electricity Trade' was held from October 4th-5th, 2013 in New Delhi, India. The conference launched the SARI/EI program to gain acceptance for its goals among the South Asian Countries, identify potential steps towards integration of power systems in South Asia, initiate a concrete and constructive discussion on the vision and road map for the South Asian Electricity Market, discuss on the role and strategic engagement of private sector in CBET and deliberate on international best practices as far as regional power markets are concerned. The 2nd day of the two-day's conference witnessed live telecast of the inauguration of 500MW India-Bangladesh link by the Prime Minister of India, Dr. Manmohan Singh and Ms. Sheikh Hasina Wajed, Prime Minister of Bangladesh which is a major milestone towards the establishment of CBET in the region. Participants broadly included representatives from governments, ministries/departments of Power & Energy, regulatory commissions, planning authorities of each South Asian country, Multilateral Development Banks (MDBs), power equipment manufacturers/power developers, and Research & Development organizations

Inaugural Conference of SARI/EI on "Cross-Border Electricity Trade"

- The Task Force-2 (Advance Transmission Systems Interconnections) meeting was held from August 21st-22nd, 2013 in Bhutan. The members discussed in detail the various technical and operational aspects of power transmission and power system integration in South Asia. They agreed to work on the developments required in the technical parameters, operation procedures and protocols for the smooth operation of the regional power system.

1st Meeting of Task Force - 2 on Advancement of Transmission Systems Interconnection

- The Task Force-1 (Policy, Legal and Regulatory) meeting was held from July 24th-25th, 2013 in Bangladesh. The focus of the meeting was on issues related to investment as well as a conducive policy and regulatory environment to address the infrastructure aspects of cross-border

1st Meeting of Task Force - 1 on Coordination of Policy, Legal and Regulatory Framework

electricity trade. It was proposed to identify and analyze the various aspects/provisions contained in country laws, policies, and regulations; to suggest recommendations for the coordination of policy, legal, and regulatory issues to facilitate cross-border electricity trade in the region.

- The 1st Project Steering Committee Meeting of SARI/EI was held on 12th March, 2013 at New Delhi. The focus was on eliciting suggestions for consensus building among different stakeholders and ensuring the buy-in of the policy-makers on issues pertaining to promoting cross-border electricity trade. The meeting also discussed the strategy for rolling-out Task Forces and their core areas of responsibility.

1st Project Steering Committee Meeting of SARI/EI

- A regional workshop on 'Issues Before Regulators in the South Asian Region' was organized successfully in Kathmandu, Nepal from February 19th-20th, 2013. The objectives of the workshop were to identify policy and regulatory barriers to cross-border electricity exchange and potential solutions; expand discussions on the cross-border electricity exchange between the South Asian countries; explore alternative regulatory and policy instruments; gather country-wise status on regulations and policies; and discuss the harmonization of codes to facilitate interconnections suited for the electricity trade.

South Asia Regional Workshop on Cross Border Energy Trade (CBET) -"Issues before Regulators in the South Asia Region"

Way Forward

- Task Force – 1 (Coordination of Policy, Legal and Regulatory Framework) and Task Force – 2 (Advance Transmission Systems Interconnection) have been constituted and highly structured Task Force meetings will be conducted periodically. The Task Force – 3 for South Asian Regional Electricity Markets shall be constituted and meetings will be organized.
- Studies/exercises/assignments will be carried out to help Task Forces to achieve their deliverables. Task Force Reports will further chalk out the program for the establishment of trading practices, transmission system planning, legal, policy, and regulatory harmonization across the region.
- To promote Cross-Border Electricity Trade (CBET) and to augment the efforts of Task Forces, study tours to developed regional electricity markets will be conducted to understand the international best practices pivotal to establishment of South Asian grid.
- Workshops/conferences related to development of infrastructure and investment trends for CBET shall also be organized.

About USAID

The US Agency for International Development (USAID) is an independent government agency that provides economic, development, and humanitarian assistance around the world in support of the foreign policy goals of the United States. USAID's mission is to advance broad-based economic growth, democracy, and human progress in developing countries and emerging economies. To do so, it is partnering with governments and other actors, making innovative use of science, technology, and human capital to bring the most profound results to a greatest number of people.

About IRADe

IRADe is a fully autonomous advanced research institute, which aims to conduct research and policy analysis and connect various stakeholders including government, non-governmental organizations (NGOs), corporations, and academic and financial institutions. Its research covers many areas such as energy and power systems, urban development, climate change and environment, poverty alleviation and gender, food security and agriculture, as well as the policies that affect these areas.

SARI/EI Contacts

For more information on the South Asia Regional Initiative for Energy Integration (SARI/EI) program, please visit the project website: www.sari-energy.org, or contact:

USAID

Mr. Amol Bhutad,
Regional Program Manager,
South Asia Regional Initiative/
Energy Integration, USAID/India,
American Embassy, Shantipath,
Chanakyapuri, New Delhi 110 021, India
Tel: 0091-11-2419-8693, Fax: 0091-11-2419-8612
E-mail: abhutad@usaid.gov

IRADe

Mr.V.K. Kharbanda,
Project Director,
SARI/EI, IRADe,
B-44, Shivalik, Malviya Nagar,
New Delhi 110 017, India
Tel: 0091-11-2669-2716
E-mail: vkkharbanda@irade.org