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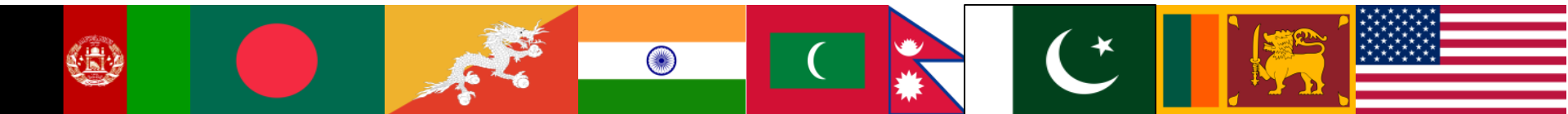
# Overview to South Asian Regional Initiative for Energy Integration (SARI/EI)

January 19, 2017

Nepa Hall, Hotel Radisson, Kathmandu

*Presented by:*

**Dr. Jyoti Parikh, Executive Director,**  
*Integrated Research and Action for Development (IRADe)*

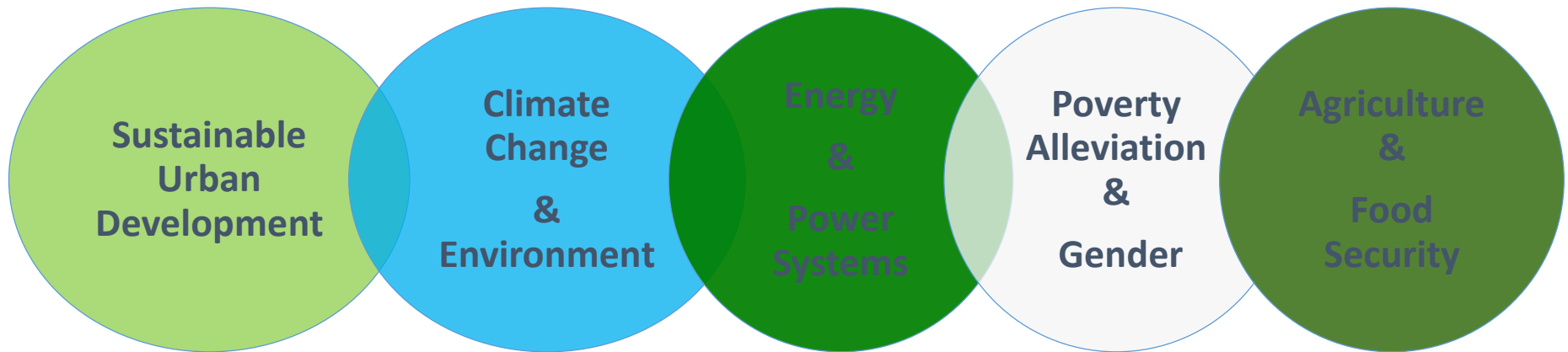




## About IRADe

- IRADe, a think tank set up in 2002
- Conducts multi disciplinary research and policy analysis
- Multi stakeholders problems and approaches involving government, non-governmental organizations, corporations, academia and financial institutions.
- Engages in national and international dialogue for consensus building

Key thematic areas





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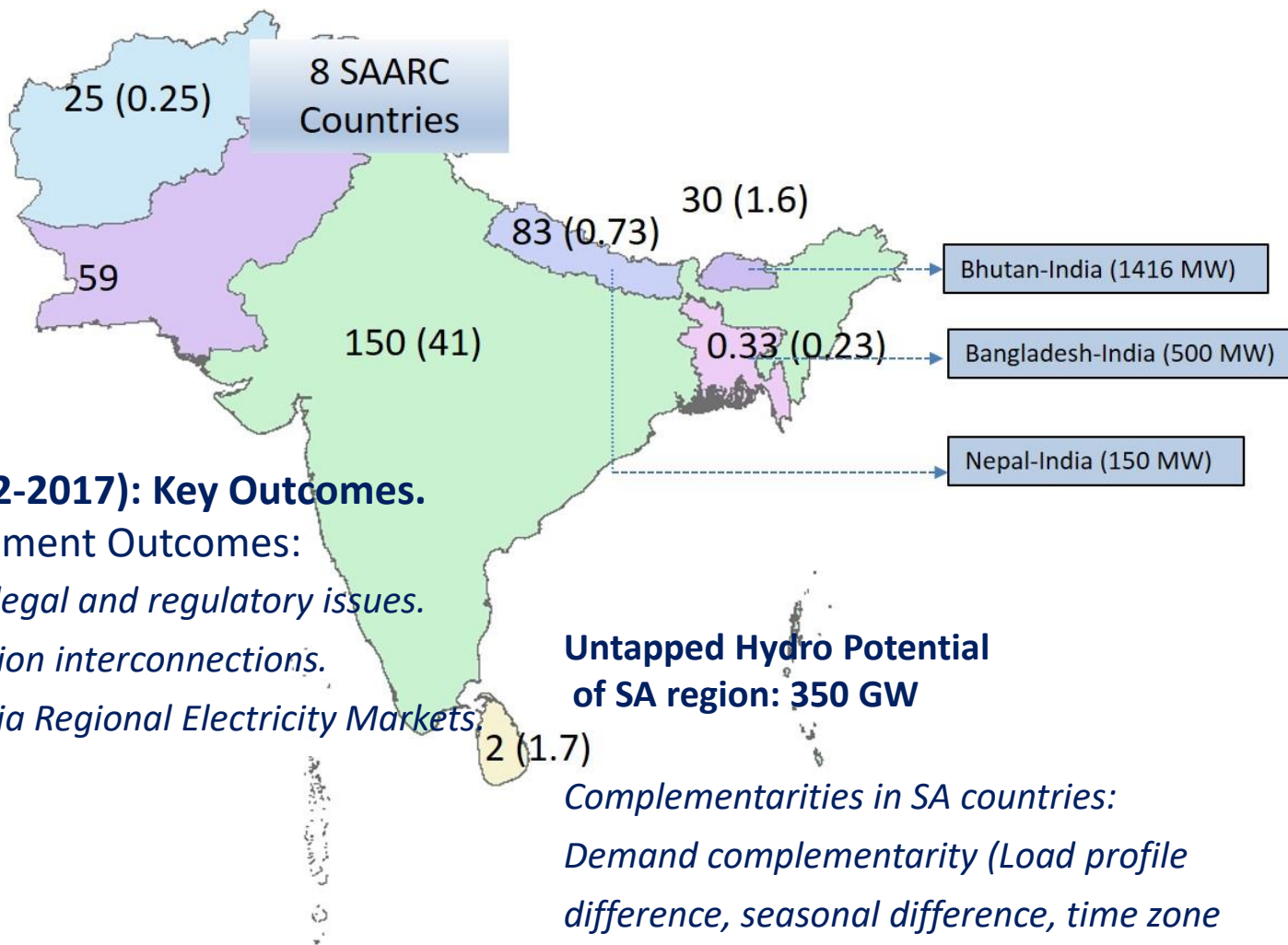
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## Overview SARI/EI Program: South Asia Regional Initiative for Energy Integration (SARI/EI)

## Overview SARI/EI Program and Cross border Electricity Trade

SARI/E is a long standing program of USAID started in the year 2000.



### SARI/EI-Phase IV (2012-2017): Key Outcomes.

Three Key Development Outcomes:

1. Coordinate policy, legal and regulatory issues.
2. Advance transmission interconnections.
3. Establish South Asia Regional Electricity Markets.

**Untapped Hydro Potential of SA region: 350 GW**

*Complementarities in SA countries:*

*Demand complementarity (Load profile difference, seasonal difference, time zone difference etc.)*

*Resource complementarity*



## Benefits of Cross-Border Electricity Trade

Energy security due to large trade possibilities

Diversified **generation mix**

Reduction in **Load Shedding**

Reduction in **spinning reserves**

Efficient management of **peak energy deficit**

Improved system reliability

### Technical and Operational Benefits

Power availability at **competitive price**

High **export income**

Avoided **generation capacity and T&D infrastructure**

Less exposure to **volatile international energy prices**

Reduction in **Current Account Deficit**

### Economic and Financial Benefits

Reduction in **CO<sub>2</sub> emissions**

Less Impact on Local and Global environment

Renewable Energy Development

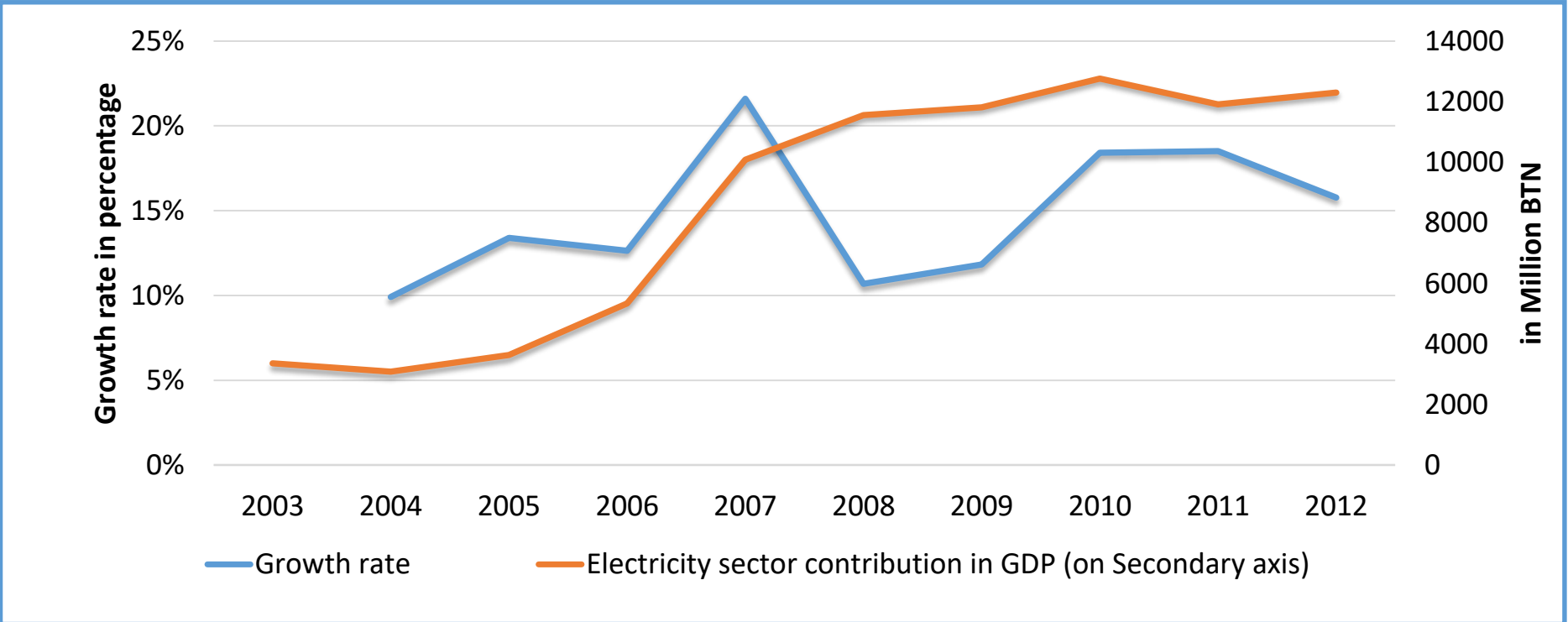
Improvement in **Social Indicators**

### Sustainability Benefits



## Best Fitted case of Economic Benefits: Bhutan as an Country example

- ❖ Hydroelectricity has a tremendous impact on Bhutan's economy; during 2007 with the commissioning of Tala hydro plant, a high surge in the GDP growth rate (**12% in 2006 to 21% in 2007**) was observed.
- ❖ As per the Bhutan power export plan, **per-capita incomes could double to around US\$ 5,000 by FY19** if external financing and overall balance of payment issues well managed.



## SARI/EI: Structure Framework

**SARI/EI  
SECRETARIAT**  
▼  
**PROJECT  
STEERING COMMITTEE**  
▼

### TASK FORCE-1

Co-ordination of policies,  
legal and regulatory frameworks

Defining ground rules for  
allocation of cost and risks; and  
creating an enabling environment  
for investors both in generation  
and transmission

### TASK FORCE-2

Advancement of  
transmission system  
interconnections

Both technical and  
operational aspects of  
power system  
interconnections

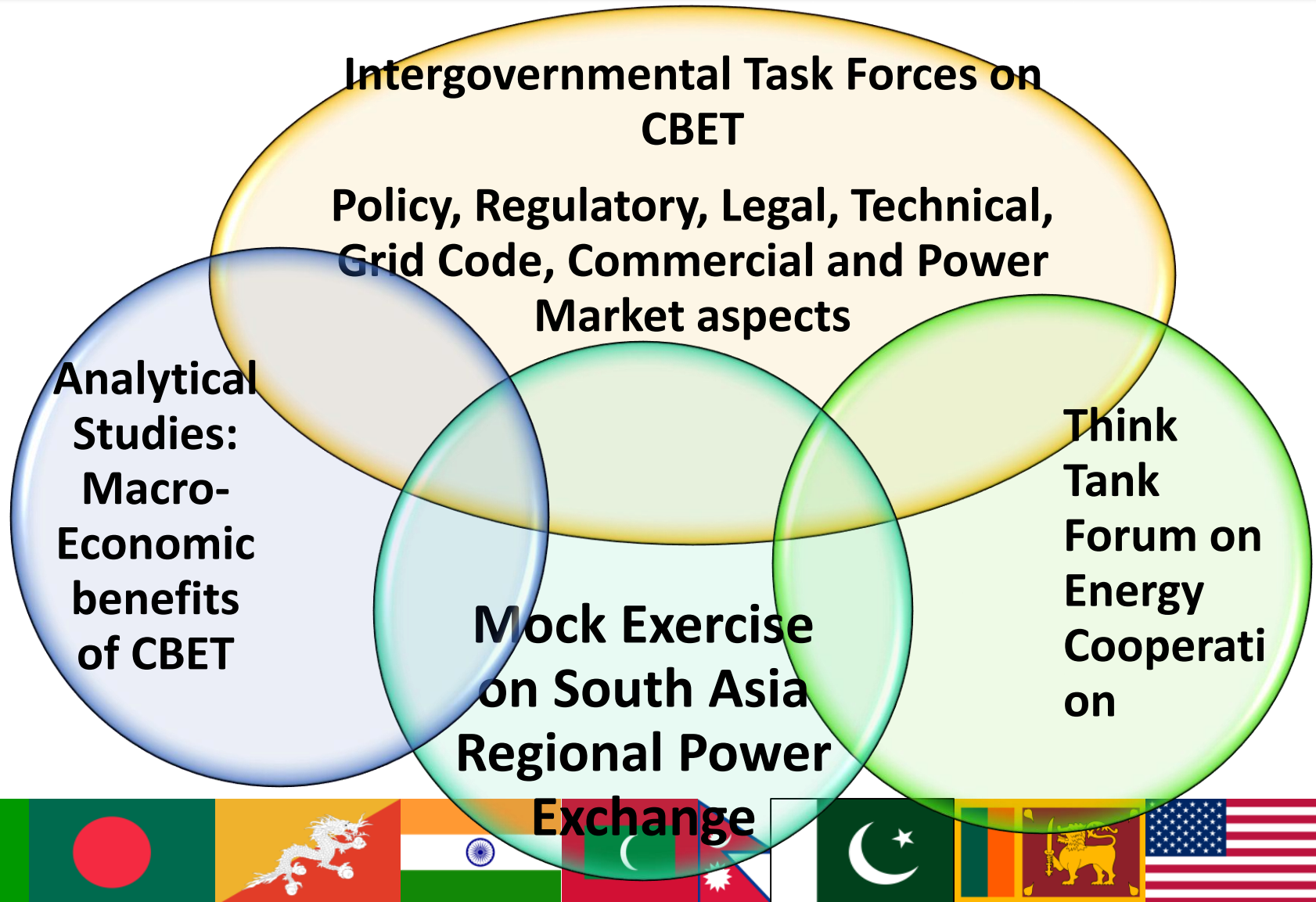
### TASK FORCE-3

South Asia  
Regional Electricity  
Market (SAREM)

Exploring market-driven  
commercial practices in power  
trading (including long-term  
contractual instruments and  
short-term power trade  
in exchanges)

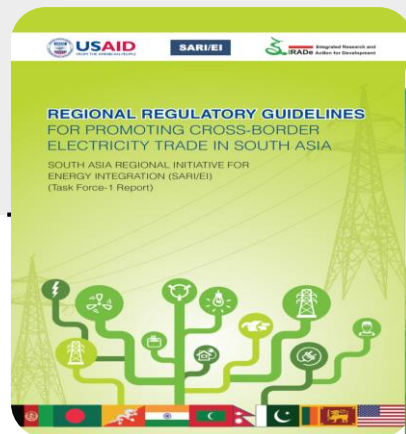
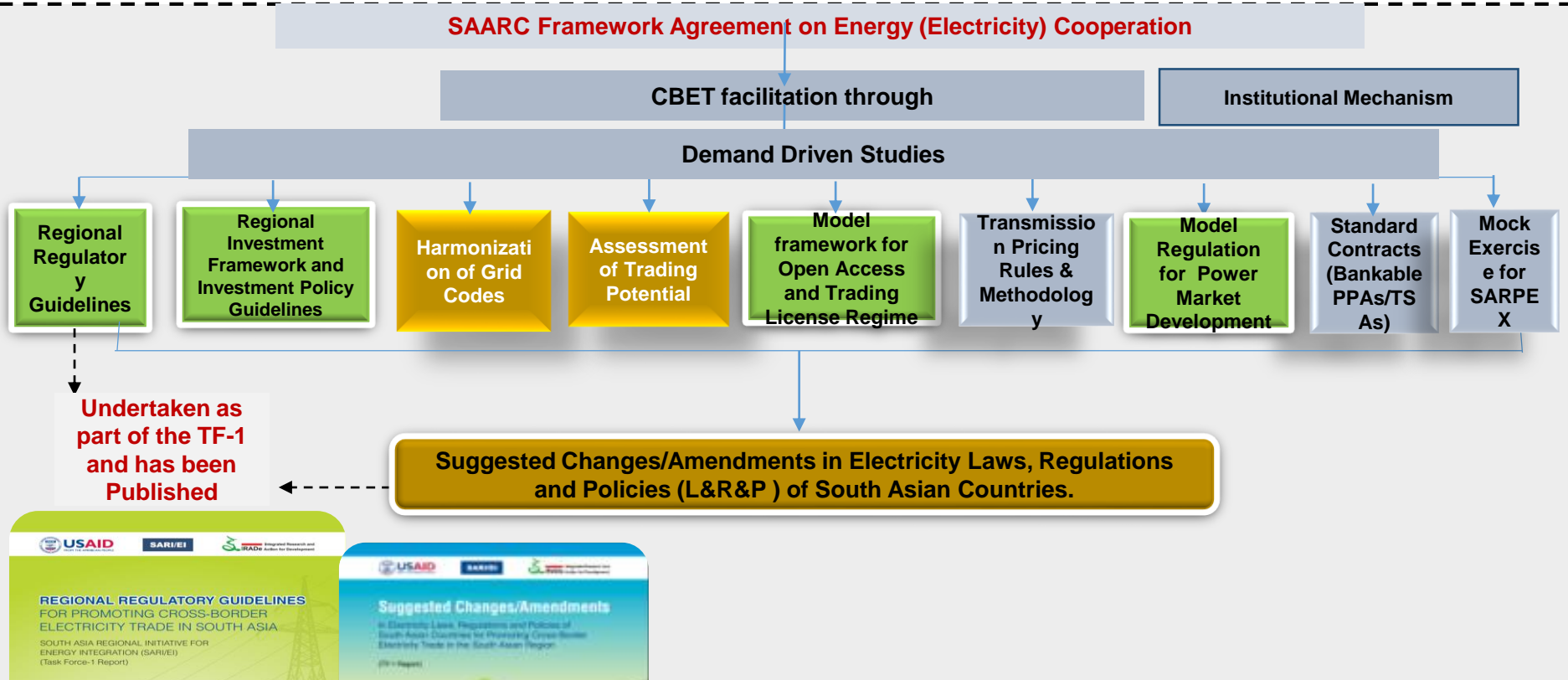


# SARI/EI: Various Streams of Work





# SARI/EI Overall Framework for development of CBET in South Asia



**International Consultants**

- Deloitte, KMPG
- PRDC, PWC, ICF
- Mercados, E & Y



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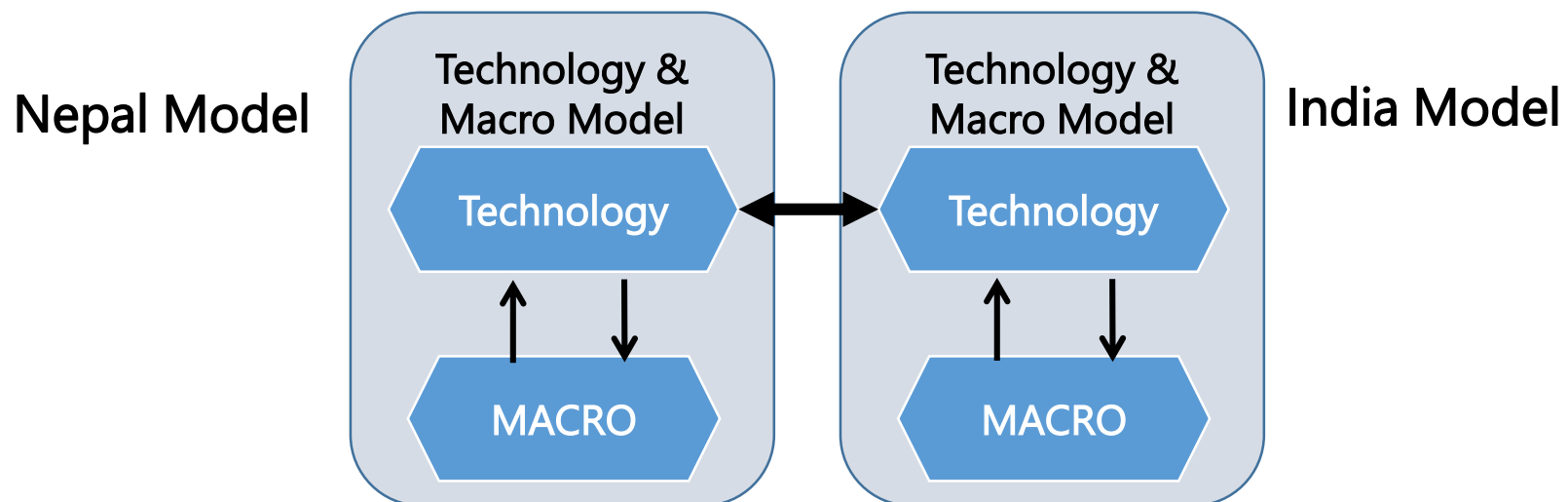
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## SARI/EI Analytical Studies (AS)

## Analytical studies : Modelling Nepal India Trade – Economic Benefits Important to Build Consensus

- Power trade on mutually agreeable terms- quantity, price and time
- Four sub models – Macro model for each country and detailed power technology model for each country which balances power demand supply on an hourly basis
- 40 year time horizon
- Iterations give a consistent result – Resources to invest, impact on growth and electricity demand, surplus for trade etc.



# Stakeholder Consultation Process

Aug  
2015

- 1st Stakeholder Meeting, Kathmandu, Nepal
- Meeting with government ministries representatives and channelization of contacts

Dec  
2015

- Annual PSC Meeting, Mumbai, India.
- Validation of Dummy Nepal Technology Model Results by the PSC members

Jan  
2016

- 2nd Stakeholder Meeting, Kathmandu, Nepal.
- Interim Result from Nepal Technology Model & its economic impact presented

Apr  
2016

- Workshop on Regional Power Trade, Kathmandu, Nepal.
- Result from Nepal Technology & Macro Model presented.

Jul  
2016

- Focus Group Discussion on India Technology Model, CEA, New Delhi, India
- Outputs of India Technology Model shared with CEA

Jul  
2016

- National Conference on Post Paris Climate Action on India Technology Model, New Delhi, India
- Outputs of India Technology Model shared with wider stakeholders

Jan, 20  
17

- ***Release of Final Report on 19<sup>th</sup> January, 2017 at Kathmandu***



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## SARI/EI Think Tank Forum (TTF)

## THINK TANK FORUM FRAMEWORK



### Key objectives identified for the SARI/EI Think-Tank Forum:

- A network of leading think tanks in each participating South Asian country
- To initiate a discourse on the role of CBET in addressing energy demands for socio-economic development
- To establishing narratives and examples of the relevance of CBET in the energy security and climate change discourses
- TTF to take these messages to the stakeholders in respective nations
- Countries in focus: Bangladesh, Bhutan, Pakistan and Nepal

# SARI/EI Think Tank Forum for South Asian Regional Energy Cooperation

<b>Nepal</b>	<b>Bangladesh</b>	<b>Sri lanka</b>	<b>Bhutan</b>	<b>India</b>
Institute for Integrated Development Studies (IIDS)	Bangladesh Institute of Developmental Studies (BIDS)	University of Paradeniya	Royal Society for Protection of Nature (RSPN)	Centre for Study of Science, Technology & Policy (CSTEP)
Institute for Social and Environmental Transition Nepal (ISET)	Bangladesh Centre for Advanced Studies (BCAS)	SLYCAN Trust	QED Group	Consumer Unity & Trust Society (CUTS)
International Center for Integrated Mountain Development (ICIMOD)	Bangladesh Enterprise Institute (BEI)	Climate and Development Research, Munasinghe institute for Development (MIND)		Observer Research Foundation (ORF)
Samriddhi foundation	International Centre for Climate Change and Development (ICCCAD)			National Council of Applied Economic Research (NCAER)
Niti Foundation				

# Examples of Activities Identified for Engagement

## 1. Policy Advocacy

- Preparing Policy Briefs, Organizing Seminars
- Engaging parliamentarians (example: engaging Parliamentary Committees or similar forums to reach out to politicians)

## 2. Media engagement

- For policy interpretations (country specific media engagements)
- Public campaigns
- Facilitate public understanding of domestic and regional policy dynamics of CBET and prepare communication materials

## 3. Quantifying Impacts

- Surveys that results in human stories.
- Develop Indicators

## Areas of Work

- CBET for energising South Asia under the Climate Change and Sustainable Development agenda
- linkages to electricity access for livelihoods and gender mainstreaming
- Study on “transit villages/Towns”





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# **SOUTH ASIAN REGIONAL POWER EXCHANGE- SARPEX (MOCK TRADE) and Capacity Building**



## SOUTH ASIAN REGIONAL POWER EXCHANGE- SARPEX (MOCK TRADE)

### Power Exchange : Capacity Building

**Day Ahead Market:** Daily demand variation is substantial in South Asian region and providing a sizable opportunity for regional day ahead market.

**Operationalization:** The day ahead trade and faire competitive option of power sell and buy which the exchange provides for can't be available through other contracts.

To extract the full benefit of regional power trade of day ahead nature, a Regional Power Exchange is essential.

### **Key Stakeholder Involved for completing the mock exercise:**

Market Advisory Committee represent- Nord Pool, South African Power Pool, Indian and Denmark market experts;

Core team members- Bhutan, Bangladesh and Nepal governments representatives; Task Force-3 members etc.

**Key Impacts of SARI/EI in South-Asian Region CBET since 2012-13**

2012-13	2013-14	2014-15	2015-16	2016-17
India-Bangladesh 500 MW HVDC link commissioned	India- Nepal Power Trade Agreement Signed	SAARC framework agreement on energy (electricity) co-operation signed	Tripura (India)- Comilla (Bangladesh) 400KV transmission interconnecti on commissione d & 100 MW power is being exported to Bangladesh	GOI issued guidelines for CBET,  Created SAARC Council of Experts of Energy Regulators. Trade  CBET Increased by 800 MW since 2012.



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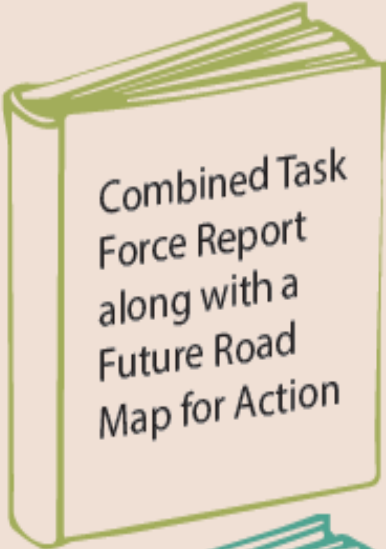


## Way Forward

## Synthesis of SARI/EI Task Force Recommendation

### Synthesis of SARI/EI Task Force Recommendation

- Regional Regulatory Guidelines (RRGs)
- Suggested Amendments in Electricity Laws, Regulations and Policies
- Regional Investment Framework and Policy Guidelines
- Trading Potential
- Model PPAs/TSAs
- Mock Exercise for South Asia Regional Power Exchange (SARPEX)

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Combined Task Force Report along with a Future Road Map for Action

A teal-outlined icon of a book.

Recommendations Briefs on Policy, Regulatory and Legal frameworks; development of regional Power System; establishment of Regional Power Market

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Summary for South Asian Policy makers

**Thank you**