

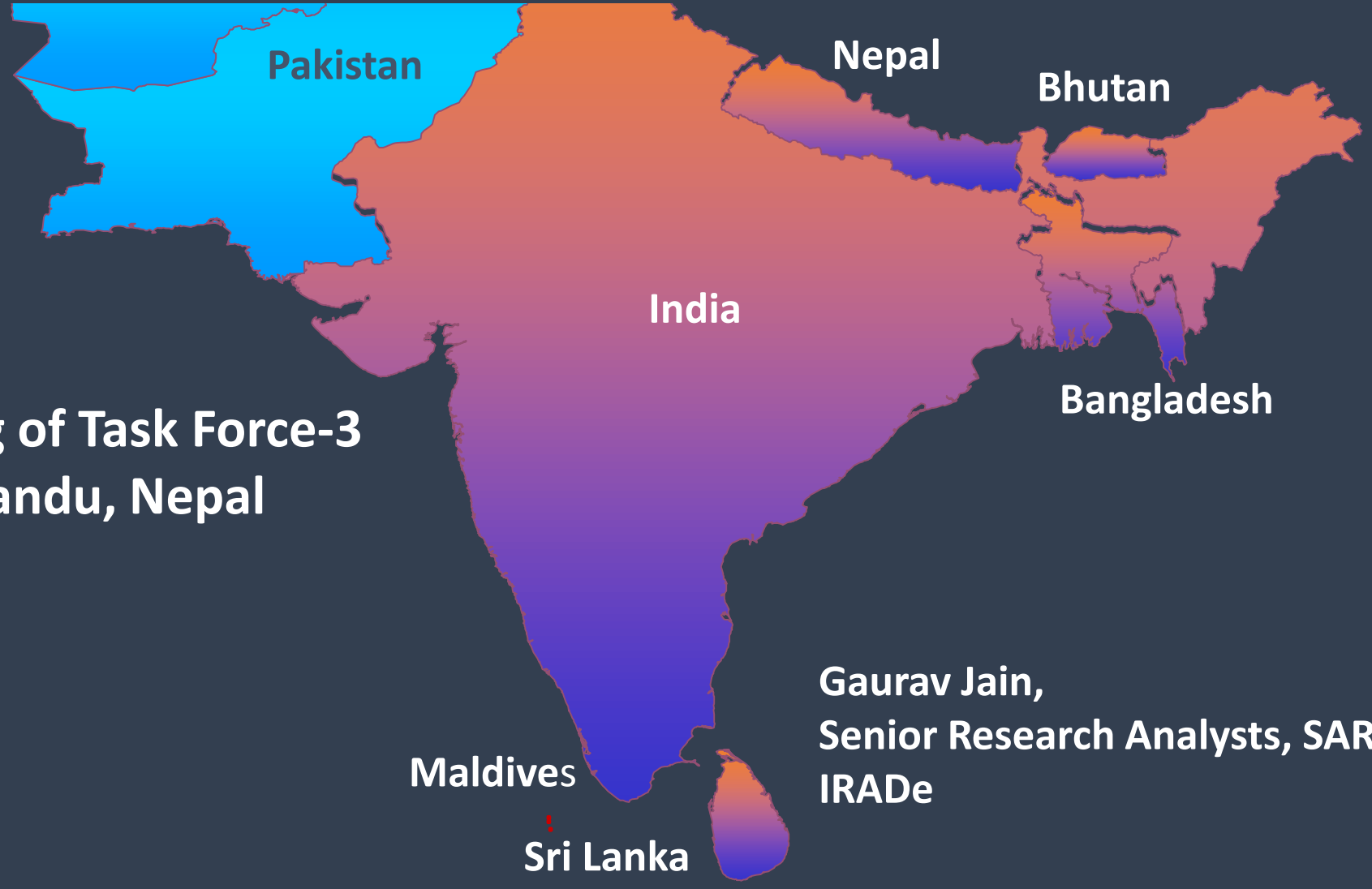


**USAID**  
FROM THE AMERICAN PEOPLE

**SARI/EI**

**IRADe** Integrated Research and  
Action for Development

# Final Recommendations and implementation plan on Commercial T&C for CBET and suggesting model for PX in SA region



**4<sup>th</sup> Meeting of Task Force-3  
Kathmandu, Nepal**

**Gaurav Jain,  
Senior Research Analysts, SARI/EI,  
IRADe**



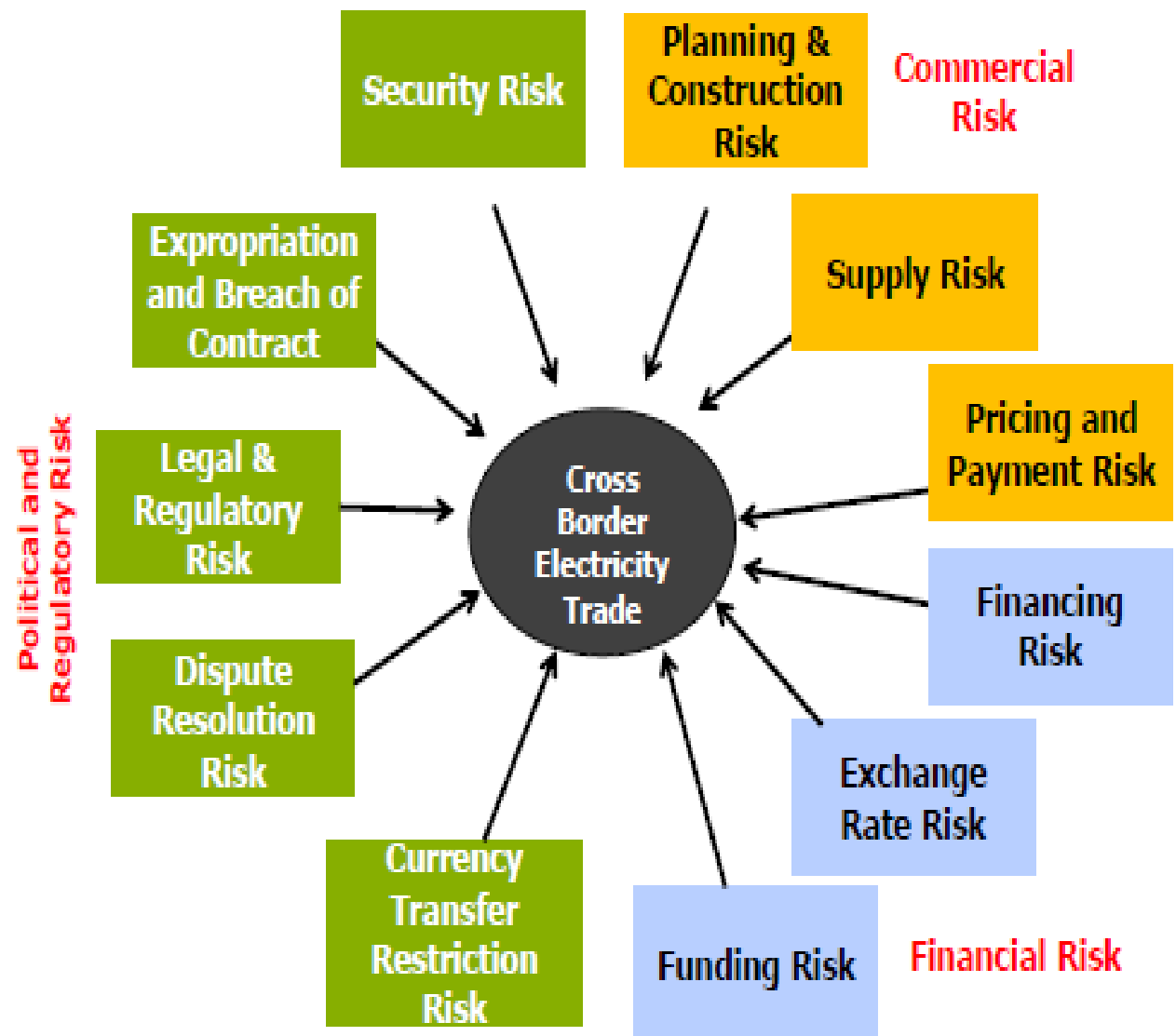
## *Contents*

- 1 Tariff recommendations and implementation plan.
- 2 Recommendations on CBET PPA and TSA: Commercial aspects and implementation plan
- 3 Recommendations and implementation plan on Model for PX in SA region

# Study background

- Infrastructure projects are having high risk due to long gestation period and cross country regulatory mechanism involved.
- Not having the operational clarity is making it more cumbersome and lengthy process.
- Case to case variation in the regional projects provide the uncertainty in developers and investors.
- Investor major concern is viability of project and clarity in tariff determination is very much necessary.

## Typical Risks in Cross-Border Projects



## *Tariff Recommendation*

- It is recommended that each SAC may determine separate tariff for generation and transmission which would also assist in comparison of generation tariff within the country and cross-border imports.
- For transmission pricing, it would be challenging to adopt a uniform methodology across SACs given the differences in industry structure, regulatory mechanism, etc.
- Hence, for short term perspective a segmented approach needs to be adopted viz. the transmission pricing for each link on the path between generator/source and consumer/demand needs to be separately determined.
- In the long run the same may change into more robust mechanism which may be distance, direction and quantum sensitive and distribute the charge according to real time based usage.

# Transmission Tariff Determination

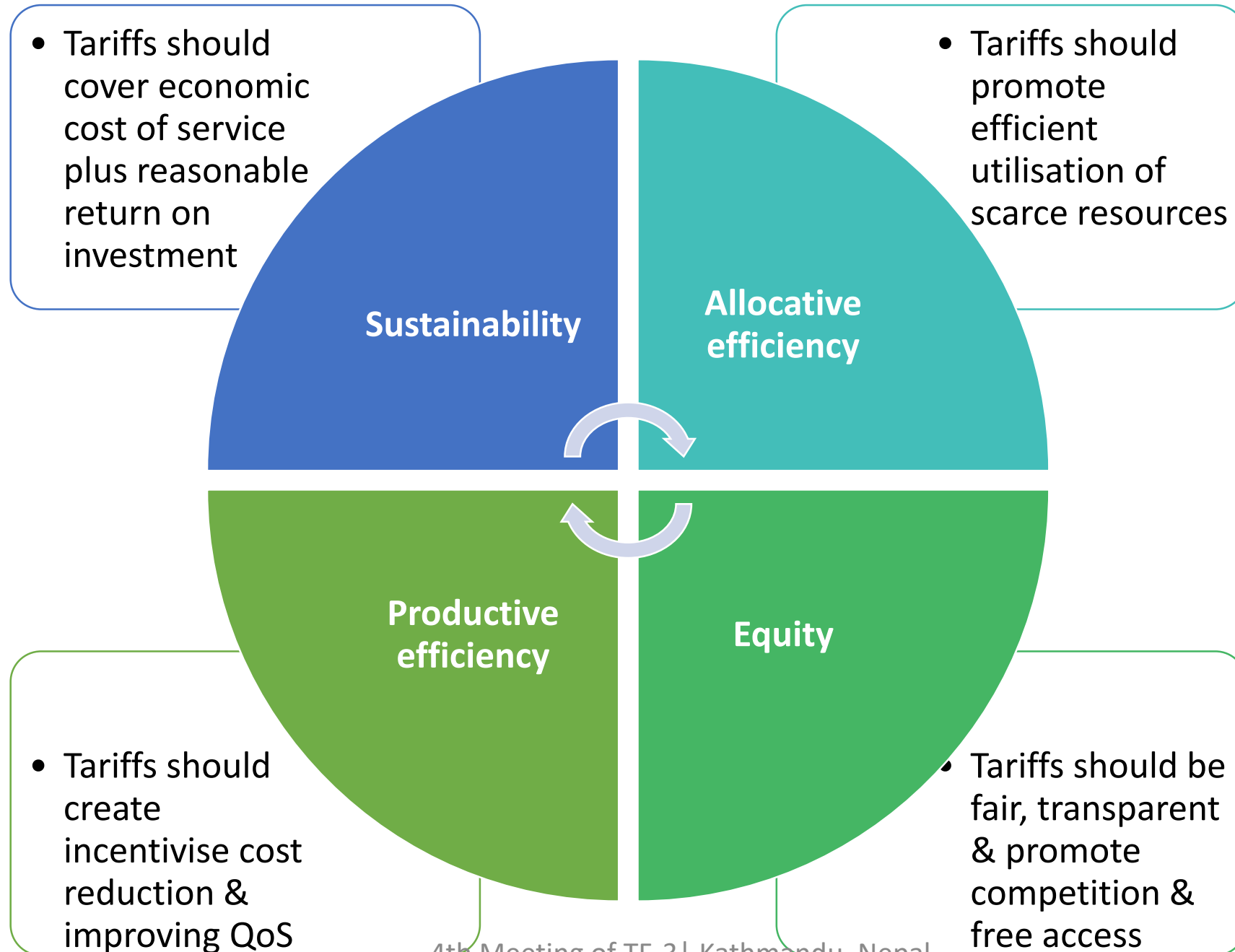
Country	Determined by Regulator	Determined through Competitive bidding	Mode of Recovery
<b>Afghanistan</b>	Yes	No	Bundled with retail tariff
<b>Bangladesh</b>	Yes	No	Per unit basis (BDT 0.2291/kWh)
<b>Bhutan</b>	Yes	No	Bundled with retail tariff
<b>India</b>	<u>Yes</u>	<u>Yes</u>	<u>Point of Connection (PoC) mechanism</u>
<b>Maldives</b>	Not applicable		
<b>Nepal</b>	Yes	No	Bundled with retail tariff
<b>Pakistan</b>	Yes	No	Use of system charge (per MW)
<b><u>Sri Lanka</u></b>	Yes	No	Postage Stamp Methodology based on contribution to coincident monthly system peak

## *Implementation plan*

It is envisaged that the a harmonize framework should be agreed by the various stakeholders of SAC. The mentioned approach should be adopted as next step in order to ensure this transition to harmonize the tariff framework in South Asian countries:

The major issue is standardized the market products and methodology/ framework so that new developers and investors may feel the less uncertainty and explore the regional market.

# *Basis of tariff framework adoption*



# *Implementation steps for tariff recommendations*

## Step-1

Discussion with tariff fixation committee, regulatory authority and other relevant stakeholder.

This will create awareness in all the Nations about the recommendations . Further on, it is likely to lead to Standard tariff framework for CBET in SA region.

## Step-2

National electricity authorities/tariff fixation committee/regulatory authority to identify specific changes required in the ongoing tariff framework or tariff discovery related to CBET in South Asian region.

Each Nation may consider the recommendations for CBET in the context of the National policies, regulations etc. Based on the same additional activities may be undertaken.

## Step-3

Clearly indicative framework for power procurement and tariff framework for CBET in SA region.

Framework or guiding principle should ensure social welfare, economic growth and efficient pricing . This will lead to a proper growth of CBET.



# *Commercial terms & conditions of PPA and TSA*

1. *Term*
2. *Tariff, Structure, Recovery*
3. *Availability, Incentive & Damages*
4. *Billing, Payment-terms including rebate & surcharge*
5. *Payment Security Mechanism*
6. *Dispute Resolution*

## *Model PPA- Hydro and Model TSA*

Traditionally, CBET has been facilitated through various agreements at inter-governmental level. However, lately, a distinct shift towards competitive bidding models has been observed in the CBET.

Adopting standardised model PPA and TSA for CBET would enhance transparency and is likely to boost cross-border trade. For this purpose, various agreements (PPA and TSA) both prevailing within each SAC and select executed cross-border transactions in SA region were studied in detail to arrive at recommendations.

Also, Model PPA and Model TSA for CBET in SA region were developed as a part of this study.

Model PPA and TSA will help promoting the CBET and provide the certainty for developers/investors etc. However these documents should be flexible enough that these should meet specific project requirements.

## Recommendations on CBET PPA: Tariff related

	Long-term	Medium-term	Short-term	Key considerations
<b>PPA Term</b>	<p><b>Thermal:</b> At least 25 years</p> <p><b>Hydro:</b> At least 35 years</p>	1-5 years	Less than 1 year	<ul style="list-style-type: none"> <li>• Term of long-term agreement should commensurate with useful life of the generating asset</li> <li>• Perspective of buyer (e.g. hedging price volatility) vs. seller (e.g. bankability) in case of long-term contract</li> <li>• Recommendations for long-term procurement in line with the existing cross-border trades</li> <li>• Recommendations for medium-term and short-term procurements aligned with the framework in India               <ul style="list-style-type: none"> <li>• Such framework only prevalent in India</li> <li>• India is the largest power market in South Asia</li> </ul> </li> </ul>
<b>Tariff Structure</b>	<p><b>Thermal:</b> Two-part</p> <p><b>Hydro:</b> Single-part</p>		Single-part	<ul style="list-style-type: none"> <li>• Technology-specific tariff structure</li> <li>• Two-part tariff structure for thermal generators and single-part tariff structure for hydro generators observed across CBET PPAs reviewed by us</li> </ul>

## Recommendations on CBET PPA: Tariff related

	Long-term	Medium-term	Short-term	Key considerations
<b>Tariff Recovery</b>	<p><b>Single-part tariff:</b> Recovery based on scheduled energy at delivery point (failure to off-take treated as ‘deemed delivery’)</p> <p><b>Two-part tariff:</b> (1) Fixed cost: based on Declared Capacity (MW); (2) Variable cost: Scheduled energy (MWh) at delivery point</p>			<ul style="list-style-type: none"> <li>Recovery of single-part tariff as well as variable cost in case of two-part tariff is based on scheduled energy (within most SACs - it is based on actual energy at delivery point) <ul style="list-style-type: none"> <li>✓ Delivery points likely to be boundary points with India; hence, cross-border transactions will be subject to ABT/DSM at boundary points</li> </ul> </li> </ul>
<b>Principle of Tariff Determination</b>	<p><b>Competitive bidding</b></p> <p><b>Cost-plus/negotiation in case of hydro power procurement</b></p>	<p><b>Competitive bidding</b></p> <p><b>Negotiation</b> for smaller quantum or contingency procurements</p>	<ul style="list-style-type: none"> <li><b>Thermal:</b> India, the largest power market in the region, has adopted competitive bidding for all procurements except in case of hydro procurement; 250 MW procurement by Bangladesh from thermal plant (through PTC) is based on competitive bidding</li> <li><b>Hydro:</b> project implementation risks; longer gestation period - hence, procurements from hydro projects are on negotiated basis (prevailing scenario)</li> <li><b>Short-term:</b> Competitive bidding to promote competition and transparency</li> </ul>	

## Recommendations on CBET PPA: Payment security and Dispute resolution mechanisms

	Long/Medium/Short-term	Key considerations
<b>Payment Security Mechanism</b>	<p><b>PSM:</b> Irrevocable and revolving Letter of Credit (LC) [Others: Sovereign Guarantee (Optional); Sale of power to third party]</p> <p><b>Period:</b> Lower of (One year, Contract duration)</p> <p><b>Invoke:</b> 15 days post Due Date</p> <p><b>Value:</b></p> <p>(1) LT &amp; MT: Two months of Fixed Charges (at normative availability) plus Variable Charges</p> <p>(2) ST: One week charges</p>	<ul style="list-style-type: none"> <li>• LC is widely used payment security mechanism in most SACs and CBET PPAs</li> <li>• Sovereign guarantee provided by GoB in case of NVVNL PPA with BPDB (Bangladesh)</li> </ul>
<b>Dispute Resolution Mechanism</b>	<p><b>Two-tier</b> dispute resolution mechanism:</p> <p>(1) Settle Amicably; (2) Arbitration</p> <p>If not settled amicably within 60 days, it shall be referred to SAARC Arbitration Council OR Singapore International Arbitration Centre (SIAC)</p>	<ul style="list-style-type: none"> <li>• Two-tier dispute resolution mechanism adopted in most CBET PPAs reviewed</li> <li>• Singapore International Arbitration Centre (SIAC) is included in CBET PPAs reviewed</li> <li>• Option of SAARC Arbitration Council shall be explored for arbitrations related to cross-border PPAs</li> </ul>

## *Implementation plan*

It is envisaged that the model PPA and TSA should be shared with the various stakeholders (Generating companies-private and government players, traders and off takers/distribution utility).

The given approach can be adopted as next step in order to ensure this model document should be initiated and provide the basis of further discussion to make it in line with the expectations of all concerned.

The model PPA and TSA documents have been prepared and enough flexibility has been provided so that the same may fulfill the specific project/country need.

## *Implementation steps for Model Documents (PPA and TSA)*

### Step-1

Shared the model documents with the key stakeholders (Generating companies, Transmission utility and Power Trader etc in SA Region)

Discussion on requirement of model PPA, TSA and other standard documents to for CBET in region.

### Step-2

National electricity authorities to review the same as per countries own need (specifically for CBET)

Additional studies/reviews undertaken in due course contribute to fine tuning and defining the same.

### Step-3

Model and standard documents as being prepared for India model PPA.

Business entitles to use model documents for time saving and less negotiation required.



## *Recommendations on Model for PX in SA region*



# Global best practices for creation of cross border Power Exchange

## Objective

- Reviewed the evolution and set-up of select Cross Border / Regional Power Exchange (RPX) with an objective to suggest a model for setting up of cross border power exchange in SA context
- Pioneering contribution by Nordic countries by creating Nord Pool
- Learning from the Nord Pool experience, other European countries also ventured into evolving RPXs
- South African Power Pool (SAAP) was created as a cooperative power pool of member nations, evolved to become RPX

Nord Pool Spot

European Power Exchange

OMI-Polo Espanol S.A. (OMIE)

Amsterdam Power Exchange (APX)

South African Power Pool (SAPP)

## *Key takeaways*

### Evolution history

Initially, PXs may start operations in one or two countries. Subsequently, they may be expanded to other countries as RPX through merger & demerger or through acquisition of equity stake in national PXs

### Ownership

RPXs may have TSOs, national PXs or market operators as owners

### Governance Structures

RPXs should have robust, multi-level governance structures including supervisory boards, management team/board and advisory committees

### **Products**

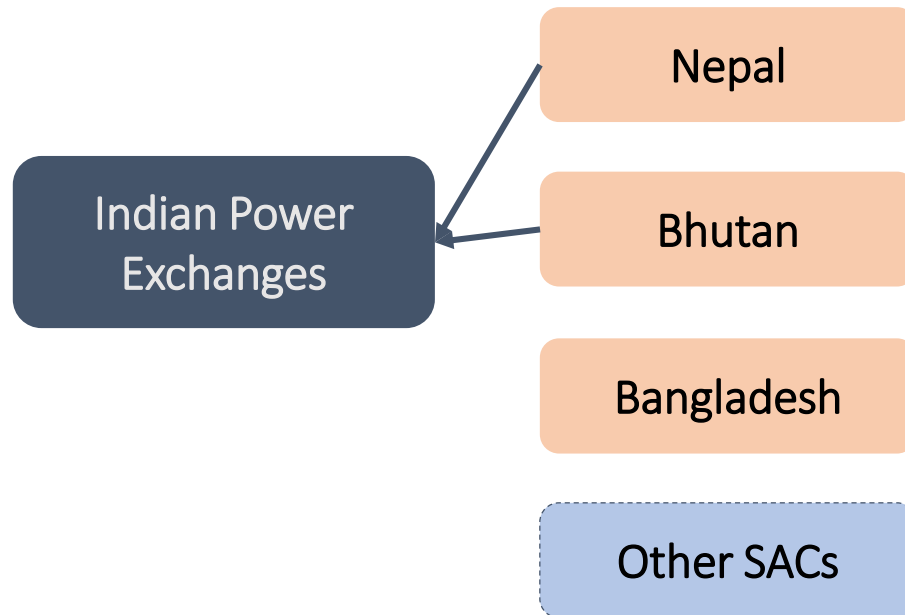
Day Ahead Market (DAM) and Intra Day Market (IDM), a variant of Term Ahead Market (TAM), are the main products offered on all national and RPXs around the world

### **Settlement**

Popular practice of commercial settlement is through advance margins and collaterals as per the governing rules of the PX concerned

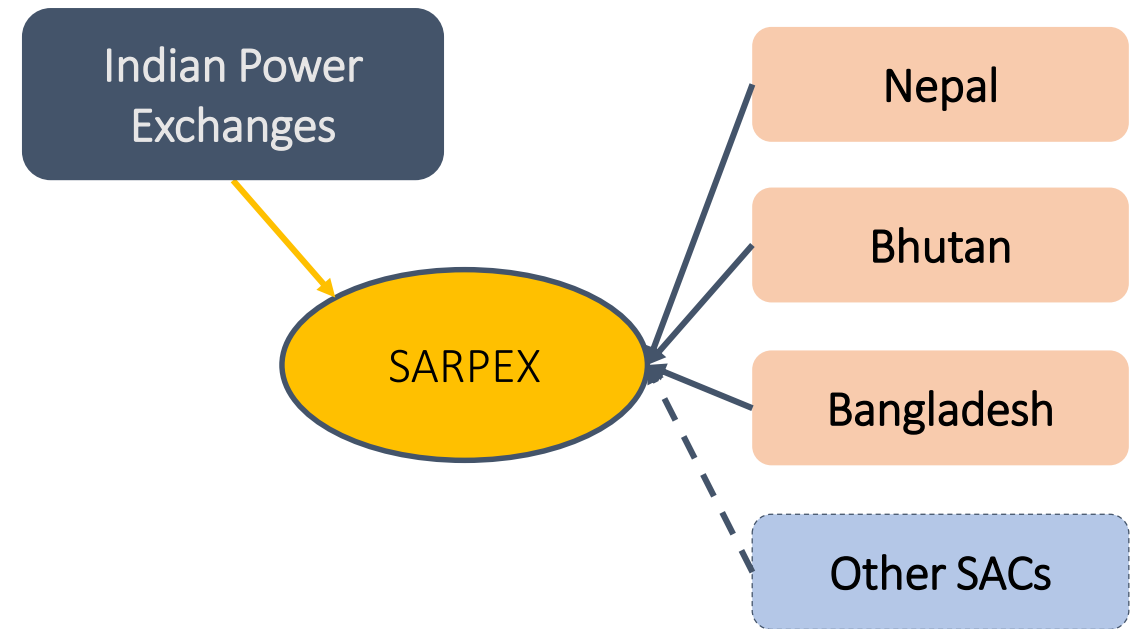
## Recommendations on Model for PX in SA region

Option 1: Extend operations of established Power Exchanges in India



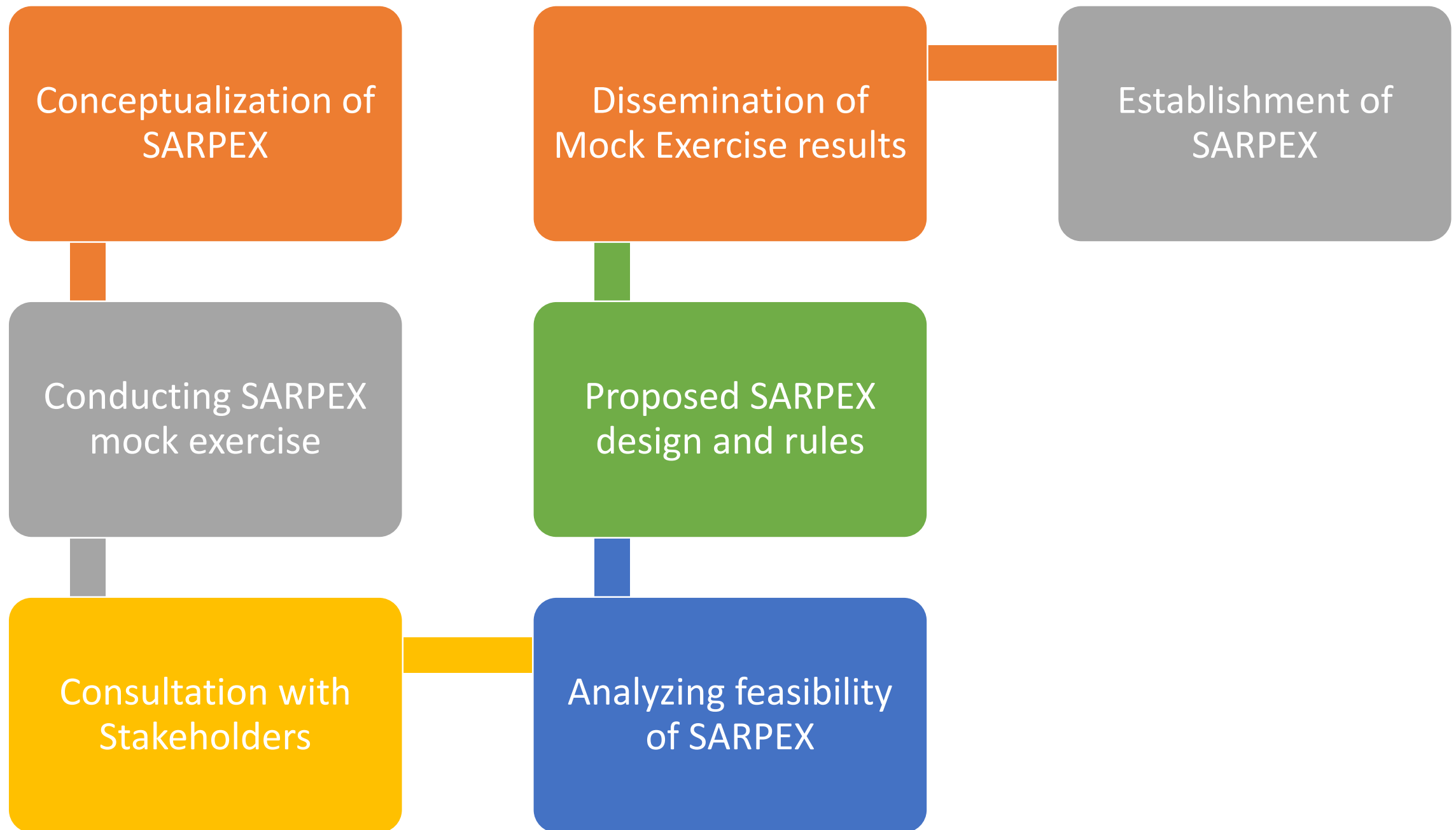
- Create separate bid area for each SAC or include SAC in nearby existing bid area depending upon technical feasibility
- To begin with, include SACs having existing grid connectivity; Add other SACs as and when they get connected with Indian grid

Option 2: Set-up South Asia Regional Power Exchange (SARPEX)



- Create separate SARPEX where SACs (including India) can participate
- SARPEX can receive bids from SACs and, depending upon technical feasibility, it can receive either separate direct bids from Indian sellers and buyers OR only uncleared buy bids and sell bids from Indian PXs

## *Further Step for SARPEX: Feasibility and desirability*



***Thanks***

***For more information You may reach me on  
[gjain@irade.org](mailto:gjain@irade.org)***