

**SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION (SAARC)**



**SAARC ENERGY CENTRE  
ISLAMABAD**

Program Activity: SEC/PRG-62/2014/PENT

**SAARC Workshop on Harmonizing Regulations  
and Policies for Cross Border Power Trade, Risk  
Sharing and Financial Settlements**

Organized by

**SAARC Energy Centre, Islamabad**

In collaboration with

Independent Power Producers' Association, Nepal (IPPAN), and  
Independent Power Producers Association of India (IPPAI)  
as knowledge partner.

26-27 June 2014

Kathmandu, Nepal

SAARC Energy Centre  
697, Street 43, Sector E-11/4, NPF,  
Islamabad, Pakistan  
[www.saarcenergy.org](http://www.saarcenergy.org)

---

**SAARC Energy Centre**

---



SEC Program Activity: SEC/PRG-62/2014/PENT  
**SAARC Workshop on Harmonizing Regulations and Policies for  
Cross Border Power Trade, Risk Sharing and Financial Settlements**  
26-27 June 2014, Kathmandu, Nepal



---

## **The Report**

### **Introduction**

SAARC Energy Centre (SEC), Islamabad under its program for FY 2014 organized a 2-day workshop on “Harmonizing Regulations and Policies for Cross Border Power Trade, Risk Sharing and Financial Settlements” on 26-27 June, 2014 in Kathmandu, Nepal. The event was arranged at hotel Soaltee Crowne Plaza, Kathmandu in collaboration with Independent Power Producers’ Association, Nepal (IPPAN), and Independent Power Producers Association of India (IPPAI) acting as knowledge partner. Workshop Program is attached as **Annex-I**.

2. The Workshop was designed to deliberate on the issues of harmonizing regulations and policies among the SAARC Member States in order to prepare and promote the power trade in the Region. The ultimate objective of the initiative is to create the SAARC Power Grid as a part of the SAARC Energy Ring envisioned by the SAARC Summit 2004 held at Islamabad. The other key goals included a) helping the SAARC Member States think through long term regional strategies for maximizing the usage and potential of the regional power market; b) creating linkages of a regional power market

with economic growth, geopolitical changes and shared prosperity in South Asia; and c) connecting the South and Central Asian power systems.

### **Participation**

3. List of Delegates from Member States is attached at **Annex-II** and List of Resource Persons is attached at **Annex-III**. The overall Participants list is attached at **Annex-IV**. A total of 91 delegates from Bangladesh, Bhutan, India, Maldives, Nepal, Sri Lanka, Asian Development Bank, UNDP, GIZ, SAARC Energy Centre and SAARC Secretariat participated in the workshop. The workshop was also participated by delegates from IPPAI and IPPAN.

### **Welcome Dinner**

4. IPPAN hosted welcome dinner for the delegates at Hotel Soaltee Crowne Plaza in the evening of 25 June, 2014 which was also attended by eminent energy experts and members of civil society of Nepal.

### **Inaugural Session**

5. The Chief Guest, Honorable Ms. Radha K Gyawali, Minister of Energy, Nepal inaugurated the Workshop on 26 June, 2014.

6. Mr. Shahzada Khalid, Officer Incharge, SAARC Energy Centre welcomed all the delegates from the SAARC Member States. He expressed gratitude towards Honorable Ms. Radha K Gyawali, Minister of Energy, Nepal for inaugurating the workshop. He also thanked distinguished guests including H.E Ambassador of Pakistan to Nepal, H.E Ambassador of Sri Lanka to Nepal and H.E Ambassador of Bangladesh to Nepal for attending the Inaugural Session of the Workshop. He introduced the SAARC Energy Centre to the delegates and highlighted its commitment to mitigate energy poverty through fostering energy cooperation within and across South Asia for a better tomorrow.

7. He acknowledged the need of regional cooperation in terms of power sharing among the SAARC Member States in order to guarantee energy security which has been jeopardized by growing dependence on the fossil fuel. While stressing on the importance of this workshop, he pointed out that harmonizing regulations and policies in the power sector of the SAARC Region directly correspond to energy trade within the region that is linked with a reliable, economic and sustained power system. He wished all the participants pleasant stay at Kathmandu during the workshop.

8. Mr. Harry Dhawal, Director General, IPPAI in his welcome address reiterated the need to harmonize the regulations and policies among SAARC Member States. Governments across the Member States have now begun to allow private sectors to take part actively in the energy sector. He highlighted the need of holding regular conferences and workshops and discuss how government policies impact the energy sector, he also emphasized that sanctity of contract is a major issue that the governments need to guarantee. A central

coordination agency like SAARC may take lead in harmonization of rules which is the need of the hour. Once this is guaranteed, there is immense potential for power sharing that can then be materialized. The ultimate goal is improving knowledge on cross border trade and sharing those ideas for benefit of consumers.

9. Mr. Khadga Bahadar Bisht, President, IPPAN stated that with a population of 1.4 billion, average GDP growth of 5% and immense demand for energy, SAARC region has great potential for regional power trade. Price fluctuations in SAARC Member States need to make optimal utilization of resources, and environmental concerns further necessitate power trade among SAARC nations. It has been found that initial power trade discussions have been started by private sectors in the member countries. From international experience, it has been proven that power trading is commercially viable while also being efficient in responding to energy demands. Examples can be taken from Nordic countries, Southern Africa and India. Historically, it has been found that most of these successful power trading mechanisms begin as bilateral agreements, later growing to become big regional projects. Amongst SAARC nations, bilateral power sharing has been practiced for some time now. Furthermore, SAARC power system has complementarities and therefore regional power trade is viable and doable. The upcoming SAARC summit 2014 to be held in Kathmandu itself may be used as a platform.

10. Honorable Ms. Radha K Gyawali, Minister of Energy, Government of Nepal formally released the Knowledge Report prepared by IPPAI. The copies of the report were made available to all the delegates for their information.

11. Mr. G Parthasarthy, Former Ambassador of India to Pakistan, Australia and Cyprus gave a keynote address in the Inaugural Session of the workshop. He stated that Energy integration is a part of economic integration. There is power sharing going on between India and Nepal. World Bank is financing a project for trans-border power transfer (estimated time of completion being 2016.) With Nepal's potential, it can be a big contributor to the whole of SAARC region. Private sector in Nepal has been very active and private projects have moved faster than government projects.

12. He also mentioned that Bhutan is planning to export 10,000 MW to India by 2020. Similarly, Myanmar is integrated with India. Sri Lanka imports coal from India. There should be high voltage DC grid connectivity between India and Sri Lanka. Pakistan and India have been looking to strike a deal in terms of power sharing. Under such global context, a framework is required for regionalizing these bilateral agreements. Regionalization can extend from West Asia to India and further east.

13. In her inaugural address, the Chief Guest, Honorable Ms. Radha K Gyawali, Minister of Energy, Government of Nepal emphasized on the importance of cross border power trade to reduce the ever escalating power demand in the region. She stated that plethora of studies, identifying necessary reforms and interventions have been done. Now there is need to implement their recommendations. The ultimate goal is to have unfettered power transfers

in the region in commercial scale. For economic optimization of resources, checking greenhouse gas emissions, and coping with the growing demands for energy, cross border integration is a must. Spot market trading should also be encouraged.

14. She also acknowledged that the idea of SAARC power trade is moving very slow and needs to be expedited. One of the reasons for this is the disharmony in the region in terms of policy and regulatory environment. Nepal's potential can be utilized to meet both domestic and regional needs. Nepal is currently working with the World Bank and the Asian Development Bank to achieve cross border power trade with India. Nepal remains hopeful and expects reciprocity from the SAARC Member States.

15. A group photograph of the Workshop participants with the Chief Guest was snapped on this occasion.

### **Technical Presentations**

16. All participants of the workshop observed one minute silence in remembrance and to acknowledge the invaluable services of late Mr. Hilal A. Raza, Director SAARC Energy Centre especially for the SAARC region in terms of energy and its related aspects.

17. The Workshop proceedings were initiated with Technical sessions, designed on the following specific areas started with country presentation by each of the participating Member States. The Workshop program comprised of seven technical sessions comprising of 23 presentations by the delegates from the Member States, Resource Persons and energy professionals from the SAARC Member States. All the presentations made in the following technical sessions are available at the SEC website ([www.saarcenergy.org](http://www.saarcenergy.org)):

**Technical Session 1:** Country Presentations: Issues and Challenges regarding Exchange of Power and Harmonization of Regulations & Policies

**Technical Session 2:** SAARC Power Market (Power Trade scenario in SAARC Region – How nations will benefit)

**Technical Session 3:** Creating an Enabling Regulatory Environment for SAARC Regional Power Trading (Focus: Identifying a Geographical hub for exchange of Power & Harmonization of Regulations & Policies)

**Technical Session 4:** Role of Private Sector in Construction, Maintenance and Operation of Trans Border Power Lines

**Technical Session 5:** Operational Issues (Scheduling, Coordination & Energy Accounting for Cross Border Trade)

**Technical Session 6:** Strategies to improve the role of IPPs and Utilities in Cross Border Power Trade

**Technical Session 7: Power Trade Agreements for Cross Border Power Trade (Focus: Sanctity of Contract, Dispute resolution, Risk Sharing)**

**Reception**

18. Global Energy Private Ltd. India hosted Cocktail Dinner at Hotel Soaltee Crowne Plaza on the evening of the opening day for the workshop (26 June, 2014) providing an informal opportunity for close interaction and networking among the delegates.

**Interactive Formulation of the Way Forward**

19. A three members Rapporteurs Committee comprising of Mr. Akash Shrestha, Mr. Pramod Rijal and Mr. Serene Khatiwada covered and formulated the proceedings of the Workshop. The report of the rapporteurs is attached at **Annex-V**. Mr. Shahzada Khalid, Officer Incharge, SEC presented the summarized recommendations of the workshop during the Valedictory Session of the Workshop.

**Valedictory Session**

20. Mr. Radhesh Pant, CEO, Investment Board, Nepal, chaired the valedictory session of the workshop.

21. Mr. Shahzada Khalid, Officer Incharge, SEC shared the report of the Workshop with the participants while thanking IPPAN and IPPAI for their contribution in successful culmination of the workshop, he read out the following recommendations emerging from the deliberations of the workshop:

- a. With the prevailing disharmony between the policy and regulatory environment among the SAARC Member States, there needs to be a regional level cooperation in order to achieve the desired energy security.
- b. Power trading mechanisms have already begun as bilateral agreements in the SAARC Region, these can be upgraded to trilateral agreements and then finally to a regional level. SEC can play an advisory/facilitating role in the effective transaction.
- c. SAARC Energy Centre may identify potential Hydro power projects for development as regional energy projects.
- d. The Electricity Laws and Regulations may be amended at country level or through a regional framework at SAARC level ratified further by all Member States. The following necessary mechanisms may be established by the SAARC:
  - i. SAARC Electricity Legal Framework to permit/ facilitate cross border power trade
  - ii. SAARC Regulatory Mechanism to regulate cross border power trade in South Asia
  - iii. SAARC Electricity Trading Mechanism that lays down the norms for cross border power trade

- iv. SAARC Regional/ Sub-regional Power Plants to add substantial capacities to enhance supply in the region
- v. SAARC Investment Facilitation Program to promote cross border investments from or within the region
- vi. South Asia Regional Power Exchange for which a study has already been undertaken by SAARC
- vii. SAARC Template Documents covering all sorts of commercial and other documents including the Tolling Agreements, to save time and reduce transaction time and costs

22. The Chair, Mr. Radhesh Pant, CEO, Investment Board, Nepal in his address to the workshop participants, emphasized the importance of cross border power trade in the SAARC Region. He lauded the role of SAARC Energy Centre in organizing the Workshop which provided an excellent platform for mutual discussion among the policy makers and regulators from all across the SAARC Region. He expected that SEC will continue playing its role with the same zeal and spirit.

23. The certificates of participation were awarded to the delegates.

24. Dr. H. M. Wijekoon Banda, delegate from Sri Lanka offered vote of thanks on behalf of all the participants to SAARC Energy Centre, IPPAN and IPPAI for successful organizing of the workshop and maintaining high enthusiasm and involvement on the part of delegates throughout the 2-day Workshop.

.

**Annexure – I**

SAARC ENERGY CENTRE  
ISLAMABAD

**SAARC WORKSHOP ON HARMONIZING REGULATIONS AND  
POLICIES FOR CROSS BORDER POWER TRADE, RISK SHARING AND  
FINANCIAL SETTLEMENT ISSUES**

**26-27 June, 2014**

**Hotel Soaltee Crowne Plaza, Kathmandu, Nepal**

**Wednesday, 25 June 2014**

Arrival of Guests

2000 hrs

Welcome Dinner hosted by IPPAN for the delegates

**Thursday, 26 June 2014**

0830 – 0900

Registration

**Inaugural Session**

0900 – 0930

Welcome Addresses: a. *Mr. Shahzada Khalid, Dy Director/Officer Incharge, SAARC Energy Centre*  
b. *Mr. Harry Dhaul, Director General, IPPAI*  
c. *Mr. Khadga B. Bisht, President, IPPAN*

0930 – 0935

Release of knowledge report by IPPAI by the Honorable Minister of Energy, Nepal

0935 – 0945

Keynote Address: *Mr. G Parthasarthy, Former Ambassador of India to Pakistan, Australia, Myanmar and Cyprus*

0945 – 1005

Inaugural Address: *Ms. Radha K. Gyawali, Honorable Minister of Energy, Nepal*

1005 – 1030

Coffee/ Networking break and Group Photograph

**Technical Session 1:**

**Country Presentations: Issues and Challenges regarding Exchange of Power and Harmonization of Regulations & Policies**

*Chair: Mr. Ahmar Ismail, Director (ETS), SAARC Secretariat, Kathmandu, Nepal*

1030 – 1200

- Bangladesh  
(*Mr. Md. Mizanur Rahman, Chief Engineer (P&D), Bangladesh Power Development Board, Bangladesh*)
- Bhutan

	<p>(Mr. Prem Dojee, Principal Engineer, Bhutan Electricity Authority, Bhutan)</p> <ul style="list-style-type: none"> <li>• India (Ms. Manju Gupta, AGM, CTU, Power Grid Corporation, India)</li> <li>• Maldives (Mr. Ibrahim Nizam, Senior Engineer, State Electric Company, Maldives)</li> <li>• Nepal (Mr. Sher Singh Bhat, Chief Generation Directorate, NEA, Nepal)</li> <li>• Sri Lanka (Dr. H. M. Wijekoon Banda, CE/Transmission Planning, Ceylon Electricity Board, Sri Lanka)</li> </ul>
<p><b>Technical Session 2:</b> <b>SAARC Power Market</b> (Power Trade scenario in SAARC Region – How nations will benefit)</p> <p><i>Chair: Mr. G Parthasarthy, Former Ambassador of India to Pakistan, Australia, Myanmar and Cyprus</i></p> <p>Key Note: Existing Scenario and future prospects of cross border trade (Country wise Overview) <i>Mr. Ravinder, Former Chairman, Central Electricity Authority, India</i></p>	
1200 – 1330	<ul style="list-style-type: none"> <li>• SAARC Power Market – Opportunities and Challenges <i>Dr. Sandip Shah, Vice President &amp; Country Director at Statkraft, Nepal</i></li> <li>• Multilateral funding for the SAARC grid <i>Dr. Priyantha Wijayatunga, Senior Energy Specialist, Asian Development Bank</i></li> <li>• Cross Border Power trade - Lessons from India Bangladesh Power Trade <i>Mr. ANM Obaidullah, Manager (Planning), Coal Power Generation Company Bangladesh Limited</i></li> <li>• Holistic approach to SAARC power market development <i>Mr. Amit Kumar, Senior Vice President, Global Energy Pvt. Ltd, India</i></li> </ul> <p><b>Q &amp; A</b></p>
1330 – 1430	<b>Luncheon</b>
<p><b>Technical Session 3:</b> <b>Creating an Enabling Regulatory Environment for SAARC Regional Power Trading</b> <b>(Focus: Identifying a Geographical hub for exchange of Power &amp; Harmonization of Regulations &amp; Policies)</b></p> <p><i>Chair: Dr. Priyantha Wijayatunga, Senior Energy Specialist, Asian Development Bank</i></p>	
1430 – 1600	<ul style="list-style-type: none"> <li>• Harmonization of Regulations &amp; Policies for cross border trade <i>Mr. D N Raina, President, Entecsol International, India</i></li> <li>• Panel Discussion: Overview of Regulatory framework for Trading of Power and Harmonization of regulations and policies – Setting up an over arching regulatory body for cross border trade. <ul style="list-style-type: none"> <li>• <i>Mr. U N Panjiar, Chairman, Bihar Electricity Regulatory Commission, India</i></li> <li>• <i>Mr. Pramod Deo, Former Chairman, Central Electricity Regulatory Commission, India</i></li> <li>• <i>Mr. Sriranjan Lacoul, Secretary, Water and Energy Commission Secretariat, Nepal</i></li> <li>• <i>Mr. ANM Obaidullah, Manager (Planning), Coal Power Generation Company Bangladesh Limited.</i></li> <li>• <i>Dr. H. M. Wijekoon Banda, CE/Transmission Planning, Ceylon Electricity Board, Sri Lanka</i></li> <li>• <i>Mr. Gem Tshering, Director (Transmission wing), Bhutan Power Corporation, Bhutan</i></li> </ul> </li> </ul>

	<b>Q &amp; A</b>
1600 – 1620	<b>Coffee/ Networking break</b>
<b>Technical Session 4: Role of Private Sector in Construction, Maintenance and Operation of Trans Border Power Lines</b>	
<i>Chair: Mr. Sher Singh Bhat, Chief, Generation Directorate, Nepal Electricity Authority, Nepal</i>	
1620 – 1710	<ul style="list-style-type: none"> <li>• Transmission Challenges and requirements for the way forward <i>Mr. Alok Roy, Chief Executive Officer, Reliance Power Transmission Ltd, India</i></li> <li>• Nepal IPP Perspective for Regional Power Trade <i>Mr. Gyanendra Lal Pradhan, SAARC CCI Council on Climate Change, Energy and Water Resources, Nepal.</i></li> </ul>
	<b>Q &amp; A</b>
2000	<b>Cocktail Dinner hosted by Global Energy Private Ltd. India for the delegates</b>
<b>Friday, 27 June 2014</b>	
<b>Technical Session 4: Operational Issues (Scheduling, Coordination &amp; Energy Accounting for Cross Border Trade)</b>	
<b>Chair &amp; Keynote:</b> Settlement mechanisms for cross border trade - <i>Mr. Ravinder, Former Chairman, Central Electricity Authority, India</i>	
0900-1030	<ul style="list-style-type: none"> <li>• Operational Experiences of power trade between India-Bhutan <i>Mr. Gem Tshering, Director (Transmission wing), Bhutan Power Corporation, Bhutan</i></li> <li>• Operational issues including scheduling and coordination for Cross Border Connectivity <i>Mr. S S Barpanda, AGM, NLDC, POSOCO (Power System Operation Corporation Ltd), India</i></li> <li>• Modalities for Cross Border Connectivity and related operational issues - HVDC and Radial Mode Connections <i>Mr. S K Singh, Chief Engineer, North Bihar Power Distribution Company Ltd., India</i></li> <li>• Nepal's Experience of Scheduling and Coordination for Cross border Power Trade <i>Mr. Surendra Rajbhandary, Director, NEA, Nepal</i></li> </ul>
	<b>Q &amp; A</b>
1030-1045	<b>Coffee Break</b>
<b>Session 5: Role of Private Sector in Construction, Maintenance and Operation of Trans Border Power Lines</b>	
<i>Chair: Mr. Sher Singh Bhat, Chief, Generation Directorate, Nepal Electricity Authority, Nepal</i>	
1045-1145	<ul style="list-style-type: none"> <li>• Transmission Challenges and requirements for the way forward <i>Mr. Alok Roy, Chief Executive Officer, Reliance Power Transmission Ltd, India</i></li> <li>• Nepal IPP Perspective for Regional Power Trade <i>Mr. Gyanendra Lal Pradhan, SAARC CCI Council on Climate Change, Energy and Water Resources, Nepal.</i></li> </ul>
	<b>Q&amp;A</b>
<b>Technical Session 6: Strategies to improve the role of IPPs and Utilities in Cross Border Power Trade</b>	
<b>Chair:</b> <i>Upendra Dev Bhatta, Acting MD, NEA, Nepal</i>	
<b>Keynote Address:</b> <i>Mr. Harry Dhaul, Director General, IPPAI</i>	

1145-1315	<ul style="list-style-type: none"> <li>• Challenges and Opportunities for International investments in cross border generation projects Mr. Bishal Thapa, MD, Lotus Energy, Nepal.</li> <li>• Requirements for certainty of investments and Investment security Mr. Damitha Kumarasinghe, DG Public Utilities Commission of Sri Lanka, Sri Lanka</li> <li>• Hydro Projects in Nepal - The IPP perspective for power trading Mr. Khadga B. Bisht, President, IPPAN, Nepal</li> </ul> <p><b>Q &amp; A</b></p>
1315-1415	<b>Networking Lunch</b>
<p style="text-align: center;"><b>Technical Session 7: Power Trade Agreements for Cross Border Power Trade</b> (Focus: Sanctity of Contract, Dispute resolution, Risk Sharing)</p> <p style="text-align: center;"><b>Chair:</b> <i>Mr. Khadga B. Bisht, President, IPPAN</i></p> <p style="text-align: center;"><b>Keynote Address:</b> <i>Mr. Rajendra Kishore Kshatri, Secretary, Ministry of Energy, Nepal</i></p>	
1415-1545	<ul style="list-style-type: none"> <li>• Presentation by <i>Dr. Pramod Deo, former Chairman Central Electricity Generation Authority, India</i></li> <li>• Key Aspects of a Power Trade Agreement for cross border power trade <i>Mr. Sanjay Sen, Managing Partner, Praxis Partners, India</i></li> <li>• Power Trade Agreements for Cross Border Power Trade from Nepal's perspective <i>Mr. Hitendra Dev Shakya, Nepal Electricity Authority, Nepal</i></li> <li>• Role of trading companies in Cross Border Trade <i>Mr. Rajiv Mishra, Executive Director, PTC India Ltd</i></li> </ul> <p><b>Q &amp; A</b></p>
1545-1600	<b>Coffee Break</b>
<p style="text-align: center;"><b>Valedictory Session</b> <i>Chair: Mr. Radhesh Pant, CEO, Investment Board, Nepal</i></p>	
1600-1700	<p>Report of the Workshop <i>Mr. Shahzada Khalid, SAARC Energy Centre</i></p> <p>Valedictory Address <i>Mr. Mr. Radhesh Pant, CEO, Investment Board, Nepal</i></p> <p>Vote of Thanks <i>By Dr. H. M. Wijekoon Banda, delegate from Sri Lanka</i></p>
<b>Saturday, 28 June 2014</b>	
<b>Delegates Depart</b>	

**Annexure – II****List of Delegates from Member States**

#	MS total	Member State	Name, Designation	Contact Info.
1	1	Bangladesh	<b>Mr. Md. Mizanur Rahman</b> , Chief Engineer (P&D), Bangladesh Power Development Board.	Ph: +8801819229840 <a href="mailto:mizan9948@yahoo.com">mizan9948@yahoo.com</a>
2	2	Bangladesh	<b>Mr. Qazi Ahsan Shafique</b> , Chief Engineer (P&D), Power Grid Company of Bangladesh.	Ph: +8801714070272 <a href="mailto:gm-pnd@pgcb.org.bd">gm-pnd@pgcb.org.bd</a>
3	1	Bhutan	<b>Mr. Prem Dojee</b> , Principle Engineer, Bhutan Electricity Authority.	Ph: +97517603542 <a href="mailto:pdorjee1951@gmail.com">pdorjee1951@gmail.com</a>
4	2	Bhutan	<b>Mr. Sonam</b> , Engineer (Transmission and Power Systems), Department of Hydropower and Power Systems.	Ph: +97517719147 <a href="mailto:sonamhaap87@gmail.com">sonamhaap87@gmail.com</a>
5	1	India	<b>Mr. S S Barpanda</b> , AGM, NLDC (National Load Despatch Center), Power System Operation Corporation (POSOCO).	Ph: +919717296928 <a href="mailto:ssbarpanda@gmail.com">ssbarpanda@gmail.com</a>
6	2	India	<b>Ms. Manju Gupta</b> , AGM, CTU (Central Transmission Utility) Planning, Power Grid Corporation of India Ltd, (PGCIL).	Ph: +919910378111 <a href="mailto:manju@powergridindia.com">manju@powergridindia.com</a>
7	1	Maldives	<b>Mr. Ibrahim Nizam</b> , Senior Engineer, State Electric Company.	Ph: +9607787028 <a href="mailto:nixam@hotmail.com">nixam@hotmail.com</a>
8	1	Nepal	<b>Mr. Dinesh Kumar Ghimire</b> , Superintended Engineer, Department of Electricity Development.	Ph: +9779851181619 <a href="mailto:dkgmowr@hotmail.com">dkgmowr@hotmail.com</a>
9	2	Nepal	<b>Mr. Surendra Rajbhandari</b> , Director, Nepal Electricity Authority.	
10	3	Nepal	<b>Mr. Kamal Ram Joshi</b> , Senior Divisional Engineer, Water and Energy Commission Sectt.	Ph: +97714211415 <a href="mailto:joshikamalram@hotmail.com">joshikamalram@hotmail.com</a>

#	MS total	Member State	Name, Designation	Contact Info.
11	4	Nepal	<b>Mr. Suresh Shrestha</b> , Senior Divisional Engineer, Water and Energy Commission Sectt.	Ph: + 9841336773 <a href="mailto:saudaksur@gmail.com">saudaksur@gmail.com</a>
12	1	Sri Lanka	<b>Dr. H. M. Wijekoon Banda</b> , CE/ Transmission Planning, Ceylon Electricity Board.	Ph: +94714115592 <a href="mailto:cetrplan@ceb.lk">cetrplan@ceb.lk</a>

**Annexure –III****List of Resource Persons**

#	Session	Name, Designation	Topic	Contact
1.	(Technical session-2)	<b>Mr. A N M Obaidullah</b> , Manager (Planning), Coal Power Generation Company Bangladesh Limited., Bangladesh.	Cross Border Power trade - Lessons from India Bangladesh Power Trade	Mobile: +88 01711585258 <a href="mailto:obaidanm@yahoo.com">obaidanm@yahoo.com</a>
2.	(Technical session-5)	<b>Mr. Gem Tshering</b> , Director (Transmission Wing), Bhutan Power Cooperation Limited, Bhutan.	Operational Experiences of power trade between India-Bhutan	Mobile: +9752333582 <a href="mailto:gemtshering@bpc.bt">gemtshering@bpc.bt</a>
3.	(Technical session-3)	<b>Mr. D N Raina</b> , President, Entecsol International, India.	Harmonization of Regulations & Policies for cross border trade	Phone: +911145563288 <a href="mailto:rainadn@gmail.com">rainadn@gmail.com</a>
4.	(Technical session-2)	<b>Mr. G Parthasarthy</b> , Former Ambassador of India to Pakistan, Australia, Myanmar and Cyprus, India.	Chair	Phone: +91 11 22755572 <a href="mailto:partha0@gmail.com">partha0@gmail.com</a>
5.	(Technical session-3)	<b>Mr. UN Panjiar</b> , Chairman BERC, India.	Panel Discussion: Overview of Regulatory framework for Trading of Power and Harmonization of regulations and policies – Setting up an over arching regulatory body for cross border trade.	Phone: +91 8987305999 <a href="mailto:un_paniar@yahoo.co.in">un_paniar@yahoo.co.in</a>
6.	(Technical session-5)	<b>Mr. Ravinder</b> , Former Chairman, Central Electricity Authority, India.	Chair	Phone: +91 9971568444 <a href="mailto:ravinders.only@gmail.com">ravinders.only@gmail.com</a>

#	Session	Name, Designation	Topic	Contact
7.	(Technical session-2)	<b>Dr. Priyantha Wijayatunga</b> , Principal Energy Specialist, Asian Development Bank, Philippines.	Multilateral funding for the SAARC grid	Phone: +63 26831739 <a href="mailto:pwijayatunga@adb.org">pwijayatunga@adb.org</a>
8.	(Technical session-6)	<b>Mr. Damitha Kumarasinghe</b> , Director General, Public Utilities Commission of Sri Lanka, Sri Lanka.	Requirements for certainty of investments and Investment security	Phone: +94 11 2392605 <a href="mailto:damitha@pucl.gov.lk">damitha@pucl.gov.lk</a>

**Annexure - IV****List of Participants**

	<u>Sr. No.</u>	<u>Name</u>	<u>Designation</u>	<u>Company Name</u>	<u>Mobile Number</u>	<u>Tele Number</u>	<u>Fax Number</u>	<u>Email</u>
<b>Hon. Minister</b>	1	Ms. Radha Kumari Gyawali	Minister, Energy	Ministry of Energy, Nepal				
<b>Ambassadors</b>	2	H.E. W.M Senevirathna	Ambassador of Sri Lanka to Nepal	Embassy of Democratic Socialist, Sri Lanka		00977 01 4720623	00977 01 4720128	<a href="mailto:lankaemb@wlink.com.np">lankaemb@wlink.com.np</a>
	3	H. E. Arshed Saud Khosa	Ambassador of Pakistan to Nepal	Pakistan Embassy, Kathmandu				
	4	H.E. Mashfee Binte Shams	Ambassador of Bangladesh to Nepal	Bangladesh Embassy, Kathmandu				
<b>Bangladesh</b>	5	Mr. Md. Mizanur Rahman	Chief Engineer, Planning and Design	Bangladesh Power Development Board	0088 01819229840	00880 2 550246	00880 2 9552623	<a href="mailto:mizan9948@yahoo.com">mizan9948@yahoo.com</a>
	6	Mr. Qazi Ahsan Shafique	Chief Engineer (P&D)	Power Grid Company Of Bangladesh Ltd	01714 070272	00880 2 9567012	00880 2 7171833	<a href="mailto:gm-pnd@pgcb.org.bd">gm-pnd@pgcb.org.bd</a>
	7	Mr. A N M Obaidullah	Manager (Planning)	Coal Power Generation Company Ltd	0088 01711585258			<a href="mailto:obaidanm@yahoo.com">obaidanm@yahoo.com</a>
	8	Mr. Khan Md. Moinul Hossen	First Secretary	Embassy of People's Republic of Bangladesh	00977 9808184014	00977 1 4390128	00977 1 4390132	<a href="mailto:moinhossen@yahoo.com">moinhossen@yahoo.com</a>
<b>Bhutan</b>	9	Mr. Pem Dorjee	Principle Engineer	Bhutan Electricity Authority	(9751) 760- 3542	(9750) 233- 7076		<a href="mailto:pdorjee1951@gmail.com">pdorjee1951@gmail.com</a>
	10	Mr. Sonam	Engineer (Transmission and Power Systems Division)	Department of Hydropower and Power Systems	(9751) 771- 9147	(975) 232- 3618		<a href="mailto:sonamhaap87@gmail.com">sonamhaap87@gmail.com</a>
	11	Mr. Gem Tshering	Director (Trasmission Wing)	Bhutan Power Cooperation Limited	00975 1760258	00975 2 333582	00975 322279	<a href="mailto:gemtshering@bpc.bt">gemtshering@bpc.bt</a>
<b>India</b>	12	Ms. Manju Gupta	Additional General Manager	Power Grid Corporation Of India Ltd	0091 9910378111	0124 2822130	0124 2571793	<a href="mailto:manju@powergridindia.com">manju@powergridindia.com</a>
	13	Mr. S.S Barpanda	Additional General Manager	Naltional Load Despatch Centre(POSOCO)	00919 717296928	011 26536342	011 26536901	<a href="mailto:ssbarpanda@posoco.in">ssbarpanda@posoco.in</a>

<u>Sr. No.</u>	<u>Name</u>	<u>Designation</u>	<u>Company Name</u>	<u>Mobile Number</u>	<u>Tele Number</u>	<u>Fax Number</u>	<u>Email</u>
14	Mr. Ravinder	former chairman	Central Electricity Authority	0091 9971568444			<a href="mailto:ravinders.only@gmail.com">ravinders.only@gmail.com</a>
15	Mr. G Parthasarthy	Former Ambassador of India to US, Australia and Cyprus	India	(91981) 051- 3575	91 11 22755572		<a href="mailto:partha0@gmail.com">partha0@gmail.com</a>
16	Mr. UN Panjiar	Chairman BERC	India	91 8987305999	91-612- 2504187		<a href="mailto:un_panjiar@yahoo.co.in">un_panjiar@yahoo.co.in</a>
17	Mr. D N Raina	President	Entecsol International		(91114) 556- 3288		<a href="mailto:rainadn@gmail.com">rainadn@gmail.com</a>
18	Mr. Pramod Deo	Former Chairman	Central Electricity Regulatory Commission, India				-
19	Mr. S K Singh	Chief Engineer (Commercial)	North Bihar Power Distribution Company Ltd.India				-
20	Mr. Balamurgan D	Managing Director	North Bihar Power Distribution Company Ltd.India		0612 2504044	0612 2504509	<a href="mailto:ms.nbpdc@gmail.com">ms.nbpdc@gmail.com</a>
21	Shri Ashok Chavan	Chief Engineer (Power Purchase)	Maharashtra State Electricity Distribution Company Ltd.	(981) 911- 1600	26474211 Ext 2303		<a href="mailto:ceppmsedcl@gmail.com">ceppmsedcl@gmail.com</a>
22	Dr. Rajiv Mishra	Executive Director	PTC India Ltd				
23	Mr. Amit Kumar	Sr. Vice president	Global Energy Private ltd	0091 9711597668	0091 22473444	0091 2243734466	<a href="mailto:amitkumar@global.net.in">amitkumar@global.net.in</a>
24	Mr. Alok Roy	Chief Executive Officer	Reliance Power Transmission	00919 350261630	0091 1243917975	0091 1243917982	<a href="mailto:alok.k.roy@relianceada.com">alok.k.roy@relianceada.com</a>
25	Mr. Asok Dasgupta	President	Independent Power Producer Association of India	00919 830268291			<a href="mailto:asokdasgupta@ippaimail.org">asokdasgupta@ippaimail.org</a>
26	Mr. Harry Dhaul	Director General	Independent Power Producer Association of India	00919 811115171			<a href="mailto:harrydhaul@gmail.com">harrydhaul@gmail.com</a>
27	Ms. Nayyara Hossain	Exec Vice President	Independent Power Producer Association of India	(91858) 880- 5716	(91114) 955- 6600		<a href="mailto:nayyara@ippaimail.org">nayyara@ippaimail.org</a>
28	Ms. Gita Chhetri	Executive Business Development	Independent Power Producer Association of India				
29	Ms. Iqbal Kaur	Sr manager	Independent Power Producer Association of India				
30	Ms. Kamia Sharma	Sr Manager	Independent Power Producer Association of India				

	<u>Sr. No.</u>	<u>Name</u>	<u>Designation</u>	<u>Company Name</u>	<u>Mobile Number</u>	<u>Tele Number</u>	<u>Fax Number</u>	<u>Email</u>
	31	Mr. Prashant Khankhoje	President	Global Energy Private Ltd	0091 9823082605	0091 20 41026767	91 20 41026799	<a href="mailto:prashantk@globalenergy.net.in">prashantk@globalenergy.net.in</a>
	32	Ms. Zonunpari	Assistant Manager	Global Energy Private Ltd	0091 9899029153	00911 11 43734444	911 11 43734466	<a href="mailto:pari@globalenergy.net.in">pari@globalenergy.net.in</a>
<b>Maldives</b>	33	Mr. Ibrahim Nizam	Senior Engineer	State Electric Company	960 3338303	960 7787028	(960) 332- 7036	<a href="mailto:nixam@hotmail.com">nixam@hotmail.com</a>
<b>Nepal</b>	34	Mr. Rajendra Kishore Kshatri	Secretary	Ministry of Energy, Nepal				
	35	Mr. Sriranjana Lacoul	Secretary	Water and Energy Commission Secretariat, Nepal				
	36	Mr. Radhesh Pant	CEO	Investment Board, Nepal				
	37	Mr. Udaya Raj Sapkota	Joint Secretary	Ministry of Energy, Nepal				
	38	Mr. Sunil B Malla	Joint Secretary	Water and Energy Commission Secretariat		00977 1 4211428	00977 1 4211425	<a href="mailto:sunilbmalla@gmail.com">sunilbmalla@gmail.com</a>
	39	Mr. Sher Singh Bhat	Chief, Generation Directorate	Nepal Electricity Authority, Nepal	(985) 103- 8540			
	40	Mr. Dilli Bahadur Singh	Director General	Ministry of Energy, Nepal		00977 1 4480326	00977 1 4480257	<a href="mailto:dillisingh@gmail.com">dillisingh@gmail.com</a>
	41	Mr. Dinesh Kumar Ghimire	Dy. Director General	Ministry of Energy, Nepal	00977 9851181619	00977 1 449921		<a href="mailto:dkgmowr@hotmail.com">dkgmowr@hotmail.com</a>
	42	Mr. Sanjay Sharma	Dy. Director General	Ministry of Energy, Nepal		00977 1 4481614	00977 1 4480257	<a href="mailto:siysharma@yahoo.com">siysharma@yahoo.com</a>
	43	Mr. Surendra Rajbhandari	Director	Nepal Electricity Authority				
	44	Mr. Hitendra Dev Shakya	Director	Nepal Electricity Authority		00977 1 4153081		<a href="mailto:hitendraev@hotmail.com">hitendraev@hotmail.com</a>
	45	Mr. Satish kumar Singh	Chief Engineer	North Bihar Power Distribution Company Ltd	07763815021	09835073760	09471861924	<a href="mailto:bseb.ce.commercial@gmail.com">bseb.ce.commercial@gmail.com</a>
	46	Mr. Bishal Thapa	MD	Lotus Energy				
	47	Dr. Sandip Shah	Vice President	Statkraft	00977 9801025634	00977 1 5521864	00977 1 5539380	<a href="mailto:sandip.shah@statkraft.com">sandip.shah@statkraft.com</a>

<u>Sr. No.</u>	<u>Name</u>	<u>Designation</u>	<u>Company Name</u>	<u>Mobile Number</u>	<u>Tele Number</u>	<u>Fax Number</u>	<u>Email</u>
48	Mr. Kamal Ram Joshi	Senior Divisional Hydrologist	Water and Energy Commission Secretariat	00977 9841282557	00977 1 4211415	00977 1 4211425	<a href="mailto:joshikamalram@hotmail.com">joshikamalram@hotmail.com</a>
49	Mr. Ashish Sinha	First Secretary (Commerce)	Indian Embassy, Kathmandu				-
50	Mr. Narendra Prajapati	Chief Executive Officer	Bhote Koshi Power Company	977 98510 45789	00977 1 4270027	00977 1 4273516	<a href="mailto:narendra.prajapati@bkpc.com.np">narendra.prajapati@bkpc.com.np</a>
51	Mr. Suresh Shrestha	Senior Divisional Engineer	Water and Energy Commission Sectt.	(984) 133-6773	00977-1-4211415		<a href="mailto:saudaksur@gmail.com">saudaksur@gmail.com</a>
52	Mr. Sanjeeb Baral	Senior Divisional Engineer	Ministry of Energy, Nepal				
53	Mr. Madhu Bhatwal	Senior Divisional Engineer	Dept of Electricity Development				
54	Mr. Shyam Kishor Yadav	Senior Divisional Engineer	Ministry of Energy, Nepal		00977 1 4211509	00977 1 4211510	<a href="mailto:sk Yadava@hotmail.com">sk Yadava@hotmail.com</a>
55	Ms. Mon Devi Shrestha	Hydropower Engineer	Dept of Electricity Development				
56	Mr. Jeebachh Mandal	Programme Leader (Energy Trade)	SAARC Energy Centre	00977 9841312250			<a href="mailto:jeebachh@moen.gov.np">jeebachh@moen.gov.np</a>
57	Mr. Khadga Bahadur Bisht	President	Independent Power Producers' Association, Nepal	00977 9802026406	00977 1 4169175	00977 1 4169175	<a href="mailto:khadga.bisht@hpl.com.np">khadga.bisht@hpl.com.np</a>
58	Mr. Shailendra Guragain	Vice President	Independent Power Producers' Association, Nepal	00977 9851034770	0977 1 4169175	00977 1 4169175	<a href="mailto:guragain.shailendra@gmail.com">guragain.shailendra@gmail.com</a>
59	Mr. Gyanendra Lal Pradhan	Advisor	Independent Power Producers' Association, Nepal				-
60	Mr. Kumar Pandey	Secretary General	Independent Power Producers' Association, Nepal				
61	Mr. Ananda Chaudhary	Executive Member	Independent Power Producers' Association, Nepal	00977 9851018118	00977 1 4169175	00977 1 4169175	<a href="mailto:ananda.chaudary@gmail.com">ananda.chaudary@gmail.com</a>
62	Mr. Pashupati Dhungel	Executive Member	Independent Power Producers' Association, Nepal	00977 9841537136	00977 1 4169175	00977 1 4169175	<a href="mailto:pdhungel@ippan.org.np">pdhungel@ippan.org.np</a>
63	Mr. Tuk Pd. Paudel	Executive Member	Independent Power Producers' Association, Nepal				
64	Mr. Sourish Dasgupta	Manager	Price Waterhouse Coopers	0091 9051600202	09133 23579101	00933 23572754	<a href="mailto:sourish.dasgupta@in.pwc.com">sourish.dasgupta@in.pwc.com</a>

<u>Sr. No.</u>	<u>Name</u>	<u>Designation</u>	<u>Company Name</u>	<u>Mobile Number</u>	<u>Tele Number</u>	<u>Fax Number</u>	<u>Email</u>	
65	Mr. Yogesh Daruka	Director	Price Waterhouse Coopers	00919 830110790	0091 33 23579101	0091 33 23572754	<a href="mailto:yogesh.daruka@in.pwc.com">yogesh.daruka@in.pwc.com</a>	
66	Mr. Onkar Bhattacharya	Principle Consultant	Price Waterhouse Coopers	00919 830028819	0091 33 23579101	0091 33 23572754	<a href="mailto:onkar.bhattacharya@in.pwc.com">onkar.bhattacharya@in.pwc.com</a>	
67	Dr. Subarna D. Shrestha	Chief Executive Officer	Sanima Mai Hydropower Ltd		00977 1 4446442	00977 1 4441277	<a href="mailto:subarna@sanimahydro.com">subarna@sanimahydro.com</a>	
68	Mr. Moti lal Dugar	Chairman	TM Dugar Group		00977 1 4244352	00977 1 4248695	<a href="mailto:dugargroup@wlink.com.np">dugargroup@wlink.com.np</a>	
69	Mr. Amrit Man Nakarmi	Professor & Coordinator	Center For Energy Studies (CES)		00977 1 5532235	00977 1 5532234	<a href="mailto:nakarmiamrit@gmail.com">nakarmiamrit@gmail.com</a>	
70	Dr. Rakesh Kumar	AGM-Project Design & Engr	Moser Baer Projects Private Ltd	0091 9910248142	0091 11 47624100	0091 11 47624229	<a href="mailto:rakesh.kumar@moserbear.in">rakesh.kumar@moserbear.in</a>	
71	Mr. Vinay Bhandari	Chief Executive Officer	CEDB Hydro Fund Ltd		00977 1 4261827	00977 1 4260266	<a href="mailto:vinay.bhandari@chf.com.np">vinay.bhandari@chf.com.np</a>	
72	Mr. Laxman Biyogi	Correspondent	Nepal Republic Media Pvt. Ltd	00977 98510 10614	00977 1 4265100	00977 1 4252262	<a href="mailto:biyogi2@gmail.com">biyogi2@gmail.com</a>	
73	Mr. Kabraj Gurung	Managing Director	Jyoti Arts, Sanepa, Lalitpur	00977 9841217481	00977 1 5549879		<a href="mailto:kabiraj_gurung@yahoo.com">kabiraj_gurung@yahoo.com</a>	
74	Mr. Puspa Raj Koirala	Reporter	New Business Age Information and Analysis	(984) 967- 7945	426-7717	426-8726	<a href="mailto:pkoirala@abhiyan.com.np">pkoirala@abhiyan.com.np</a>	
75	Mr. Bhim Gautam	Assistant Sr. Reporter	Rajdhani News Publication Pvt Ltd	00977 1 9841302627	00977 1 5546300	00977 1 5011594	<a href="mailto:journalistbhim@gmail.com">journalistbhim@gmail.com</a>	
76	Mr. Baburam Khadka	Chief Development Bureau	Karobar National Economic Daily		00977 1 4785000	00977 1 4785665	<a href="mailto:mail@karobardaily.com">mail@karobardaily.com</a>	
<b>Sri Lanka</b>	77	Mr. Damitha Kumarasinghe	Director General	Public Utilities Commision Of Sri Lanka	0094 77 7572958	0094 11 2392605	0094 11 2392641	<a href="mailto:damitha@puosl.gov.lk">damitha@puosl.gov.lk</a>
	78	Dr. H. M. Wijekoon Banda	CE/ Transmission Planning	Ceylon Electricity Board	(9471) 411- 5592	(9411) 232- 4842		<a href="mailto:ctrplan@ceb.lk">ctrplan@ceb.lk</a>
<b>SAARC Sectt</b>	79	Mr. Ahmar Ismail	Director (ETS)	SAARC Secretariat, Nepal		9771- 4221694	9771- 4227033	<a href="mailto:dirpak@saarc-sec.org">dirpak@saarc-sec.org</a>
<b>SEC</b>	80	Mr. Shahzada Khalid	Deputy Director/ Officer Incharge	SAARC Energy Centre	0092 300 854 2852	0092 51 222 2089	0092 51 222 1937	<a href="mailto:shahzada@saarcenergy.org">shahzada@saarcenergy.org</a>
	81	Mr. Ahsan Javed	Research Fellow (Renewable Energy)	SAARC Energy Centre	(92333) 517- 2446	92-51- 2228802 & 4	0092 51 222 1937	<a href="mailto:ahsan@saarcenergy.org">ahsan@saarcenergy.org</a>

	<u>Sr. No.</u>	<u>Name</u>	<u>Designation</u>	<u>Company Name</u>	<u>Mobile Number</u>	<u>Tele Number</u>	<u>Fax Number</u>	<u>Email</u>
	82	Mr. Saeed	Support Staff	SAARC Energy Centre	(92345) 506-6550	92-51-2228802 & 4	0092 51 222 1937	<a href="mailto:m.saeed@saarcenergy.org">m.saeed@saarcenergy.org</a>
<b>SIC</b>	83	Mr. Magan Shrestha	Admin & Finance officer	SAARC Information Centre				-
<b>ADB</b>	84	Mr. Kenichi Yokoyama	Country Director	Asian Development Bank	00980 20310000	00977 1 4005120	00977 1 4005137	<a href="mailto:kyokoyama@adb.org">kyokoyama@adb.org</a>
	85	Dr. Priyantha Wijayatunga	Principle Energy Specialist	Asian Development Bank		0063 26831739	0063 26362338	<a href="mailto:pwijayatunga@adb.org">pwijayatunga@adb.org</a>
	86	Mr. Tika limbu	Head, portfolio Management Unit	Asian Development Bank		00977 1 4005120	00977 1 4005137	<a href="mailto:tlimbu@adb.org">tlimbu@adb.org</a>
	87	Mr. Pushkar Manaadhar	Project Officer	Asian Development Bank		00977 1 4005120	00977 1 4005137	<a href="mailto:pmanandhar@adb.org">pmanandhar@adb.org</a>
<b>WB</b>	88	Dr. Rabin Shrestha	Senior Energy Specialist	The World Bank, Nepal				
<b>UNDP</b>	89	Mr. Anupa Rimal Lamichhane	Climate Change Programme Analyst Environment	United Nations Development Programme		00977 1 5523200	00977 1 5523991	<a href="mailto:anupa.lamichhane@undp.org">anupa.lamichhane@undp.org</a>
<b>GIZ</b>	90	Mr. Bart Van Beuzekom	Team Leader	GIZ		00977 1 5538129	00977 1 5551706	<a href="mailto:bart.vanbeuzekom@giz.de">bart.vanbeuzekom@giz.de</a>
<b>RN Embassy</b>	91	Mr. Bibek Chapagain	Energy Advisor	Royal Norwegian Embassy	00977 9851018861	00977 1 55 45 307	00977 1 5545226	<a href="mailto:bibek.chapagain@mfa.no">bibek.chapagain@mfa.no</a>
<b>Media</b>	92	Mr. Sachen Gautam	Reporter	Nayapatrika Daily				
	93	Mr. Laxman Biyogi	Reporter	Nagarik Daily				
	94	Mr. Baburam	Reporter	Karobar Daily				
<b>Rapporteurs</b>	95	Mr. Akash Shrestha	Rapporteurs	Nepal				
	96	Mr. Pramod Rijal	Rapporteurs	Nepal				
	97	Mr. Serene Khatiwada	Rapporteurs	Nepal				

**Annexure - V****Rapporteurs' Report**

---

**Inaugural Session****Welcome Addresses:****a. Mr. Shahzada Khalid, Dy Director/Officer Incharge, SAARC Energy**

Mr. Khalid commenced his deliberation by expressing gratitude towards Government of Nepal and all participating delegates. He then acknowledged the need of regional cooperation in terms of power sharing among SAARC nations in order to guarantee energy security which has been jeopardized by growing dependence on fossil fuel. With existing disharmony between the policy and regulatory environment among SAARC member countries – which has been brought about by the market dynamics of the respective countries – there needs to a regional-level cooperation in order to achieve the desired energy security. Flow of cross border investment needs to be increased and infrastructure development should be put into first priority. Then the member countries need to implement complementary policies, reducing regulatory gaps, allowing for Power trading amongst them. Policy makers need to take a comprehensive view of South Asia to make a transition from a regulatory framework to privatization such that maximum benefit is attained.

**b. Mr. Harry Dhaul, Director General, IPPAI**

Mr. Dhaul began by re-iterating the need to harmonize the regulations and policies among member nations. Governments across the member nations have now begun to allow private sectors to partake more and more actively in the energy sector. However, government and private sector are guided by different interests (public service versus profit maximization respectively). He highlighted the need of holding regular conferences and workshops and discussing how government policies impact the energy sector. Sanctity of contract is a major issue that the government needs to guarantee. A central coordination agency like SAARC itself, specializing in energy sector that can guarantee harmonization is the need of the hour. Once this is guaranteed, there is immense potential for power sharing that can then be materialized. The ultimate goal is improving knowledge on cross border trade and sharing those ideas for benefit of consumers.

---

**c. Mr. Khadga B.Bisht, President, IPPAN**

With a population of 1.4 billion, average GDP growth of 5% and immense demand for energy, SAARC region has great potential for regional power trade. Price fluctuations in member countries, need to make optimal utilization of resources, and environmental concerns further necessitate power trade among SAARC nations. It has been found that initial power trade discussions have been started by private sectors in the member countries. In the mean time, it has also been a realization that the

countries themselves need to coordinate energy trading policies. From international experience, it has been proven that power trading is commercially viable while also being efficient in responding to energy demands. Examples can be taken from Nordic countries, Southern Africa and India. Historically, it has been found that most of these successful power trading mechanisms begin as bilateral agreements, later growing to become big regional projects. Amongst SAARC nations, bilateral power sharing has been practiced for some time now. Furthermore, SAARC power system has complementarities and therefore regional power trade is viable and doable. Governments thus need to sign MoUs to the soonest. SAARC summit 2014 that is going to be held in Kathmandu itself can be used as a platform.

---

### Knowledge report release

Hon. Radha K. Gyawali, Minister of Energy, Government of Nepal formally released the Knowledge Report prepared by IPPAI.

### Keynote Address:

Mr. G Parthasarthy, Former Ambassador of India to Pakistan, Australia and Cyprus

Energy integration is a part of economic integration. In 1998, a roadmap of Energy integration was made whereby, SAARC Free Trade Area would be achieved by 2010, Customs union by 2015 and Economic union by 2020. This was ultimately accepted in Kathmandu in 2003. There is a need to assess where SAARC economic integration lies in the global context.

North American electricity grid is the biggest grid. It is managed by a single reliability commission which is followed by regional level councils Europe, China, Russia, Japan and India follow respectively, in terms of electricity grid sizes.

Within SAARC, more integration required for a global context

India has got complicated federal structure. It is difficult to integrate within the country as there is different policy setup in different states.

There is power sharing going on between India and Nepal. Cross border grid is being discussed. World Bank is financing a project for trans-border power transfer (estimated time of completion being 2016.) With Nepal's potential, it can be a big contributor to the whole of SAARC region. Private sector in Nepal has been very active and private projects have moved faster than government projects.

Bhutan is planning to export 10,000 MW to India by 2020. It has potential to exporting more and lead the region. Per capita income is increasing in the same rate as those of Singapore and S. Korea.

Similarly, Myanmar is integrated with India. Sri Lanka imports coal from India. There should be high voltage DC grid connectivity between India and Sri Lanka. Pakistan and India have been looking to strike a deal in terms of power sharing.

Under such global context, what is needed now is a framework for regionalizing these bilateral agreements. Regionalization can extend from West Asia to India and further east. There is immense potential to achieving this.

**Inaugural Address: Ms. Radha K. Gyawali, Honorable Minister of Energy, Nepal**

South Asians lagging behind in terms of energy security. North Americans and South Americans have bigger capacities. Cultural and lingual proximities should have eased up integration, but as it so been that paper works are more time consuming than infrastructure constructions.

A plethora of studies, identifying necessary reforms and interventions have been done. We need to implement their recommendations. Magnitude of investments is enormous (and enticing for more decades to come). Regional convention is possible way out. But this may take some time. Until then, power markets will provide viable solutions. The ultimate goal is to have unfettered power transfers in the region in commercial scale. For economic optimization of resources, checking greenhouse gas emissions, and coping with the growing demands for energy, cross border integration is a must. Spot market trading should also be encouraged.

We need to look into international best practices. SAARC power trade is moving very slow and this needs some expediting. FDI is extremely low in South Asia, compared to other regions. One of the reasons for this is the disharmony in the region in terms of policy and regulatory environment. Nepal's potential can be utilized to meet both domestic and international needs. She is always looking to trade power with India. Nepal is currently working with World Bank and Asian Development Bank to achieve cross border power trade. Nepal remains hopeful and expects reciprocity from SAARC member nations.

## Technical Session 1:

### **Country Presentations: Issues and Challenges regarding Exchange of Power and Harmonization of Regulations & Policies**

**Chair: Mr. Ahmar Ismail, Director (ETS), SAARC Secretariat, Kathmandu, Nepal**

Late Mr. Hilal Raza, acknowledgement. One minute silence.

#### **1. Bangladesh**

**- Mr. Md. Mizanur Rahman, Chief Engineer (P & D), Bangladesh Power Development Board**

Bangladesh has high population density. It is an LDC with population of 150million. GDP per capita stands at USD 1044. If power purchase is disregarded, per capita shoots to USD 2500. It experiences 6 % GDP growth in the last decade and expects 7 % growth in coming year. Installed capacity of electricity amounts to 10000MW. That amounts to capacity of 321 MW per person. Still, only 62% population has access of electricity. Various internal and external shocks have hampered Bangladesh's economic growth.

Bangladesh aims to undertake capital intensive power projects in the future. Electricity generation is remarkably high. It has aimed at fuel diversity and sustainable supply of primary fuel. Private sector participation on power sector is growing, harnessing renewable energy resources. Government of Bangladesh is focusing on regional energy cooperation within the region.

Bangladesh has a single buyer system in terms of electricity. Under Ministry of Power, Energy and Mineral Resources, Power department buys all generated electricity and sells to distribution entities in bulk. Primary fuel option in Bangladesh is very critical. Fiscal Year 2013, majority of electricity came from natural gas, contributing as much as 80%. Liquid fuel electricity generation has also increased and as a result, cost has increased by 2.5%.

Bangladesh is a flat land and thus there is less opportunity for hydropower. Coal provides a solution to this problem. However, the mines are located in densely populated areas. Therefore, government has been exploring ways to harness it more efficiently.

Cost of energy is still high, thus there is a need of import option. Energy has been imported from Indonesia, Australia, Mozambique and South Africa.

Thus, regional hydropower import is very important. Bangladesh has been looking to import electricity from neighboring nations. Power exchange points have been identified. Majority of imports will be made from India. Even Myanmar has agreed to export 500 MW to Bangladesh. Government of Bangladesh guarantees a payment in case BPDB fails. Joint Technical team has also been formed between two nations for further cooperation. After the completion of transmission line in Case 2 (800KV DC Rangariater to Baoropoaukhar), Bangladesh can import from Arunachal Pradesh, and India can transfer North East power to North West. If this is possible, Nepal also becomes a viable exporter through power swap. Nepal could be contracted for 4000MW. Remaining 6000MW could be imported from India. If this is achieved, no further investment will be required. It leads to Long term contract

Bangladesh has been looking for importing power from regional power market. No regulatory framework has been developed thus so far. Harmonization of policy is an important factor for regional trade. Development of transmission is also another major necessity for regional trade, which is major challenge. Therefore, political will be key for overcoming all these challenges.

---

## **2. Bhutan**

**- Mr. PremDojee, Principal Engineer, Bhutan Electricity Authority**

Bhutan has not yet formed a separate ministry for power. It is included in the Ministry of economic affairs. There is however, a separate department of hydropower and power system. Electricity Act was developed in 2001 which came into effect from 2005. The lag was caused due to the fact that it takes time to develop capacity of agencies.

For promoting renewable energy and enhancing efficiency, several policies have been formulated at different periods of time. Regulation regarding safety, grid code and tariff determination were formulated between 2006 and 2008.

By 2014, Bhutan has developed hydropower projects of different capacities, including micro and small hydro projects. Total installed capacity stands at 1488.168 MW and more projects are under construction. Agreements have already been concluded regarding most of the proposed hydropower projects. Peak demand in Bhutan stands at 315 MW. There is no direct subsidy but 15% of energy generated at subsidized rate is sold to BPC and distributed to consumers. 28 % energy is consumed domestically and surplus is exported. For transmission purpose of exportable electricity to India, transmission lines with different capacities have been constructed. Share of electricity in GDP stands at 12% as of 2012. Bhutan has got cross border connection with India and India has got connection with Nepal and Bangladesh. Therefore, involvement of India is very important. Political will is a must for development of SAARC power grid. This needs to form core Technical Team.

---

## **3. India**

**-Ms. Manju Gupta, AGM, CTU, Power Grid Corporation, India**

India's installed capacity stands at 248 GW with the share of renewable resource increasing continually and reaching current capacity of 30GW. The role of Private sector is increasing in generation sector. It is estimated to increase to up to 53 % within the next 3 years.

Main transmission network in India is 400KV network with circuit length of 300,000 km. Power system is divided into 5 systems. Before 1990s, these were of different frequencies. Currently all of these are of same frequency and operate as a single grid. Still, integration of renewable is a great challenge for India.

Private sector investment was opened in 1991. Open access to market was allowed from 2003. Private sector can now build transmission lines and distribution channels. National Electricity Policy and Tariff Policy were formulated in consultation with state agencies. Prior this Act, Private sector participation was limited to joint venture. Now, generation agencies can supply power to distribution companies as there is open access. Private sector generation companies need to acquire No Objection Letter.

There are 3 levels of load dispatch centers. Indian Electricity Grid Code ensures healthy competition in generation and supply of electricity. First Indian Electricity Grid code was introduced in 2000. Today, India has grown into a big market increasing the importance of maintaining power balance. India needs to generate electricity from hydropower for maintaining balance in the environment.

Some of the major issues that need to be dealt with while contemplating interconnectivity are:

- recovery period of transmission cost,
  - regulatory challenge,
  - institutional agency for looking after legal problems
- 

#### 4. Maldives

**- Mr. Ibrahim Nizam, Senior Engineer, State Electric Company**

Maldives has 1192 tropical Islands out of which 194 Islands are inhabited. Population of Maldives stands 350 thousands. Male is the most densely populated with a population of 114 thousand. Total area of Maldives is 300km sq. GDP growth rate has hovered between 6-8 percent.

Maldivian Electricity Authority is responsible for formulating rules and regulations pertaining to energy sector. It is entirely dependent on import of fossil fuel. 487 million Dollars worth of diesel was imported in 2013. Electricity is generated from imported fossil fuels and cost of production is increasing with each passing year.

There is monopoly system in Maldives as each Island has own its system of production and distribution channels. Peak demand in Male is 47 MW which has installed capacity 67 MW. One of the major challenges is that islands are separated by deep sea. Capital city is congested and grid connection is required. Network is already overloaded but it is difficult to share common grid due diverse geographical hindrances.

This has forced the islands to operate individual power house and distribution. Currently, each island is isolated with its own energy grid. Common grid could increase stability, and reliability. Maldivian demand is increasing at the rate of 5.8 % per annum.

---

#### 5. Nepal

**- Mr. Sher Singh Bhat, Chief Generation Directorate, Nepal Electricity Authority**

Nature of demand:

Energy requirement of Nepal stands at 37.5 Million Tera Joules. Peak demand is 1203 MW as of 2013. Annual energy demand is 5800 GWh. However, this is subject to growth rate of Nepalese economy. If growth is higher, demand will also go higher. Average load is 52% of peak demand. Peak electricity demand is dominated by households. Summer load is increasing by the year due to demand-pull effect. Demand rises sharply in the evenings.

Nature of Supply:

Public sector contributes to 381 MW through Run off the River projects and 92 MW through Storage-type projects. 53 MW worth of Supply comes from thermal plants. Private Sector contributes to 244 MW of electricity. Hydropower contributes over 90% of electricity supply. There is large seasonal variance in Nepal's hydropower supply. Winter demand is always higher than immediate summer demand. Nepal has huge hydropower potential as there are 6 river basins.

Cross border exchange is not choice for Nepal. Rather, it is a need. Having said that, there is a need to harmonize policies with those of other member countries. There are some specific issues that need to be harmonized:

- Common planning and design criterion
- Common construction standards
- Common technical standards

For market accessibility, uniform policies should be established. Market issues should be solved in a common forum. International accounting practices should be guaranteed. Price signals should come from the market. Competitiveness of the energy supply should be there to benchmark import.

---

## 6. Sri Lanka

**- Dr. H. M. Wijekoon Banda, CE/Transmission Planning, Ceylon Electricity Board**

In Sri Lanka, the regulator governs all policies. There are independent producers. Population of Sri Lanka 20.5 million. GDP growth rate is 7-10%. Installed capacity is 3334 MW out of which 50% comes from hydropower. Access to electricity is 96%. Sri Lanka has almost 100% reach in some cities. There is cross- border interconnection with India. India is also the only feasible trading partner for Sri Lanka. Therefore, any possibility of regional grid comes through India.

In 2002, Nexant Inc. and USAID conducted a joint study to explore possibilities of power sharing. Bilateral discussions were then held in 2006. Sri Lankan cabinet approved in 2006 and an MoU was signed in the 9<sup>th</sup> of June, 2010. Executing bodies are there with India. There are certain legal and regulatory challenges in terms of power sharing between India and Sri Lanka. A total of 500 MW is installed and the two countries follow a common grid code. Current practice is that there is bulk supply and the transmission and bulk supply license is held by Ceylon Electricity Board (CEB). CEB needs to be empowered to enter into cross border power transfers. The transmission and bulk supply license held by CEB needs to be amended.

---

## Technical Session 2:

### SAARC Power Market

#### (Power Trade scenario in SAARC Region – How nations will benefit)

Chair: Mr. G Parthasarthy, Former High Commissioner of India to USA, Australia & Cyprus

#### Key Note: Existing Scenario and future prospects of cross border trade (Country wise Overview)

- Mr. Ravinder

- Former Chairman, Central Electricity Authority, India

India is a huge player in power trade among SAARC nations. The geographical location India – in the central region of SAARC – means that massive amount of trade is possible via India.

Pakistan can buy electricity from the Indian border. Power transfer can be made via displacement mechanism. If there is a SAARC agreement there will not be any need to draw long transmission lines. Therefore, SAARC grid needs not be very expensive. Grid development investment must go hand in hand with the power in the cable. Social acceptability and political decision-making are the most difficult factors. Other physical factors are not real challenges at all. Cross border trade is mainly dependent on social acceptability, security of transmission corridor, political decision and economic viability.

Bangladesh connection is an exemplary model that started with the right note – political commitment. ADB played the role of an active donor. A 2020 framework agreement was signed in 2009. There was total clarity in how the project would move ahead. Therefore, power flow to Bangladesh can be increased in a matter of months.

Bhutan plan is an ambitious one. 90,000 crores worth of Indian rupees have been invested in the project. Hydropower projects have been constructed in Government-to-Government model. However, the plan has already been delayed. Only 2 projects have taken off till date. The success rate is only 30% because of financial challenge. Corporate structure, harmonization of policies and regulations, tariff determination are some of the major challenges. These can however be resolved. PPA so far is the sole success factor.

In case of Nepal, there are issues like social acceptability, physical security of transmission system, political decisiveness, economic viability, financing, technical feasibility, long term PPA, planning/building interconnection, scheduling and settlement, commercial terms and condition and dispute resolution.

In case of Srilanka, quantum of power should be planned and then the interconnection details should be worked out.

Hydropower plans must be based on long term PPAs. Negotiating must be between two governments and not private players. Indian players should be there to determine the tariff because the Indian consumers are in majority.

## 1. SAARC Power Market – Opportunities and Challenges

- Dr. Sandip Shah

-Vice President & Country Director at Statkraft

India is the focal point of SAARC countries, in terms of energy, as evinced by all macroeconomic data. However, the South Asian energy consumption is still dismally low. In terms of energy consumption, there is deficit in most countries. Bhutan and India have relatively good mix. Nepal is largely hydro dominated. There are high seasonal imbalances throughout the region. There is a need of privatization across the region.

Nepal and India have been undertaking cross border projects. As much as 650 MW electricity is being generated for internal consumption as well as export purpose. Nepal needs to define and recognize electricity as a commodity and not just a service. A lot of subsidy has been given to farmers and industrial customers which has been hurting the economy. This subsidy must be removed as electricity is a commodity and not a service.

Harmonization of cross border issues is a must. Regulations should be in place where required. Right regulatory regime should be available and commercial pillars should be strong. If the private sectors are coming as major players, commercial terms should be in place. Pricing mechanism, open access must be developed. There should be level playing field in transmission systems and various pricing mechanism. Environment where trade can happen should be there.

In case of Nepal-India trade prospects, there used to be import duty policy when electricity was treated as a commodity (but under restricted commodity list.) Currently, it is no more the case, which is a very good news as power trade can now be done. This move has been an essential one for cross border power trade. Long term PPA basis should be put in place now. There is a need to further study whether techno economical clearance is needed while exporting. If investment is in foreign currency, a mechanism to deal with exchange rate risk should be developed. Political willingness seems to be increasing.

Further areas of study are what kind of model needs to be developed for trading power in the whole of South Asia. Power Cooperation Agreement has been introduced but market model should be given more emphasis. Economics and physics play more important role than politics when it comes to electricity flow, and this should be recognized by all nations.

## 2. Multilateral funding for the SAARC grid

- Dr. Priyantha Wijayatunga

- Senior Energy Specialist, Asian Development Bank

There is high diversity in the region in terms of resources, demand and use. Furthermore, there is seasonality of demand. This provides a great prospect for power trading. There is coherence in terms of high demand route and there are shortages. These are in fact, the catalysts for the power sector development.

Within-country transmission infrastructures are not very strong. They are not really strong to transmit to the borders. This is a major issue to be addressed before cross border transmission can be achieved. Harmonization of regulations is a requirement. Cross border trade needs to be harmonized between the countries. AC-to-AC interconnections need to be harmonized. Unless there are big government owned companies, transmitting all the generated electricity can be a problem.

ADB Strategy 2020 highlights that regional integration is key. Private sector-government cooperation is the key.

There should be a common energy policy for promoting energy efficiency. These should be parallel with the company alignments. ADB has been assisting in investment. ADB has a private sector window to support the private sector. Funds are provided through country programs, regional cooperation funds and raising co-financing. Investments are channeled through governments.

---

### **3. Cross Border Power trade - Lessons from India Bangladesh Power Trade**

**- Mr. ANM Obaidullah**

**- Manager (Planning), Coal Power Generation Company Bangladesh Limited**

USAID has helped conduct pre-feasibility studies. An MoU has been signed between nodal agencies of both countries. Areas of cooperation are exchange of power, grid connectivity, renewable energy, and investment. Government of Bangladesh has given sovereign guarantee.

Governing framework of SAARC member states should also be looked at. All of these should be harmonized. Licensing agencies should also be harmonized. There should be no restrictions for regional cooperation. Intergovernmental MoUs are needed. Technicalities are not the major problems. These can be dealt with.

---

### **4. Holistic approach to SAARC power market development**

**- Mr. Amit Kumar**

**- Senior Vice President, Global Energy Pvt. Ltd, India**

Market comes into play when infrastructure is in place. There is deficit of power in all south Asian countries. But per capita consumption of all countries is getting high. Short term goals should be the major focus in the moment. There is no clarity in contractual obligation on long term basis. All contractual agreements should be a part of SAAEC energy grid. Competition is lacking. There should be more competition as it develops market within country and region.

India has relatively holistic framework. Therefore, similar kind of mechanism should be developed in South Asian countries. Multilateral thinking should be developed instead of limiting in bilateral

agreements. Identification of surplus zones is a high priority issue. Some other major areas to look into are,

- Product development
  - Standard contract development
  - Standard dispute settlement mechanism
-

### Technical Session 3:

#### **Creating an Enabling Regulatory Environment for SAARC Regional Power Trading**

**(Focus: Identifying a Geographical hub for exchange of Power & Harmonization of Regulations & Policies)**

**Chair: Dr. Priyantha Wijayatunga, Senior Energy Specialist, Asian Development Bank**

#### **Harmonization of Regulations & Policies for cross border trade**

**- Mr. D N Raina**

**- President, Entecsol International, India**

There are 109 billion tons of coal mines in the region and ample electricity availability, but except for Bhutan we face deficit of power. Several initiatives have been taken to deal with this, over the years. The main focus of reform was to exploit indigenous resources.

Afghanistan is yet to formulate regulatory framework on generation, export and import of electricity. Bangladesh has no provision to govern cross border trade. If the planner itself is the regulator, there can always be conflict of interest. Bhutan developed a comprehensive law and set legal and regulatory provision for cross border trade. Bilateral agreements with India state that Bhutan can use whatever needed and rest is exported to India. This restricts other traders to purchase power from Bhutan. Bhutan needs private investment if it wants to export power to other nations. One big limitation is that supply from Bhutan should be flow from India. Though India is exchanging power with Nepal, Bangladesh and Bhutan, the Act is still silent regarding power exchange. Maldives has got a regulatory body. Their demand is so low, they have not put any provision regarding cross border trade. Nepal Electricity Act 1992 has non-discriminatory provision for cross border trade but it needs a regulatory commission. Pakistan has an Electricity Power Act, 1997. Despite its power import from Iran, Pakistan has not put any provision in the Act. With Sri Lanka again, the Act is silent on cross border power trade.

Therefore there have to be regional initiatives to making power trading a reality. Laws and regulations need to be aligned with each-others'. South Asian Regional power exchange is needed. In order to achieve that, SAARC regional investment framework and South Asian regional power trade framework are needed.

---

**Panel Discussion: Overview of Regulatory framework for Trading of Power and Harmonization of regulations and policies – Setting up an over arching regulatory body for cross border trade.**

**1. Mr. U N Panjiar**

**- Chairman, Bihar Electricity Regulatory Commission, India**

There are not many hindrances in making regional power trade a reality except for political will. Power exchange is already taking place between countries without any hassle. There is no default in payments. Even though it started between Governments, market based exchange is also allowed. Beyond government supply, there is also a scope for markets. In case of Bangladesh, 250 MW is imported from India in market mode and the remaining 250 MW comes from government to government mode. Countries can begin with bilateral trade, then moving on to trilateral trades as the markets mature.

---

**2. Mr. Sriranjana Lacoul**

**- Secretary, Water and Energy Commission Secretariat, Nepal**

There are not really big barriers in making regional power trade a reality. Countries can start at bilateral level, then moving on to open market and regional context. Certain things need to be addressed in the process. Since the pricing is not based on the same guiding principle across the region, this needs to be addressed. Power needs to be traded on the basis of market principle rather than on government-to-government level. Subsidies distort the market prices and therefore, this distortion needs to be checked.

---

**3. Mr. ANM Obaidullah**

**- Manager (Planning), Coal Power Generation Company Bangladesh Limited.**

Price should be driven by the market, and not by the government. CERC regulations should first be preceded, then switching to the market overview. Gradual move to regional level can then be made. It is high time that bilateral exchanges be upgraded to trilateral exchanges and then finally to a regional level.

---

**4. Dr. H. M. Wijekoon Banda**

**- CE/Transmission Planning, Ceylon Electricity Board, Sri Lanka**

One practical regulatory regime should be studied. Pricing is a regulatory business. Ultimately, the consumer needs low price electricity. Over the past 5-6 years, many discussions have been carried out in terms of cross border trade. However, nothing has materialized till date.

---

**Technical Session 4**

**Operational issues (Scheduling, Coordination and Energy Accounting for Cross Border Trade)**

**Chair: Mr. Ravinder, Former Chairman, Central Electricity Authority, India**

**Keynote Address: Settlement mechanisms for cross border trade****- Mr. Ravinder****- Former Chairman, Central Electricity Authority, India**

Settlement mainly refers to the process of settling financial issues. The deviation account is applicable to everyone who is involved in the transactions. The delivery of electricity may not be so much relevant to the actual settlement process because most of the delivery is done or issued later. The check and balance of this mechanism primarily lies on the deviation account.

There is a price discrimination mechanism, which is primarily done in the peak hours. Any bilateral trade should also be on this manner where market determines the price of the electricity thus the peak hour load derives a higher price. The deviation account comes from the contracted settlements and the actual settlements and this has to be ultimately dealt with in a fair manner.

Buying and selling can be in a simultaneous manner in case of cross border transaction through traders. The Nodal agencies arrange the transaction between the traders which is non discriminatory open access and the same is enjoyed by any regional transaction or cross border trade. The deviation payment is also done through the Nodal agency.

Question asked: Open access mechanism governs that Bangladesh is drawing power and there is no barrier. If GMR tries to sell power to Bangladesh and has a contract with Nepal then what will be the case. Is cross border trade applicable?

Answer: In the bottom space there is CB 2, a cross border entity, say Nepal. You can tell your Nodal agency to get open access up to the point of Nepal border then Nepal will deliver electricity at the Indian border, then the Nodal agency has managed open access through India. Or any other trader in Bangladesh's behalf can get open access. Because there is a deviation settlement issue in hand, the total schedule has a difference; this difference needs to be settled. Any trader is entitled to open access.

---

**1. Operational Experiences of power trade between India- Bhutan****- Mr. Gem Tshering****- Director (Transmission wing), Bhutan Power Corporation, Bhutan**

Bhutan has a very low population density, thus very low population coverage in Bhutan. By law Bhutan is required to maintain a 65% forest coverage and these two effects together also reason for the very low population density of Bhutan.

Bhutan can be further divided into 5 big basins. Every basin is being explored for different projects and not all basins have hydropower projects established yet, there are various major projects to be taken up to build the hydropower in Bhutan.

Gross National happiness index of Bhutan are on four footages- religion, culture, economy and environment. Most covered area in Punatsagchhu where most of the hydropower projects were located. This is also one reason why environment is so much on the top priority list of Bhutan.

The total hydro power reserves of Bhutan amount to 30,000 MWs and the total installed capacity till now is 1488 MW. Under the clean development mechanism (CDM), a 70kW project has already been commissioned since August 2005.

75% of the generated electricity is exported from Bhutan, this export is under an umbrella agreement with the Government of India. The sales revenue from these total exports is about 40% of the national revenue.

Transmission systems all across Bhutan are well fledged transmission connections. And almost all power is pulled through the Alipur 800kV sub-station.

The challenges faced by Bhutan among the many are: Requirement of uniform standards, the use of common corridor versus dedicated transmission pipe, billing and metering issues, system securities, interaction between LDC. Also there are a lot of transmission cables going through the forests which creates a disturbance to the natural ecology.

Even if there is no SAARC grid the bilateral function between India and Bhutan will still persists but there is always a firm recommendation from Bhutan's side that there be a SAARC grid. Among the major reasons for this is that Bhutan shares border only with Indian and if there is any power trade, the export of power from Bhutan will only be through India.

If there exists a power trade agreement, there will be a transcendental effect of peace prospering throughout the region.

## **2. Operational issues including scheduling and coordination for Cross Border Connectivity**

**- Mr. S S Barpanda**

**- AGM, NLDC, POSOCO (Power System Operation Corporation Ltd), India**

The mechanism in India is based on taking various aspects under consideration, a lot of the studies carried are simulation studies and they are very much limited to transfer capability.

The various types of transactions in India regarding power are the short, medium and long term accesses. There are reliability margins concerning every one of these accesses. The access transfer capability is the basis and all transactions are allowed in India, which are controlled by 100 controlled areas in the whole nation.

The electrical system is bounded by interconnection (tie lines) among which regional entities are also present which are treated as control areas (control areas could also have sub control areas within

them) and all of these are metered. Moreover in the system, a day is divided in to 96 blocks and the usual method of algebraic sum is followed henceforth.

Demarcations of responsibilities between various regional entities are there and there is decentralized scheduling. The system has a deviation portion within also.

The disembarkation is dependent on a forecasted demand, and they have an own base-load which is previously known and thus the transaction type can be chosen. If the load curve is not anticipated there could be a contingency mechanism.

The energy charges much be paid according to the schedule and some charges are settled through the system operator which consists of most of the deviation. The charges associated are known upfront and are submitted but the Nodal agency, thus there is no scope for pan-caking, and nevertheless the additional interest rates are added here. The transmission losses are paid in terms of kind and not in money.

The success factors can be listed as follows: control areas demarcation and boundary metering, robust transmission system assessment of transfer capability, balancing mechanism, methodology of transmission charge sharing, treatment of transmission losses, streamlined scheduling and settlement mechanism transparency and non discriminatory implementation, compliance, dispute re-addressal mechanism, congestion management.

The major points that needs to be addressed when constructing cross border operational coordination are the following: system security aspects, protection, operation instructions, outage planning, recovery procedures, event information, transfer capability assessment, scheduling and dispatch, congestion and management, formation of coordination groups- everything must be coordinated.

Also there should be a clear operation instruction so that there is no difference across the border- there should be clear cut information codes and coordination groups should be there. In addition the system of single buyer and multi buyer should be treated differently. Lastly, the deviation should be settled as per the CERC deviation settlement mechanism, 2014 Deviation Rule.

---

### **3. Modalities for Cross Border Connectivity and related operational issues- HVDC and radial Mode Connections**

**- Mr. S K Singh**

**- Chief Engineer, North Bihar Power Distribution Company Ltd, India**

There are a lot of issues related to Power Trade with Nepal, among them the most significant is the difference in voltage between the two countries. The issue power trade with Nepal is administered through some agreements.

Power trade with Bhutan on the other hand is based on a long term basis. The HVDC grid interconnection is the disadvantage to any other countries conducting this is that the cost is very high, and the question remains to who will bear the cost of converting the current into the AC system. Moreover the volume is also one of the major issues when it comes to HVDC trade between countries, also there is a unidirectional power flow and also there is no participation of the private

sector. But whatever the case there is a major scope for Bihar being the power trade hub between Nepal and Bhutan.

If there is an opening of the boundaries between the countries of SAARC then there should be a concrete dispute resolution mechanism, and also there should be differential duties and tariff mechanism.

---

#### **4. Nepal's Experience of Scheduling and Coordination for Cross border Power Trade:**

**- Mr. Surendra Rajbhandary**

**- Director, NEA Nepal**

Existing power trade between Nepal and India has 2 committees.

The current situation is that Nepalese import of power from India is increasing whereas the export is decreasing. Though there are 5 major river basins in Nepal and the generation capacity well exceeds the imported capacity, this is not being utilized.

Power exchange is our need because there is an imbalance between demand forecasts and capacity, the major reason behind this is the season deficit that persists in Nepal. During the dry season, Nepal has a deficit amounting to 343 MWs.

Power trade started before the 1990s between India and Nepal, there was an agreement of 5MWs only. Thus during the period up-to 1992 there was no problem. Post 2000, Nepal started to face a shortage, due to the rapid urbanization and increase in demand. Thus there was a rise imports.

The grid between Nepal and India is still in an island mode because many of the things are not harmonized. The Nepalese grid is divided into 3 parts, the eastern, central and western portions. The central portion is the only portion where the electricity generated by Nepal is consumed but in the rest of the other parts, the electricity is consumed from the imports (from the neighboring states namely Bihar and Uttar Pradesh).

Power trade between India and Nepal are done on two modes: the commercial and the exchange mode. The dispatch request is made through fax and mails. There are disputes in few cases but these are mostly solved. The PTC settlements are done weekly and in some cases which are not weekly they are conducted on a monthly basis. The framework is not harmonized; the procedures and the metering are also the same. Nevertheless there are no major issues because of the radial lines.

The major cause of shortages in Nepal is because of the planned outage in India. There are differences in preventive measures and therefore the side in Nepal faces problems.

Nevertheless there are billing issues that come up, the Nepalese side shows more energy consumption than in India thus there are a lot of problems in billing, and in addition the UI settlement mechanism is also not there and thus the unused contract energy is also charged.

The major impediments to cross border trade are: political barriers and institutional barriers. If there is a will on both sides the technical part is easily achievable.

---

### **Questions and Answers**

Ashok Das Gupta to Gem Tshering: Bhutan has an ambitious plan to add 10000 MW by 2020, what are the actual statuses of these projects are these financially closed?

Initially 3 projects had 40% completion and these are expected to be completed by 2017. Other 4 projects of 3000MW, joint venture agreements have been signed with GOI when the newly elected PM of India visited Bhutan. The signing of other projects has also been done. 3 major projects between the government of India and Bhutan were signed, all these will be developed in the Inter Governmental mode so this will come into play. Thus the projects are financially closed and are very much viable.

## Technical Session 5

### Strategies to improve the role of IPPs and Utilities in Cross Border Power Trade

**Chair: Sher Sing Bhat, NEA, Nepal**

**Hydro Projects in Nepal - The IPP perspective for power trading**

**- Mr. Gyanendra Lal Pradhan,**

**- IPPAN, Nepal**

Despite Nepal, Bhutan and northern parts of Pakistan having immense potentiality in terms of hydro power generation, there are issues of power shortages in the region. Nepal, India Bangladesh and Pakistan face major power shortages. Connectivity is a major issue in hydropower transmission and SAARC region faces poor connectivity.

Countries can be divided in terms of river basins. The next pragmatic move then will be to focus on bilateral trans-border grid connectivity, rather than regional connectivity. Examples like connectivity between India and Bhutan, and India and Bangladesh evince that bilateral grids are feasible and possible.

As for Nepal, bilateral connectivity with India is the best alternative as the seasonal variations in Nepal and India complement each other. Nepal faces surplus in monsoon and huge deficits in the dry season. Therefore, power trade with India is a must for Nepal.

A SAARC grid that encompasses all nations is a distant dream. A regional cooperation among all eight nations is not possible, at least into the very near future. Countries should be grouped together in terms of their demand and supply, level of technological development, geographical proximity and the likes. Following can be a model grouping, in terms of possibilities of implementation:

Group A: Nepal, Bhutan, India and Bangladesh

Group B: Afganistan, Pakistan

Group C: Mauritius, Maldives and Sri-Lanka

Quebec and New York Power Exchange Model is the one to explore. Nepal and India can follow a similar model in the future, after trans-border connectivity is achieved. This can be further practiced in between other countries as well. We need to explore all the possibilities we can and start acting.

---

## 1. Requirements for certainty of investments and Investment security

- Mr. Alok Roy

- CEO, Reliance Power Transmission,

Within SAARC region, there needs to be a clear understanding of what is doable and what is not. Setting up transmission frameworks is a challenge. It is almost impossible for private parties to set up transmission channels due to different conflicts of interest in the local levels. Setting up a balance between generation and transmission is the need of the hour. Mechanisms and institutions have to come up, in order to allow for these. There is demand and deficit, and on the other hand, we have money and right people to work on these issues. There are immense economic gains to be tapped in.

Some of the major challenges that are being faced power developers are:

1. Right of Way
    - Not in my Backyard (NIMBY)
    - Fear of decreasing prices
    - Loss of aesthetics and environmental impact
    - Health concerns
  2. Diverse laws
    - Different right of way codes and standards
    - Countries have varied clearance requirements
    - RoW compensation arrangements different in various countries
  3. Tariff and Financing
    - P payment mechanism, insulation from political risks and financing
  4. Regulatory issues
    - Lack of clarity in regulations
    - Provision in laws and regulations
    - Procedures for obtaining clearances
    - Private player is never given forest clearance.
  5. Political risk
-

## **Strategies to improve the role of IPPs and utilities in cross border power trade**

Chiar: Upendra Dev Bhatta, Acting MD, NEA, Nepal

### **1. Challenges and opportunities for international investments in cross border generation projects**

- Mr. Bishal Thapa

- Lotus Energy

There are infinite possibilities if we can allow for power trading and guarantee energy security. But there are challenges to be tackled along the way. The utilities do not seem to have realized the urgency of power trading, and obligation to serve. There can be no power trading while such state of affairs persists. There is monopsony of utility and traders do not have access to the final consumers.

Trading requires maturity in financial contracting. There needs to be a parallel financial brokerage. But we have not used any financial instrument of hedging yet. We can explore the North American model of cross-border trading. IPPS have shown interest in taking the risks. They are willing to build power plants. The right kind of facilitating role is what is required from the government's side. Initiation can be taken from small, well-managed brokerage deals.

---

### **2. Hydro Projects in Nepal - The IPP perspective for power trading**

- Mr. Khadga B. Bisht,

- President, IPPAN, Nepal

Seasonal fluctuation of supply of hydropower in Nepal means that Nepal needs to trade power with its neighboring countries. Post 2017, Nepal is all set to have surplus hydropower and in order to prevent the spill-over losses, Nepal needs to trade its power. Furthermore, there is a good energy mix in the SAARC region. Bangladesh has got gas, Nepal and Bhutan have hydropower and India has got coal. The region can benefit from this mix greatly if there is proper government-to-government coordination and facilitation for Independent Power Producers.

Some of the measures that Nepal can take in the near future are:

- Signing Power Agreement with India
  - Harmonising policies with its neighboring countries with regards to power trade
  - Establishing a regional power trading group
  - Reforming the domestic market
- 

### **3. Requirements for certainty of investments and Investment security**

- Mr. Damita Kumarasinghe

- DG Public Utilities Commission of Sri Lanka

Sri Lanka has an installed capacity of 3500 MW. Majority of the population gets electricity at very low prices. The main concern for Sri Lanka is how to maintain this status-quo.

In order to promote investment in the energy sector, there needs to be robust legal and regulatory framework. The regulator should ensure uninterrupted supply of electricity and also handle the cross-border issues. Furthermore, it should promote competition and efficient allocation of resources.

There are challenges with regards to India-Sri Lanka legal agreements in terms of trade. There are provisions of licenses and there needs to be government shareholding for plants above 25 MW. Ceylon Electricity Board has the monopoly in terms of transmission. Trading happens via single-buyer model and there are no practices of wheeling charge model. Private sectors need more than 50% government shareholding in order to operate. Revocation of license is another major challenge.

Therefore it is high time that creating an enabling environment be focused on. There needs to be predictability in terms of regulations. Anti-competitive practices need to be checked. Further areas for improvement are:

- Open access for cross-border trade
  - Amendment of existing laws that restrain private investment
  - Handling trading related dispatch in the event of international trading
  - Harmonization of policies with those of India
-

## Technical Session 7

### Power Trade Agreements for Cross Border Power Trade (Focus: Sanctity of Contract, Dispute Resolution, Risk Sharing)

Chair: Mr. Khadga B. Bhist, IPPAN

#### Keynote Address

- Mr. Rajendra Kishore Kshatri

- Secretary Ministry of Energy, Nepal

There is a huge role of energy development and security. The regional grid connectivity has remained as an agenda for more than a decade and after the establishment of SAARC Energy Council, the process becomes more visible.

The major challenges include the following: traditional source of energy is the major source of energy, there is a poor quality of energy infrastructure, lack of a clear commitment from involving sector, lack of a strong political support from public and private sector is needed.

The issue of a commercial basis and a ground for governing is also needed. There also should be a conceptualized transmission linkage. In addition the hydro dominance of Nepal and the thermal dominance of India do complement each other. For the bilateral trade to become a reality there should first be an identification of the potential trade volume. There should be an acceptable draft which deals with the agreement access to market, payment, technical reliability which is essential for the free trade of power.

The conclusion is: the modest work should be started.

---

#### 1. The Key aspects of a Power Trade Agreement

- Dr. Pramod Deo

- Former Chairman of Central Electricity Generation Authority of India.

The start of a power trade agreement majorly is a government to government agreement, for an example the agreement between India and Bangladesh is a government to government agreement. There is a complex system when there is a network of multiple buyers and suppliers.

The state is the major player in India (majorly the state governments). Developing a market in a federal structure is a difficult task.

The 2003 Electricity Act introduces electricity trading as distinguished activity. Even then distribution is again dominated by state sectors. The share of private sector has gone up in the last few years and this thus formed a robust transmission sector.

One major problem is regarding transmission lines; unless there is a system of transmission lines it is impossible to develop a power sector.

In India the buyers are supreme and the power trading companies usually have no monopoly. The power markets are divided into the short term, the medium term and the long term markets. There are new transmissions pricing regulations. All of these aspects are very sensitive to distance and direction.

The central electrical agency of India has no monopoly, it is now more of a planner- unlike the system prevalent in Nepal.

---

## **2. Power trade agreements for Cross Border Power Trade from Nepal perspective**

**- Mr. Hitendra Dev Shakya**

**- Nepal Electricity Authority, Nepal**

Nepal has a surplus in electricity during the wet seasons, during the dry season there is a shortage for long periods. In order to displace this shortage there should be 100 plants by the year 2017. This is reflected by the price in Nepal, the average rate per unit in Nepal in the dry season is Nrs 8.21, in the wet season it is NRs 6.12.

The cost of electricity is high due to Khimti, Bhotekoshi and Clilime due to the high PPA paid by NEA, but within 10 years there is a significant chance that the price will come down because after ten years the ownership of these projects will be shifted entirely to NEA.

The reservoir projects needs to meet the daily load at peak hours. In Nepal at current this is not being met thus there is a power shortage, to fulfill this shortage there should be either a construction of a thermal power plant or it should be bought from the market of India depending upon the market efficiency. At present in addition to this problem, there is no plan or vision to price the excess spill of energy in the market. Open access in Nepal is only possible after a few years.

Talking about the Indian energy market, 89% the market belongs to the long term energy market. Also the prices in the Indian market decreased from 2009 because of increased competition and after 2013 after this effect subsided the energy prices again increased.

Nepal cannot base the market on the Indian model, for Nepal a medium term is better, with a vision to trade with India for 6-8 months.

The Power Trade Agreement (PTA) was signed in 1996 and is not renewed until now. There is an increasing need for PTA for large import and export of power. The current status of the PTA is that it is not ratified so this agreement is not functioning.

Synchronization is needed if this partnership is to move ahead.

In case of Nepal, cross border transmission line will be ready by 2015 December and surplus power is possible by 2017 in the wet season only. The dry season surplus is still not possible.

---

## **3. Role of trading companies in Cross Border Trade**

**- Mr. Rajib Mishra**

**- CMD, PTC India Ltd.**

Four Pillars are needed for Cross Border Trade: Political- economic relationships and commercial agreements, regulatory framework, transmission capacity (cross border) and short term scheduling. Business to start and commercial operation starts and the lesson to be learnt from experience is self evident.

The potential market has a capacity of 25-30000MW which is coming in about 20 years. The total funds required to build the complete infrastructure is USD 6 Billion.

The Priorities that needs to be focused on are as follows.

- There are 61 trading licenses that were issued, but there are only 3 traders that are major traders.
- Trading less than a billion units is not economically viable
- Political will
- Proper enactment of laws
- Harmonization of Laws.

The ways to go forward to harmonize most of these issues is to create a central body. There should be a Center for Energy Excellence formed in the SAARC Energy Center. In addition, there should be a joint forum on bilateral basis for transmission creation; also cross border perspective plans should be in a long term vision (for 20 years or more). Lastly, regulatory changes to drive tariff revisions also should be there.

---

#### **Question and Answers:**

##### **Mr Harry Daul from IPPAI to Mr. Mishra**

Q: Why can't private power producers in Nepal sell all at once to Bangladesh using the infrastructures present in India? Should there be an intermediary?

Answer: Direct corridor is a challenge as we are in the first phase of the power market. In the second stage there will be connectivity to India grid then we may have a better market. However there is will be a bilateral market in about two years time.

---

##### **Mr. Rahman from Bangladesh to Mr. Mishra**

Is PTC a nodal point from the perspective of trading power between Nepal and Bangladesh?

PTC is a nodal point from trading power between Nepal and Bangladesh. India is ready to act as a nodal agency, but there may be constrain in the grid.

---

##### **Mr. Rahmand to Mr .Pramod Deo**

Do you have regulatory barrier for trading to Bangladesh from Nepal?

Ans: Issue is transmission capacity. There should be regulatory system that works very well. Every country have own rules and try to impose.

---

##### **Mr. Shakya to Mr. Mishra**

---

Q: Is there a need to dedicate a corridor to trade power to Bangladesh?

---

A: If Nepal needs dedicated corridor to trade power to Bangladesh, then there is a need agreement from the state.

**Mr. Rahman to Mr. Mishra**

Question: Is PTC nodal agency for exporting power to Bangladesh?

Answer: Yes.

**Mr. Sunil Mall to Mr. Pramod Deo**

Question: What would be few initiatives to open market?

Ans: Transmission can be used by anyone as long as capacity is available. Some states cross subsidize and does not allow. It is reality in practice and open access remain in paper. SAARC secretariat should work on open access.

---