

SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION (SAARC)



**SAARC ENERGY CENTRE
ISLAMABAD**

THE REPORT

Program Activity: PRG-95/2016/POSIT



SAARC Training Workshop

**'Identification, Comparison and Scenario Based Application
of Power Demand / Load Forecasting Tools'**

24 – 25 August 2017
Thimphu - Bhutan

Organized by

SAARC Energy Centre, Islamabad

in collaboration with

**Department of Hydropower & Power Systems (DHPS)
Ministry of Economic Affairs, Bhutan**



September 2017

SAARC Energy Centre
697, Street 43, Sector E-11/4, NPF,
Islamabad, Pakistan
www.saarcenergy.org

SAARC Energy Centre



SEC Program Activity (PRG-95/2016/POSIT)

Training Workshop

Identification, comparison And Scenario based application of Power Demand/Load Forecasting Tools

Thimphu, Bhutan | 24 – 25 August 2017



The Report

Introduction

SAARC Energy Centre, Islamabad organized a two days training workshop **Experience Sharing on Identification, comparison And Scenario based application of Power Demand/Load Forecasting Tools** in Thimphu, Bhutan on 24 – 25 August 2017. The event was arranged at Hotel Terma Linca Resort & Spa in collaboration with the Department of Hydropower & Power Systems, Ministry of Economic Affairs, Bhutan as the Knowledge Partner (copy of the Workshop Program is available at Annexure I).

2. SEC especially envisaged this training workshop “Experience Sharing on Identification, comparison And Scenario based application of Power Demand/Load Forecasting Tools” under its thematic programme area of “Programme to Successfully Implement Technology Transfer (POSIT), aiming to enhance capabilities of the power planners in carrying out load forecasting exercise for development of Short-term, Medium-term and Long-term power plans including Generation Adequacy Forecasts and Transmission System Planning.

Participation

3. A total of 34 delegates from i) Member States Afghanistan, Bhutan, India, Maldives, Pakistan and Sri Lanka; ii) Resource Persons from India, Pakistan & Sri Lanka attended this training workshop (participant list is available at Annexure II). The workshop attracted an overwhelming participation from the host Member State Bhutan; Bhutanese delegates, dominated by SEC’s Knowledge Partner for this Workshop i.e. Department of Hydropower & Power Systems, Ministry of Economic Affairs, Bhutan followed by delegates from Bhutan Power Company.

Major Aspects Covered

4. The Workshop focused on Fundamentals of Load Forecast; Load Forecasting Methods and Techniques; Determination of Electricity Demand Forecast by combining Short Term Time Trend and Long Term Econometric Modeling; Prevailing Practices Pertaining to Generation Planning; Critical Importance and Role of Power Generation Planning in the Power System; Proposed Framework for setting up Bhutan Power Planning Component with respect to Load Forecast; Long Term Power Demand Forecasting using Regression Model; Analysis of External Impacts on Electricity Demand Forecast; Power Market Survey Model: Bottom-up Approach for Forecasting Power & Energy Demand; Load Forecasting and its Application of Forecasting Tools (Hands on Training using MiPower Software); including a Visit to National Load Dispatch Center, Bhutan Power System Operator and The Way Forward for Development of Coal Based Non-Conventional Energy Resources.

5. The workshop started with the Inaugural session chaired by Mr. Karma Tshewang, Chief Engineer, Department of Hydropower & Power Systems, Ministry of Economic Affairs, Government of Bhutan, followed by five technical sessions. The event was closed with the Valedictory Session on second day of the event i.e. 25th August 2017, chaired by Mr. Karma

P Dorji, Chief Engineer, Department of Hydropower & Power Systems, Ministry of Economic Affairs, Government of Bhutan.

Inaugural Session

6. Mr. Ihsan Ullah Marwat, Program Coordinator, SAARC Energy Centre welcomed the resource persons and all the delegates from SAARC Member States for attending the workshop and extending keen interest. He especially thanked Chief Guest, Mr. Karma Tshewang for his gracious presence at this workshop and for encouraging the SAARC endeavor for enhancing capacity of the regional power planners/ analysts.

7. Mr. Salis Usman, Program Leader (Energy Trade), on behalf of Director SEC, in his welcome address briefly introduced SEC and its program activities as the SAARC Centre of Excellence on energy. He highlighted that in view of the huge financial investments, required for addition of new power projects, power planners as well as decision makers, throughout the world, have been forced to prioritize smart solutions, modern technology and optimal utilization of available resources.

8. He added that there are various load forecasting tools available, but almost all these tools have their pros and cons. Consequently, most of the countries use multiple tools to generate different scenarios; the sole purpose remains to facilitate the decision makers with maximum number of potential options. Considering this criticality, SEC has organized this workshop in Bhutan on their exclusive demand, to apprise the SAARC professionals with the options available, their strengths, weaknesses and potential impact of selection with strong emphasis on comparison between them. The objective of this workshop is to strengthen the knowledge base of power planners for selection of one or multiple tools for **Power Demand/Load Forecasting**.

9. Program Leader, SEC shared his strong belief that that this Training Workshop will help Member States in moving ahead on the road to modern technology and energy security through complementing efforts of professionals (present in the workshop) and many others.

10. Mr. Karma Namgyel, Officiating Chief Engineer, Department of Hydropower & Power Systems, Ministry of Economic Affairs, Bhutan; in his key note address gave an in depth overview of Bhutan's power sector and shared what they expect from this workshop is to identify different load forecasting methods (for short, medium and long term planning) scenarios that suits Bhutan's situation.

11. He shared that presently power planners in Bhutan consider customer mainly in two categories i.e., domestic and industrial consumers, thus they expect from resource person to guide them how to cater for other categories of consumers such as commercial, agriculture etc.

12. Mr. Karma Tshewang, Chief Engineer, Department of Hydropower & Power Systems, Ministry of Economic Affairs, Government of Bhutan, chaired the Inaugural Session. In his address, the Chief Guest welcomed all delegated from SAARC Member States, Resource Persons and SEC officials at Thimphu Bhutan. He thanked SEC for organizing this workshop in Bhutan, by providing this opportunity to the Bhutanese power sector professionals in their homeland.

13. He first shared some statistics from Bhutan power sector, mentioning that current installed generation capacity is 1606 MW, i.e., is only about 7 % of the techno-economic potential of Bhutan, which is 20800 MW. This will be supplemented by a couple of projects underway, having generating capacity of 3658 MW, thus resulting in tapping overall 22% of the techno-economic potential by around 2023. Bhutan also has planned more projects of about 8000 MW afterwards, for which detailed feasibility studies are already completed.

14. The Chief guest informed audience that on the demand side, Bhutan has a peak demand of 336 MW with an increasing demand trend at a 9% annual growth rate, thus expecting this demand to be doubled by next seven years. And to cater for their upcoming demand and generation expansion they need to plan from today. He told that main challenge of Bhutan's power sector, as of today is the firm power, which is around one fifth of the installed capacity (about 288 MW), since Bhutan is unable to meet the demand of industries in the winter, i.e., the lean season.

15. Proper demand and load forecasting are very important for any country to meet its reliable and secure power supplies. For every 2% growth in GDP desired, we need to add 1% of electricity supply and Bhutan need to gear for this. This workshop will address and come up with necessary recommendations that to how resolve the issues that revolve around Bhutan system expansion and network augmentation, He added. Bhutan exports 70% of its electricity generation on annual basis, and during lean months Bhutan requires to import power to meet the winter peak demand in the country. That's why it is paramount and necessary to have accurate power demand forecast to ensure that their planning is in the right direction.

16. He confidently told that this training workshop will enhance the knowledge base of power planners of SAARC Member States on various electricity demand forecasting techniques and the participants would fruitfully utilize this knowledge to ensure energy security of their respective countries.

17. He also showed strong belief that SEC under the leadership of Director SEC will provide more advance trainings to enhance the capacities of our Member States, which will go a long way in integrating the network for successful and vibrant Asia. In the end Mr. Karma Tshewang thanked professionals from SAARC Energy Centre and all the delegates and resource persons for their participation.

Technical Proceedings

18. Brief information on the technical proceedings, designed in multiple sessions, is as follows (All the presentations delivered during the workshop are available at SEC's website www.saarcenergy.org):

A. Technical Session 1

- **Introduction to SAARC Energy Centre, Islamabad**

Mr. Ihsan Ullah Marwat, Research Fellow (Energy Efficiency), SAARC Energy Centre

- **Country Scenario: Presentations by the participating Member States**

- a. Afghanistan

- b. Bhutan

- c. India
- d. Maldives
- e. Pakistan
- f. Sri Lanka

- **Fundamentals of Load Forecast**

Engr. Tauseef ur Rehman, National Transmission and Dispatch Company (NTDC), Pakistan

- **Load Forecasting Methods and Techniques**

Dr. Chandra Sekhar Reddy Atla, Manager, Power System Studies, Power Research and Development Consultants Pvt. Limited, India

B. Technical Session 2

- **Determination of Electricity Demand Forecast by combining Short Term Time Trend and Long Term Econometric Modelling**

Engr. M. Buddhika S. Samarasekara, Chief Engineer (Generation Planning), Ceylon Electricity Board, Sri Lanka

- **Prevailing Practices Pertaining to Generation Planning**

Ms. D.C. Hapuarachchi, Transmission & Generation Planning Branch, Ceylon Electricity Board, Sri Lanka

C. Technical Session 3

- **Critical Importance and Role of Power Generation Planning in the Power System**

Engr. Hassan Jafar Zaidi, Power Planners International, Pakistan

- **Proposed Framework for setting up Bhutan Power Planning Component with respect to Load Forecast**

Engr. Hassan Jafar Zaidi, Power Planners International, Pakistan

D. Technical Session 4

- **Long Term Power Demand Forecasting using Regression Model**

Engr. Tauseef ur Rehman, National Transmission and Dispatch Company (NTDC), Pakistan

- **Analysis of External Impacts on Electricity Demand Forecast**

Engr. M. Buddhika S. Samarasekara, Chief Engineer (Generation Planning), Ceylon Electricity Board, Sri Lanka

- **Application of Forecasting Tools (Hands on Training using MiPower Software)**

Dr. Chandra Sekhar Reddy Atla, Manager, Power System Studies, Power Research and Development Consultants Pvt. Limited, India

E. Technical Session 5

- **Power Market Survey Model: Bottom-up Approach for Forecasting Power & Energy**

Demand

Engr. Tauseef ur Rehman, National Transmission and Distribution Company, Pakistan

Dinner Reception

19. SAARC Energy Centre hosted welcome dinner on Thursday, 24th August 2017 for the workshop delegates providing an informal opportunity for close interaction and networking. A number of dignitaries from Bhutan Power Company, Department of Hydropower and Ministry of Economic Affairs, Government of Bhutan, along with technocrats joined on this occasion.

Valedictory Session

20. Mr. Ihsan Ullah Marwat, Program Coordinator thanked the Chief Guest, Mr. Karma P Dorji, Chief Engineer (Department of Hydropower & Power Systems), Ministry of Economic Affairs, Govt. of Bhutan & Governing Board Member, SAARC Energy Centre for joining this invaluable event. He briefly informed that SEC's program activities are focused on different thematic areas including technology transfer and knowledge sharing. He commented that SEC is mandated to launch demand based program activity calendar designed and developed through participatory approach. He requested the Chief Guest, Resource Persons and all the SAARC delegates to contribute their ideas for future planning of program activities of SEC.

21. Engr. Marwat reiterated SEC's commitment to continue working through such knowledge sharing activities and proposed closed liaison among the resource persons and delegates for sustained growth and development. Mr. Marwat opined that SAARC Energy Centre is confident that this Workshop will facilitate Bhutan in moving ahead on the road to improve its generation planning in view of the shared load forecasting techniques and through synergetic efforts of professionals like you.

22. With respect to the way forward, he concluded that after having gone through these two days, following actions are proposed for the Bhutanese power sector:

- Bhutan requires a self-sufficient Load Forecasting Department Under Power Planning Entity
- The newly proposed department will be responsible for the following tasks:
 - Load Survey:
 - ✚ Collect Data from field formations of Bhutan Electricity Authority:
 - Historical loads recorded at substations for the last 10 years
 - Pending applications of customers
 - ✚ Gather all data/information from Developmental Organizations such as
 - Municipalities and Town Committees for new housing schemes and developmental details

- Organizations/Departments dealing with Industry, Agriculture and Forestry to know future expansion plans

23. In the end he thanked Mr. Nima Tshering (Sr. Engineer), Bhutan Power System Operator, Bhutan Power Corporation Ltd. for arranging visit to National Load Dispatch Center. And Miss Tshering Yangki (Dy. Executive Engineer), being focal person on behalf of Department of Hydropower & Power Systems, Ministry of Economic Affairs, Bhutan, for her reactiveness and untiring work with great commitment.

24. The Chief Guest, Mr. Karma P. Dorji chaired the valedictory session. Through his address to the workshop delegates, he congratulated SAARC Energy Centre for organizing this invaluable opportunity for achieving and maximizing the knowledge sharing opportunities. He commented that SAARC Energy Centre is playing a vital role to enhance cooperation to address regional energy issues and to enhance SAARC knowledge base in energy development and management.

25. He termed Load forecasting a very crucial activity as it serves to be a key input for generation planning & infrastructure planning for transmission & distribution systems. He admitted that significant expansion of hydro capacity along with transmission network has been planned for Bhutan in the coming years and in order to derive maximum economic benefit from such expansions, reliable forecasts of electricity is of great importance.

26. Mr. Karma P. Dorji showed greater satisfaction over the feedback from the participants of this training workshop to have an understanding/ know how of various forecasting techniques and that this knowledge will immensely benefit Bhutan.

27. In the end the chief guest thanked the resource persons for coming to Bhutan and sharing their profound knowledge to the participants and providing them with hands-on training. He also thanked program coordinator and SEC's management and hope for its support with such workshops in future to build the capacity of Member States especially Bhutan's young power sector agencies.

28. Ms. Ms. D.C. Hapuarachchi, Transmission & Generation Planning Branch, Ceylon Electricity Board, Sri Lanka offered vote of thanks on behalf of all the delegates to the Chief Guest, Resource Persons, Department of Hydropower & Power Systems, Ministry of Economic Affairs, Government of Bhutan, SAARC Energy Centre and hotel staff for successful organizing of the workshop and managing high enthusiasm and involvement on the part of delegates throughout the process.

Annexure I

SAARC Training Workshop Program
“Identification, Comparison and Scenario Based Application of Power Demand/ Load Forecasting Tools”
 Thimphu, Bhutan | 24 – 25 August 2017

Wednesday, 23 August 2017	
Arrival of Delegates: Thimphu, Bhutan	
Thursday, 24 August 2017	
Inaugural Session at The Terma Linca Resort, Thimphu, Bhutan Chair: <i>Mr. Karma Tshewang, Chief Engineer, DHPS</i>	
Time	Description
0900 – 0930	Registration
0930 – 0945	Welcome address on behalf of Director, SAARC Energy Centre (SEC) Engr. Salis Usman, Program Leader (Energy Trade)
0945 – 1000	Keynote Address Mr. Karma Namgyel, Officiating Chief Engineer, Department of Hydropower & Power Systems, Ministry of Economic Affairs, Government of Bhutan
1000 – 1015	Address by the Chief Guest Mr. Karma Tshewang, Chief Engineer, Department of Hydropower & Power Systems, Ministry of Economic Affairs, Government of Bhutan
1015 – 1045	Group Photo and Refreshments
Technical Session 1	
1045 – 1100	Introduction to SAARC Energy Centre, Islamabad Engr. Ihsanullah Marwat, Program Coordinator, SEC
1100 – 1200	Country Scenario Presentations by the delegates of SAARC Member States
1200 – 1230	Fundamentals of Load Forecast Engr. Tauseef ur Rehman, National Transmission and Dispatch Company (NTDC), Pakistan
1230 – 1300	Load Forecasting Methods and Techniques Dr. Chandra Sekhar Reddy Atla, Manager, Power System Studies, Power Research and Development Consultants Pvt. Limited, India
1300 – 1400	Luncheon

Technical Session 2	
1400 – 1430	Determination of Electricity Demand Forecast by combining Short Term Time Trend and Long Term Econometric Modelling Engr. M. Buddhika S. Samarasekara, Chief Engineer (Generation Planning), Ceylon Electricity Board, Sri Lanka
1430 - 1450	Prevailing Practices Pertaining to Generation Planning Ms. D.C. Hapuarachchi, Transmission & Generation Planning Branch, Ceylon Electricity Board, Sri Lanka
1450 – 1510	Coffee/Tea Break
Technical Session 3	
1510 – 1540	Critical Importance and Role of Power Generation Planning in the Power System Engr. Hassan Jafar Zaidi, Power Planners International, Pakistan
1540 - 1610	Proposed Framework for setting up Bhutan Power Planning Component with respect to Load Forecast Engr. Hassan Jafar Zaidi, Power Planners International, Pakistan
Welcome Dinner	
1830 - 2030	Welcome Dinner hosted by SAARC Energy Centre at Terma Linca Resort & Spa
Friday, 25 August 2017	
Technical Session 4	
0900 – 0930	Long Term Power Demand Forecasting using Regression Model Engr. Tauseef ur Rehman, National Transmission and Distribution Company (NTDC), Pakistan
0930 – 1000	Analysis of External Impacts on Electricity Demand Forecast Engr. M. Buddhika S. Samarasekara, Chief Engineer (Generation Planning), Ceylon Electricity Board, Sri Lanka
1000 – 1100	Application of Forecasting Tools (Hands on Training using MiPower Software) Dr. Chandra Sekhar Reddy Atla, Manager, Power System Studies, Power Research and Development Consultants Pvt. Limited, India
	Working Coffee/Tea Break
Technical Session 5	
1100 – 1130	Power Market Survey Model: Bottom-up Approach for Forecasting Power & Energy Demand Engr. Tauseef ur Rehman, National Transmission and Distribution Company, Pakistan
1130 - 1300	Visit to Load Dispatch Center, Bhutan Power System Operator
1300 – 1400	Luncheon

Valedictory Session

Chair: **Mr. Karma P Dorji, Chief Engineer & Member Governing Board, SAARC Energy Centre**

1400 – 1420	Summing-up and The Way Forward Engr. Ihsanullah Marwat, Program Coordinator, SAARC Energy Centre
1420 – 1440	Address by the Chief Guest (Mr. Karma P Dorji, Chief Engineer, Department of Hydropower & Power Systems, Ministry of Economic Affairs, Government of Bhutan)
1440 – 1500	Award of Shields
1500 – 1520	Distribution of Certificates
1520 - 1530	Vote of Thanks by Ms. D.C. Hapuarachchi, Transmission & Generation Planning Branch, Ceylon Electricity Board, Sri Lanka
1530 – 1600	Group Photo & Refreshments
Saturday, 26 August 2017	
Delegates Depart from Thimphu, Bhutan	

Annexure II

List of Resource Persons, Delegates & SEC Team Members
“Identification, Comparison and Scenario Based Application of Power
Demand/ Load Forecasting Tools”

Thimphu, Bhutan | 24 – 25 August 2017

#	Name	Member State	Contact Details
Resource Persons			
1.	Dr. Chandrasekhar Reddy Atla Manager Power System Studies Power Research & Development Consultants Pvt. Ltd. India	India	csreddy@prdcinfotech.com Tel: +91-9538888810
2.	Mr. Bhuddhika Samarasekara Chief Engineer (Generation Planning) Transmission & Generation Planning Branch, Ceylon Electricity Board, Sri Lanka	Sri Lanka	bsamarasekara@gmail.com Tel: +94714115626 Cell: +94112329812
3.	Mr. Tauseef Ur Rehman Khan Assistant Manager, Load Forecast o/o General Manager (Planning Power) National Transmission and Dispatch Company Limited (NTDCL)	Pakistan	r.tauseef@yahoo.com Cell: +92-321-4192794 Tel: +92-42-99204925 Ext: 418
4.	Mr. Hassan Jafar Zaidi CEO, Power Planners International (Pvt.) Ltd.	Pakistan	hassan@powerplannersint.com Cell: +92-3014145264
Delegates			
5.	Mr. Ghulam Haidar Sediqi (Chief of Dispatching/ Load Control Centre) De Afghanistan Breshna Sherkat	Afghanistan	haidarisedqi@gmail.com Cell: +93729002288
6.	Mr. Karma Namgyel Chief Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	karmanamgyel@moea.gov.bt Cell: 00975-328780

#	Name	Member State	Contact Details
7.	Mr. Gem Dorji Principal Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	gyemdorji@moea.gov.bt Cell: 00975-333088
8.	Mr. Passang Executive Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	passang@moea.gov.bt Cell: 00975-17592968
9.	Ms. Tshering Yangki Dy. Executive Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	tyangki@moea.gov.bt Cell: 00975-17737688
10.	Ms. Kuenga Choden Dorji Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	kcdorji@moea.gov.bt Cell: 00975-17294831
11.	Mr. Ugyen Chopel Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	uchophel@moea.gov.bt Cell: 00975-17377018
12.	Mr. Kinley Jamtsho Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	kjamtsho@moea.gov.bt Cell: 00975-17805472
13.	Ms. Sangay Zangmo Asst. Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	sangayzangmo@moea.gov.bt Cell: 00975-17624124
14.	Mr. Ugyen Thinley Jr. Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	ugyenthinley71@gmail.com Cell: 00975-17570443
15.	Ms. Mindu Wangmo Tariff Officer Bhutan Electricity Authority	Bhutan	mindu10021@gmail.com Cell: 00975-17626075

#	Name	Member State	Contact Details
16.	Ms. Nermin Tariff Officer Bhutan Electricity Authority	Bhutan	nermin@bea.gov.bt Cell: 00975-17343433
17.	Mr. Tenzin Dorji Executive Engineer Druk Green Power Corporation Ltd.	Bhutan	general10zi@gmail.com Cell: 00975-17617574
18.	Ms. Deki Wangmo Jr. Engineer Druk Green Power Corporation Ltd.	Bhutan	dekiluckystar10@gmail.com Cell: 00975-17634920
19.	Mr. Nima Tshering Sr. Engineer Bhutan Power System Operator, Bhutan Power Corporation Ltd	Bhutan	nimatshering@bpc.bt Cell: 00975-17416847
20.	Mr. Dawa Gyeltshen Sr. Engineer Bhutan Power System Operator, Bhutan Power Corporation Ltd.	Bhutan	dawa.gyeltshen@bpc.bt Cell: 00975-17866863
21.	Ms. Pema Yangzom Engineer Bhutan Power Corporation Ltd.	Bhutan	pemayangzom@bpc.bt Cell: 00975-17626890
22.	Ms. Palden Wangmo Engineer Bhutan Power Corporation Ltd.	Bhutan	paldenwangmo@bpc.bt Cell: 00975-17941581
23.	Ms. Thinley Yangzom Licensing Engineer Bhutan Power Corporation Ltd.	Bhutan	thinley_yangzom@bea.gov.bt Cell: 00975-17956066
24.	Mr. Dawa Phuntsho Monitoring Engineer Bhutan Power Corporation Ltd.	Bhutan	dawa_phuntsho@bea.gov.bt Cell: 00975-17613845
25.	Mr. Ishan Sharan Director, Central Electricity Authority.	India	i.sharan@nic.in Cell: +91-9868021344

#	Name	Member State	Contact Details
26.	Mr. Vikram Singh Director, Central Electricity Authority.	India	Vikramsingh-cea@gov.in Cell: +91-98683051
27.	Mr. Ismail Usman Supervisor, Fenka Corporation	Maldives	Cell: +96-09977705
28.	Mr. Imtiaz Ahmed Khan Additional Deputy Manager Hyderabad Electric Supply Co.	Pakistan	chmp@ntdc.com.pk Cell: +92-3357401384
29.	Mr. Sabih Uz Zaman Chief Engineer (Master Planning) National Transmission and Dispatch Company Limited (NTDCL), Pakistan	Pakistan	msabihuzzaman@gmail.com ; ncppspp@gmail.com Cell: +92-3408886019, +92-3332971125
30.	Ms. D.C. Hapuarachchi Electrical Engineer (Generation Planning) Transmission & Generation Planning Branch, Ceylon Electricity Board.	Sri Lanka	eeqptgp.tr@ceb.lk Cell: +97-716506235
SAARC Energy Centre			
31.	Mr. Salis Usman Program Leader (Energy Trade)	Pakistan	salis@saarcenergy.org Tel: +92-51-2228802 (Ext 110) Fax: +92-51-2221937 Cell: +92-334-9703178
32.	Mr. Ihsanullah Marwat Program Coordinator	Pakistan	rfee@saarcenergy.org Tel: +92-51-2228804 (Ext 111) Fax: +92-51-2221937 Cell: +92-321-9142930
33.	Mr. Arshad Munir Khan Computer Operations Officer	Pakistan	arshad.munir@saarcenergy.org Tel: +92-51-2228807 (Ext 114) Fax: +92-51-2221937 Cell: +92-332-9656898
Focal Person – Knowledge Partner			
34.	Ms. Tshering Yangki Dy. Executive Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	tyangki@moea.gov.bt Cell: 00975-17737688

Brief Pictorial View of the Workshop





















