

SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION (SAARC)



SAARC ENERGY CENTRE
ISLAMABAD

THE REPORT

Program Activity: PRG-84/2015/PENT

SAARC Dissemination Workshop
"Study for Development of Potential Regional Hydro Power Plant in South Asia"
09-10 May 2016
Hotel Soaltee Crowne Plaza
Kathmandu - Nepal
Organized by
SAARC Energy Centre, Islamabad
in collaboration with
Department of Electricity Development
Ministry of Energy
Government of Nepal

May 2015

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SAARC Energy Centre

SEC Program Activity (PRG-84/2015/PENT)

**Dissemination Workshop on
Study for Development of Potential Regional Hydro Power Plant in South Asia
09-10 May 2016,
Kathmandu, Nepal**



Dissemination Workshop
"The Study for Development of Potential Regional Hydro Power Plant in South Asia"
09 - 10 May 2016
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**In Collaboration with
Department of Electricity Development
Ministry of Energy,
Government of Nepal**

The Report

Introduction

SAARC Energy Centre, Islamabad under its program for FY 2016 organized a two day dissemination workshop on **Study for Development of Potential Regional Hydro Power Plant in South Asia** in Kathmandu, Nepal on 09-10 May 2016. The event was arranged in Hotel Soaltee Crowne Plaza, Kathmandu in collaboration with the Department of Electricity Development, Ministry of Energy, Government of Nepal. Copy of the Workshop Program is available at **Annexure I**.

2. SEC commissioned a desktop study for development of Potential Regional Hydro Power Plant in South Asia through its Program for the FY 2014. The study was focused on the over 80,000 MW hydropower potential of Nepal. The power developed in Nepal would then be transported to India, Pakistan and Afghanistan, establishing and strengthening a great bond between the member states where India, Pakistan and Afghanistan would be benefited with the cheap hydropower whereas Nepal would earn foreign exchange owing to its potential.

SEC has organized this workshop to disseminate the outcome of the study to facilitate the concerned policy makers, professionals and investors of South Asia for providing inputs on the conclusions and recommendations of the study to further the concept of a regional hydro power plant in South Asia. The major objectives of this intervention are to:

- Share scope and viability of hydro power plant(s), at regional level, with the experts of the Member States so as to enable initial clearance and approval of concerned authorities and undertaking of detailed technical/feasibility studies in this respect
- Compliment and strengthen the stakeholder Member States' generation mix with cheap and environment friendly hydropower in addition to irrigation benefits
- Promote regional energy cooperation through regional power development projects and regional energy trade
- Meet increasing energy demand through exploitation of indigenous resources
- Improve and sustain energy security of the region
- Motivate the member states for synergizing their resources by undertaking many such regional power projects and establishing various inter-connections

Participation

3. A total of 38 participants including the delegates from Member States Bangladesh, Bhutan, Nepal, Pakistan and Sri Lanka, Resource Persons from Bangladesh, India, Nepal and Pakistan and staff from SEC participated in the workshop. Participants list is available at **Annexure II**. The study outcome was presented by the Short Term Expert. The Peer Reviewer presented the review perspectives. Besides, the resource persons delivered presentations on different issues with reference to hydro power development and regional power trade; the participants had a very open and interactive discussion over the opportunities and challenges faced in the region in the power sector.

Workshop Agenda

4. The workshop agenda was divided into five major sessions:
 - Inaugural Session
 - Country Presentations
 - Study Report Dissemination
 - Regional Integration and
 - Valedictory Sessions

Inaugural Session

5. The workshop was inaugurated by **Mr. Suman Prasad Sharma**, Secretary, Ministry of Energy, Government of Nepal. The session was graced by the presence of **Mr. Mohammad Ibrahim Ghafoori**, Director, SAARC Secretariat, **Mr. Sameer Ratna Shakya**, Director General, Department of Electricity Development, Ministry of Energy, Government of Nepal and **Mr. Muhammad Naeem Malik**, Director, SAARC Energy Centre.
6. The workshop was commenced with a Welcome Speech by Mr. Malik, Director, SAARC Energy Centre. Mr. Malik 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. Suman Prasad Sharma, Secretary, Ministry of Energy, Government of Nepal for his gracious presence at the workshop and for encouraging the SAARC Energy Centre's endeavors in Energy Sector.
7. Mr. Malik stated that Energy security is a complex and broad-based issue covering fuel diversity, multilateral sharing of energy resources and attaining a sustainable energy mix. It is driven by investments, technical cooperation and infrastructure development, while being impacted by the overarching imperatives of economy, politics and the environment. Energy security has domestic and foreign policy implications. It is increasingly important for key stakeholders to examine existing regional dynamics and develop synergies for enhanced regional trade, economic growth and improved livelihoods.
8. Director, SEC acknowledged the great cooperation extended by the Department of Electricity Development, Ministry of Energy, Government of Nepal in organizing the workshop. He expressed his satisfaction, as the real stake holders had joined hands for common goal. He also thanked Director- SAARC Secretariat, the high level officials of the Government of Nepal and the delegates and participants for their presence and for their interest and commitment to the cause of energy and power.
9. Mr. Sameer Ratna Shakya, Director General, Department of Electricity Development appreciated the initiatives taken by SEC in facilitating and coordinating programmes to enhance energy security, to remove barriers and to build confidence and consensus for sustainable energy use across the SAARC region. He said that he gives high value to the ongoing cooperation among SAARC countries on sharing technologies, experiences, capacity building in energy sector and that the signing of SAARC Framework Agreement for Energy Cooperation by the member states has further enhanced the areas of cooperation in electricity sector.

10. Mr. Mohammad Ibrahim Ghafoori, Director, SAARC Secretariat in his remark stated that most of the SAARC Member States are currently facing electricity shortage. He further emphasized that despite energy shortages, possibilities exist for cross border electricity trade in the region. To facilitate regional energy cooperation, SMS signed the “**The SAARC Framework Agreement for Energy Cooperation (Electricity)**” on November 27, 2014 in the 18th SAARC Summit held in Kathmandu. This umbrella agreement, with emphasis on electricity, lays down the broad contours for energy cooperation in South Asia and that now we have the responsibility to carry forward the spirit of Kathmandu Summit. He also, in retrospect, reminded of SAARC’s effort in energy cooperation since the year 2000.

11. Mr. Suman Prasad Sharma, Secretary-Ministry of Energy, in his inaugural address, stated that our region has the lowest energy consumption rate as well as the lowest income per capita, which necessitates accelerated joint efforts to generate as well as consume more energy for economic growth of our region so that some level of social equity with world population is achieved in the long run. He also emphasized that the situation of power shortages along with poor quality of power supply in most of the SAARC countries could be overcome with our coordinated efforts in the platform of SAARC with judicious uses of our various sources of energy. This can be addressed through regional grid for optimal utilization of infrastructures and power plants.

12. He, in the end of his remark, wished for active participation of all delegates from SAARC member countries and resource persons of the workshop for sharing information and learning from each other’s experiences in the areas of power sector development and regional cooperation. He expressed his confidence that the workshop would greatly contribute in realizing large hydropower projects for the regional benefits, refining our present policies to create conducive environment and providing networking opportunities for the professionals and experts involved in energy sector from around the SAARC region.

Technical Proceedings

13. 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):

Technical Session 1 (Country Presentations)

14. This first technical session started with the introductory presentation by **Mr. Suresh Shrestha**, Programme Coordinator, SEC. Through his presentation he shed light on the background, objectives and expectations of this two day workshop. He also quickly took the audience to the efforts of SAARC since its inception in energy cooperation within the region. He also gave a short introduction to SAARC Energy Centre, its mandate and focus areas that the centre works in.

15. This was then followed by the country presentations by the delegates from the member states. The countries Bangladesh, Bhutan, Nepal, Pakistan and Sri Lanka presented the situation of electricity sector, the ongoing and future power projects in their respective countries.

Technical Session 2: Dissemination of the Study Report

16. The Study report dissemination was divided into three parts. The Short Term Expert, **Mr. Shyam Sundar Shrestha**, within the first part, presented the major highlights of the study and its objectives. He described the methodology adopted to carry out the study, followed by the review of electricity laws and regulations in South Asia.

17. The second part covered the Power Market in South Asia. He discussed about the export oriented hydro power projects in South Asia. Economic and financial analyses of the candidate projects were presented to the audience. Upon presenting the socio-economic and environmental issues he wrapped up his presentation with the Conclusion and Recommendations.

18. Mr. Shrestha presented that there exists a wide gap between supply of electricity generated and demand in the region, with a cumulative supply and demand gap in India, Pakistan and Bangladesh being 18707 MW, which creates opportunities to potential hydro power producers such as Nepal and Bhutan. Among the three candidate projects he chose for regional use, i.e., Sunkoshi 2 Storage, Sunkoshi 3 Storage and Budi Gandaki Storage, the Sunkoshi 2 Storage Project has the highest FIRR of 13.67% and EIRR of 30%, with a WACC of 13.7% and B/C ratio of 1.38. He also suggested in his presentation that the pre-construction work would require 2 years and another 6 years for project completion.

19. The workshop hall viewed a highly interactive session on the presentation, which was highly effective in terms of sharing of knowledge among the participants on hydropower development and regional electricity trade.

20. As the third part of the session, **Mr. Nazrul Islam**, the peer reviewer then presented his perspectives on the study. He presented in his slides that most of the comments and suggestions were covered in the study report and added that very few comments were left uncovered owing to limitations of man-months for the study, constraints of time and budget for the study.

Technical Session 3: Regional Integration

21. Day 2 of the workshop began with the presentation by **Mr. Sher Singh Bhat**, the Deputy Managing Director of Nepal Electricity Authority. The topic of his presentation was “**Post PTA Indo-Nepal Power Trade**”, in which he talked about history of power transaction between Nepal and India, the major provisions of power trade agreement and made deliberations on the status of implementation of the PTA.

22. “**Pakistan’s Experience in Hydro Power Development**” was the topic of the presentation of **Mr. Munawar Iqbal**, Director-Hydro Power of Private Power and Infrastructure Board (PPIB) of Pakistan. Starting with the overview of power mix in Pakistan, he discussed the hydro power potential of Pakistan and how hydro power model evolved in Pakistan. He also shed light on the salient features of Power Policy 2002 and 2015. He concluded his presentation with the success stories of private sector in hydro power in Pakistan.

23. The third presentation in this session was “**Power Trade: Bangladesh, India and Nepal: Challenges and Opportunities**” by **Mr. Nazrul Islam**, Ex-Managing Director of Infrastructure Investment Facilitation Company of Bangladesh. He shared with the audience the power sector situation of Bangladesh and its long term power generation expansion plan, followed by the issues and challenges in regional power exchange.
24. **Mr. D.N. Raina**, the President of Entecsol, New Delhi, delivered presentation on “**Regional Electricity Trade in South Asia: Opportunities and Challenges**”. He highlighted the electricity scenario in South Asia. The crux of his presentation was on the prospects of Electricity Trade and Transit in South Asia and the issues and challenges associated with them.
25. The last presentation of the session was “**Regional Energy Cooperation: Regional Regulatory Guidelines for Promoting Cross Border Electricity Trade and Hydro Power Development in South Asia**”. This was presented by **Mr. Rajiv Ratna Panda**, Head-Technical of SARI/EI/IRADe, where he discussed about the key drives for CBET and regional exploitation of Energy Resources. He emphasized on the need of Regional Regulatory Guidelines and that hydro power can bring about regional balance of power sector in South Asia.
26. The session concluded with a very interactive question answer between the participants and the presenters.
27. In South Asia, an uneven spread of energy resources creates an excellent opportunity for electricity trade. Nepal and Bhutan has enormous hydro power resources but have small local demands, which open up avenues for electricity produced through hydro power in these countries to be exported to other SAARC countries. India has a very unique position in the region and has the role of facilitating energy flow in the region. Pakistan and Afghanistan on the other hand can help South Asia to import electricity from Central Asia region.
28. The estimated cumulative hydro power potential of South Asia is 388775 MW, only a fraction being exploited. There is a wide gap between the supply of electricity generated and demand in the region. Power transmission infrastructure is limited in South Asia. India is the only country that has cross-country interconnections and India’s unique position in the region makes India the key player in power trade in the region.
29. As per the preliminary analysis done over the three candidate projects Sunkoshi 2, Sunkoshi 3 and Budi Gandaki, the study recommends Sunkoshi 2 to be the financially viable project for the regional use.
30. The work done by the consultant was highly appreciated by the participants. As the study was of preliminary nature and was based on desk study, a detailed study can be supported by SEC through its future programmes.

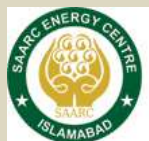
Dinner Reception

31. SAARC Energy Centre hosted Welcome Dinner on Monday, 09 May 2016 for the workshop delegates and high level government officials from the Government of Nepal for providing an informal opportunity for close interaction and networking. The Welcome Dinner was hosted in Mul Chowk Restaurant, Babar Mahal Revisited, Kathmandu.

Valedictory Session

32. **Mr. Madhu Prasad Bhetuwal**, Deputy Director General, Department of Electricity Development expressed in his valedictory address that he was delighted to have the opportunity to know about the study and appreciated the effort of the Short Term Expert and the SEC team for conducting the study, which was indeed a relevant initiatives towards development of hydro power for regional use. He also suggested that joint analysis of project; joint policy analysis and joint investments are required to build such a large project requiring massive investments as well as harmonization of trading laws and policies. He thanked the entire SEC team for successfully completing the workshop.

33. **Vote of Thanks** was delivered by Mr. D. N. Raina. Mr. Raina participated as a resource person. He is the president of the consulting firm ENTECSOL in New Delhi, India. As an expert in energy sector since long and also having experience of working closely with SAARC and SAARC Energy Centre in the past, he heartily applauded the initiatives of SAARC Energy Centre. He greatly appreciated the efforts taken by SAARC Energy Centre in conducting the study and he, on behalf of the participants, thanked the SEC team for successfully completing the workshop, the hospitalities extended to the delegates and also thanked the Hotel Soaltee Crowne Plaza for their wonderful services.

Annexure I**AGENDA**
**Dissemination Workshop
on**
“The Study for Development of Potential Regional Hydro Power Plant in South Asia”
09 – 10 May 2016
**Hotel Soaltee Crowne Plaza,
Kathmandu, Nepal**

Sunday, 8 May 2016 Arrival of Guests	
Monday, 9 May 2016	
0845- 0915	Registration
Inaugural Session	
0915 -0940	Welcome Addresses: <ol style="list-style-type: none"> a. Mr. Muhammad Naeem Malik Director, SAARC Energy Centre b. Mr. Sameer Ratna Shakya Director General, Dep. of Electricity Development, Ministry of Energy , Nepal
0940-0950	Remarks by: Mr. Mohammad Ibrahim Ghafoori Director, SAARC Secretariat
0950 - 1000	Inaugural Address by the Chief Guest: Mr. Suman Prasad Sharma Secretary, Ministry of Energy, Nepal
1000-1010	Distribution of Shields / Mementos Mr. Muhammad Naeem Malik
1010-1030	Coffee Break and Group Photograph
Session 1 Country Presentations	
1030-1050	Workshop Introduction, Objective and Expectation: Suresh Shrestha, Research Fellow (ETE), SAARC Energy Centre

1050-1200	<p>Electricity Sector in the SAARC Member States</p> <ul style="list-style-type: none"> • Afghanistan • Bangladesh • Bhutan • Nepal • Pakistan • Sri Lanka
<p>Session 2 Study Report</p>	
1200-1300	<ul style="list-style-type: none"> • Study Highlights and Objectives • Methodology • Review of Electricity laws and regulations in South Asia <p>Mr. Shyam Sundar Shrestha, Expert, Nepal</p>
1300-1400	Networking Lunch
1400-1510	<ul style="list-style-type: none"> • Power Market in South Asia • Export Oriented Hydropower Projects in South Asia • Economic and Financial Feasibility • Socio-economic and environmental Issues • Conclusion and Recommendations <p>Mr. Shyam Sundar Shrestha, Expert, Nepal</p>
1510-1540	Q & A
1540 - 1620	<p>Peer Review Perspective Mr. Nazrul Islam EX-Managing Director, Infrastructure Investment Facilitation Company, Bangladesh</p>
1620– 1630	Q & A
1630-1700	Coffee Break
1930 onwards	Welcome Dinner
<p>Tuesday, 10 May 2016</p>	
<p>Session 3: Regional Integration</p>	
0900 -0930	<p>Post PTA Indo- Nepal Power Trade Mr. Sher Singh Bhat Deputy Managing Director, Nepal Electricity Authority, Nepal</p>
0930-0940	Q & A

0940 - 1010	Coffee Break
1010 - 1040	Pakistan's Experience in Hydro Power Mr. Munawar Iqbal, Director Hydro Power, PPIB, Pakistan
1040-1110	Power Trade: Bangladesh, India and Nepal Mr. Nazrul Islam EX- Managing Director, Infrastructure Investment Facilitation Company, Bangladesh
1110-1140	Regional Electricity Trade in South Asia: Opportunities and Challenges Mr. DN Raina President, Entecsol, India
1140-1210	Regional Regulatory Guidelines for Promoting Cross Border Electricity Trade & Hydro Power Development in SA Mr. Rajiv Ratna Panda Technical Head, USAID/SARI/IE, India
1210-1230	Q & A
Session 4: Valedictory Session	
1230-1330	Valedictory Address Mr. Madhu Prasad Bhetuwal, Deputy Director General, Department of Electricity Development, Nepal Distribution of Certificates Vote of Thanks (Participant)
1330 -1430	Networking lunch
Wednesday, 11 May 2016	
Delegates Depart	

Annexure II

SAARC Dissemination Workshop
on
Study for Development of Potential Regional Hydro Power Plant in South Asia
09-10 May 2016,
Hotel Soaltee Crowne Plaza,
Kathmandu, Nepal

List of Resource Persons, Delegates & SEC Team Members

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3.	Mr. Rajiv Ratna Panda Head-Technical South Asia Regional Initiative for Energy Integration (SARI/EI), India	rajivpanda@irade.org
4.	Mr. D.N. Raina President ENTECSOL, India	rainadn@gmail.com
5.	Mr. Sher Singh Bhat Deputy Managing Director, Nepal Electricity Authority, Nepal	sneeti@wlink.com.np
6.	Mr. Munawar Iqbal Director, Hydropower, Private Power and Infrastructure Board (PPIB), Pakistan	munawar@ppib.gov.pk
Delegates from SAARC Member States		

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Bhutan		
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15.	<p>Mr. Sandeep Kumar Dev Superintendent Engineer Department of Electricity Development Government of Nepal</p>	sandipdev@hotmail.com

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24.	<p>Mr. Badri Kuikel Engineer Department of Electricity Development Government of Nepal</p>	<p>badrikuikel@gmail.com</p>
25.	<p>Mr. Madhav Prasad Adhikari Senior Divisional Engineer Budi Gandaki Hydroelectric Project Development Commitee Government of Nepal</p>	

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Brief Pictorial View of the Workshop









