

SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION (SAARC)



**SAARC ENERGY CENTRE
ISLAMABAD**

THE REPORT

Program Activity: PRG-117/2017/PROMO



**SAARC Dissemination Workshop on
“Potential for Energy Storage Technologies in Electricity
Sector of SAARC Member States”**

13 – 14 November 2017
Kathmandu - Nepal



Organized by
SAARC Energy Centre, Islamabad
in collaboration with
**Department of Electricity, Ministry of Energy
Government of Nepal**



December 2017

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SAARC Energy Centre



SEC Program Activity (PRG-117/2017/PROMO)

Dissemination workshop

“Potential for Energy Storage Technologies in Electricity

Sector of SAARC Member States”

Kathmandu, Nepal | 13 – 14 November 2017



The Report

Introduction

SAARC Energy Centre, Islamabad organized a two days Dissemination workshop on **Potential for Energy Storage Technologies in Electricity Sector of SAARC Member States** in Kathmandu, Nepal on 13 – 14 November 2017. The event was arranged at Hotel Soaltee Crowne Plaza in collaboration with Department of Electricity Development, Ministry of Energy, Government of Nepal as the Knowledge Partner (copy of the Workshop Program is available at **Annexure – I**).

SEC especially organized this workshop “**Potential for Energy Storage Technologies in Electricity Sector of SAARC Member States**” under its thematic programme area “Minimize Oil Imports through Improvements in Energy Efficiency and Fuel Substitution” (PROMO); to disseminate the study report on “*Potential for Energy Storage Technologies in Electricity Sector of SAARC Member States*” and its finding among relevant professionals of SAARC Member States. The study was conducted by a team of regional experts from Pakistan and India with the support from developed world.

Objective

In order to have a better outcome in the form of a comprehensive report, this workshop was planned to disseminate findings and recommendations of ESTES study with the relevant professionals of the Member States for further elaboration of the concept, its importance and application in the Member States.

Participation

A total of 21 delegates from i) Member States Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan and Sri Lanka; ii) Resource Persons from India, Nepal and Pakistan attended (participant list is available at **Annexure – II**). The workshop attracted an overwhelming participation from the host Member State Nepal; Nepalese delegates, dominated by SEC’s Knowledge Partner for this Workshop i.e. Department of Electricity Development, Ministry of Energy, followed by delegates from Water & Energy Commission Secretariat, Govt. of Nepal.

Major Aspects Covered

The Workshop focused on the role of Energy Storage Technologies in Electricity Sector (ESTES), its application areas, present status in advance world, and particularly in perspective of SAARC Member States. It started with the background, history and importance of the ESTES. Proven and viable Energy Storage technologies were discussed one by one in detail. The study report was thoroughly shared with the audience. India being regional leader in the area was separately discussed as a special case. In the end best practices were share followed by “way forward” for the region.

The workshop started with the Inaugural session chaired by Mr. Nabin Raj Singh, Director General, Department of Electricity Development (DoED), Government of Nepal, followed by

technical sessions. The event was closed with the Valedictory Session of the event, chaired by Mr. Madhusudan Adhikari, Secretary, Water and Energy Commission Secretariat, Government of Nepal.

Inaugural Session

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. Nabin Raj Singh, for his gracious presence at the workshop and for encouraging the SAARC endeavor for enhancing capacity of the professionals across the region.

Dr. Shoaib Ahmad, Deputy Director (Coordination), 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 added 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. Electrical power generation is changing dramatically across the world because of the need to reduce greenhouse gas emissions and to introduce mixed energy sources. The power network faces great challenges in transmission and distribution to meet demand with unpredictable daily and seasonal variations.

Deputy Director, SEC further shared that Electrical Energy Storage is recognized as underpinning technologies to have great potential in meeting these challenges, whereby energy is stored in a certain state, according to the technology used, and is converted to electrical energy when needed. However, the wide variety of options and complex characteristic matrices make it difficult to appraise a specific Electrical Energy Storage technology for a particular application. Within this perspective, he again stressed the importance of this event. In the end he thanked chief guest, resource persons, and delegates from the Member States for their presence.

Mr. Dinesh Kumar Ghimire, Joint Secretary, Ministry of Energy, Government of Nepal; in his key note address gave an in depth overview of Nepal's power sector. He shared that Nepal like other Member States do not want to rely more on imported fuels; is blessed with large hydro potential considers this study and its dissemination workshop of great support to its power sector. They expect that this workshop will provide them with guideline for storing the electrical energy not only to help its grid stability but also to diversify electrical power utilization in other sector of economy such as electrical transport.

Mr. Nabin Raj Singh, Director General, Department of Electricity Development (DoED), Government of Nepal, chaired the Inaugural Session. In his address, the Chief Guest welcomed all delegates from SAARC Member States, Resource Persons and SEC officials at Kathmandu, Nepal. He thanked SEC for organizing this workshop in Nepal, by providing this opportunity to the Nepalese power sector professionals in their homeland.

He showed his high expectations from this dissemination workshop, that it will enhance the knowledge base of power planners of SAARC Member States on various electricity storage technologies and their applications, whereas the participants would certainly utilize this knowledge to ensure energy security of their respective countries.

He also expressed his 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 South Asia. In the end Mr. Nabin Raj Singh thanked professionals from SAARC Energy Centre, all the delegates and resource persons for their participation and contribution.

Technical Proceedings

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

A. Technical Session 1

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

- a. Bangladesh
- b. Bhutan
- c. Nepal
- d. Pakistan
- e. Sri Lanka

- **Setting up the Perspective**

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

- **Inside the SAARC Research Intervention on Energy Storage 2016**

Dr. Tahir Nadeem Malik, Short Term Consultant / Dean E&IE, University of Engineering and Technology, Taxila, Pakistan

- **Energy Storage Technologies in Electricity Sector – An Overview**

Mr. Suresh Shrestha, Senior Divisional Engineer, Govt. of Nepal

Indian Success Story – Interventions and Achievements on Energy Storage

Mr. Mohan Menon, Balsa Consulting, New Delhi, India

B. Technical Session 2

- **Energy Storage: Nepalese Perspective**

Mr. Sher Singh Bhat, CEO (Kabeli Energy Ltd.), Nepal

- **Energy Storage – The Best Practices**

Mr. Mohan Menon, Balsa Consulting, New Delhi, India

Valedictory Session

Summing-up

Mr. Ihsan Ullah Marwat, Program Coordinator thanked the Chief Guest, Mr. Madhusudan Adhikari, Secretary, Water and Energy Commission Secretariat, Govt. of Nepal 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.

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.

In the end he thanked Mr. Subash Tulhadar (Senior Divisional Hydrologist), being focal person on behalf of Department of Electricity Development, Govt. of Nepal for his proactive and untiring support with great commitment.

The Chief Guest, Mr. Madhusudan Adhikari, Secretary, Water and Energy Commission Secretariat, Govt. of Nepal, 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.

He thanked the resource persons for coming to Nepal and sharing their profound knowledge among 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 Nepal's young power sector agencies.

Mr. Basanta Dhwoj Shrestha, Deputy Manager, Nepal Electricity Authority offered vote of thanks on behalf of all the delegates to the Chief Guest, Resource Persons, Department of Electricity Development, Govt. of Nepal, 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.

Dinner Reception

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 Ministry of Energy, Ministry of Minerals, Department of Electricity

Development, Water and Energy Commission Secretariat, Government of Nepal, along with technocrats also joined on this occasion.

Conclusion

In the end, recommendations of the study report were shared by the program coordinator, and elaborated in detail. The study report was very applauded by the participants; and regarded as very complete in all aspects; thus ended without any much suggestion for the audience, except one generic critical question was raised that why for implementation of such technological initiative, we usually refer to the political interest? That was very nicely addressed by the study team leader in his reply, and is covered in the recommendations of this report as well as in the study report in the same manner.

Recommendations

- The success of any endeavor depends very much on the support that it receives from the political level. Subordinate legislation would also need to be brought in, to ensure the setting of continually updated standards for design, manufacture, testing and operation of energy storage devices, besides safety standards. Regulators also need to consider the policies that will enable and incentivize storage adoption within their jurisdiction.
- Government support through financial contributions, tax credits, standard setting and market creation is important for effective technology development, innovation and deployment. Strong institutional mechanisms need to be set up.
- Commercial requirements for energy storage systems need to keep in mind the future market needs, industry capability, and the best use of storage in as many situations as feasible.
- It is necessary to get the storage story out to more people and help push the policy conversation in a direction that creates opportunities for storage to provide flexibility, reliability and renewables integration to the grid. However, energy storage should not be considered an end in itself. Rather, it provides one of the options for supporting a reliable, efficient, cost-effective and sustainable power sector.

Annexure I

SAARC Dissemination Workshop
Workshop Program
“Potential for Energy Storage Technologies in Electricity Sector of
SAARC Member States”
 Kathmandu, Nepal | 13 – 14 November 2017

Sunday, 12 November 2017

Arrival of Delegates: Kathmandu, Nepal

Monday, 13 November 2017**Inaugural Session at The Hotel Soaltee Crowne Plaza, Kathmandu, Nepal**Chair: **Mr. Anup Kumar Upadhyay**, Secretary, Ministry of Energy

Time	Description
0900 – 0930	Registration
0930 – 0950	Welcome address on behalf of Director, SAARC Energy Centre (SEC) Dr. Shoaib Ahmad , Deputy Director (Coordination), SAARC Energy Centre
0950 – 1000	Keynote Address Mr. Dinesh Kumar Ghimire , Joint Secretary, Ministry of Energy
1000 – 1010	Special Address Mr. Nabin Raj Singh Director General, Department of Electricity Development (DoED)
1010 – 1020	Address by the Chief Guest Mr. Anup Kumar Upadhyay , Secretary, Ministry of Energy
1020 – 1100	Launching of Study Report, Group Photo and Refreshments
Technical Session 1	
1100 – 1130	Country Scenario Presentations by the delegates of SAARC Member States
1130 – 1150	Setting the Perspective Mr. Ihsanullah Marwat, Program Coordinator, SEC
1150 – 1220	Inside the SAARC Research Intervention on Energy Storage 2016 Dr. Tahir Nadeem Malik, Short Term Consultant / Dean E&IE, University of Engineering and Technology, Taxila, Pakistan
1220 – 1240	Energy Storage Technologies in Electricity Sector – An Overview Mr. Suresh Shrestha, Senior Divisional Engineer, Govt. of Nepal

12:40 – 13:10	Indian Success Story – Interventions and Achievements on Energy Storage Mr. Mohan Menon, Balsa Consulting, New Delhi, India
13:10 – 14:00	Luncheon

Technical Session 2

1400 – 1420	Energy Storage: Nepalese Perspective Mr. Sher Singh Bhat, CEO (Kabeli Energy Ltd.), Nepal
1420 – 1440	Energy Storage – The Best Practices Mr. Mohan Menon, Balsa Consulting, New Delhi, India

Valedictory Session

1440 – 1450	Summing-up and The Way Forward Mr. Ihsanullah Marwat , Program Coordinator, SAARC Energy Centre
1450 – 1500	Address by the Chief Guest Mr. Madhusudan Adhikari , Secretary, Water and Energy Commission Secretariat
1500 – 1510	Award of Shields
1510 – 1520	Distribution of Certificates
1520 - 1525	Vote of Thanks by Mr. Basanta Dhwoj Shrestha , Deputy Manager, Nepal Electricity Authority
1525 – 1600	Group Photo & Refreshments

Welcome Dinner

1900 - 2000	Welcome Dinner hosted by SAARC Energy Centre at Hotel Soaltee Crowne Plaza, Kathmandu, Nepal
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Annexure II

List of Resource Persons, Delegates & SEC Team Members
Dissemination workshop on “Potential for Energy Storage Technologies
in Electricity Sector of SAARC Member States”
 Kathmandu, Nepal | 13 – 14 November 2017

#	Name	Member State	Contact Details
Resource Persons			
1.	Mr. Mohan Menon Balsa Consulting.	India	mohan@balsaconsulting.com Tel: +91 9876120565
2.	Mr. Sher Singh Bhat CEO (Kabeli Energy Ltd.)	Nepal	shersingh.bhat@kel.com.np Cell: +9779851038540
3.	Mr. Suresh Shrestha Senior Divisional Engineer.	Nepal	saudaksur@gmail.com Cell: +9779841336773
4.	Dr. Tahir Nadeem Malik, Dean E&IE, University of Engineering and Technology, Taxila	Pakistan	tahir.nadeem@uettaxila.edu.pk Cell: +92-3004136894
Delegates			
5.	Mr. Sayed Arif Ahmadzada Project Implementation Manager, De Afghanistan Breshna Sherkat	Afghanistan	arif.ahmadzada@dabs.af Cell: +93729 00 22 11
6.	Mr. Md Shahariag Deputy Secretary Power Division, Ministry of Power, Energy & Mineral Resources	Bangladesh	riaz6694@yahoo.com Cell: +8801715306474
7.	Mr. Shahed Mohammad Mehedi Iqbal Sub Divisional Engineer (IPP-3 Cell) Bangladesh Power Development Board (BPDB)	Bangladesh	smmsadi@gmail.com Cell: + 8801716295868
8.	Ms. Sangay Zangmo Assistant Engineer Department of Hydropower & Power Systems, Ministry of Economic Affairs	Bhutan	sangayzangmo@moea.gov.bt / sangay.zangmo25@gmail.com Cell: +975-17624124

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13.	Mr. Karshan Maharjan, Electrical Engineer Water & Energy Commission Secretariat	Nepal	karshanmaharjan@gmail.com Cell: +9779846763192
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17.	Mr. Mian Muhammad Hamid Chief Commercial Officer Peshawar Electric Supply Company (PESCO).	Pakistan	mmhamid@hotmail.com , jawadatif@hotmail.com Cell: +92-333-9117206
SAARC Energy Centre			
18.	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

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19.	Mr. Ihsanullah Marwat Program Coordinator	Pakistan	rfee@saarcenergy.org Tel: +92-51-2228804 (Ext 111) Fax: +92-51-2221937 Cell: +92-321-9142930
20.	Mr. Muhammad Saeed Librarian	Pakistan	saeed.saarc@gmail.com Tel: +92-51-2228807 (Ext 117) Fax: +92-51-2221937 Cell: +92-345-5066550
Focal Person – Knowledge Partner			
21.	Mr. Subash Tuladhar Senior Divisional Hydrologist Department of Electricity Development, Ministry of Energy.	Nepal	subashtuladhar@gmail.com Cell: +977-9841355389

Pictorial View of the Workshop









