

Brief Concept Note
for
SAARC Training workshop
Year 2025



SAARC Energy Centre
Islamabad, Pakistan

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1. Introduction

SAARC Energy Centre is planning to organize Training workshops focused on emerging and critical topics in the Energy sector as part of its annual Programme Activities. Each Training Workshop with its specific area, would be focusing on key issues and challenges being faced by the Energy sector of SAARC Member States. It will also provide insights into best practices and innovative solutions being adopted by the countries within and outside the SAARC region.

The Centre requires experts in the fields of Renewable Energy, Electric Vehicles, Electric Transmission, Energy Efficiency, GHG Inventory and NDCs, Energy Transition, and Electricity Exchange etc for conducting these Training workshops. A brief concept note on each Training Workshop is given below:

2. Training workshop on “GHG Protocol for Measurement, Reporting and Management of Emissions”

GHG Protocol is an initiative of World Resource Institute (WRI) and World Business Council for Sustainable Development (WBCSD). This protocol sets standardised frameworks to estimate GHG emissions from public and private sector entities and develop mitigation strategies based on the estimated emissions. The Article 13 of Paris Agreement establishes “Enhanced Transparency Framework (ETF)”, which includes reporting of GHG emissions and progress made towards achieving Nationally Determined Contribution (NDC) by each country. In this regard, equipping the relevant stakeholders of SAARC Countries with the essential knowledge about reporting and management of GHG emissions will help each Member State to progress towards achieving their NDCs in a credible and coherent manner.

The 3-days training will cover the overview of GHG Protocol, types of accounting standards and brief on each of the accounting standards as well mitigation strategies. In addition, the participants will be given a comprehensive briefing on the estimation tools developed based on GHG protocol; emissions identification, reporting and tracking, setting mitigation goals and actions to achieve those goals. The participants will also be given knowledge on the impacts of policies on GHG emissions, key performance indicators and policy performance monitoring.

3. Training Workshop on “Navigating the Energy Transition and its implication for SAARC region”

Mitigating GHG emissions from fossil fuels will require fossil fuel production to decline rapidly, as well as a fast and sustained establishment of alternative and cleaner modes of energy production and consumption. This requires, among other actions, a major shift of investment flows from fossils toward clean energy sources. Energy scenarios can play a key role in fostering such a transformation by indicating suitable energy pathways that can be translated into policy frameworks conducive to a

clean energy transition. They can also inform the shift of capital flows away from fossil-based energy production and toward renewable energy sources. South Asia is home to approximately 1.9 billion people or a quarter of the world's population. The challenge for governments, businesses and citizens in South Asia is to embrace innovations that enable a cleaner pathway to growth. At the same time, Member States desperate not to lose out on the promise of growth, are looking to use whatever energy resources are available to secure a prosperous future.

This 3-days training aims to inform what is required to align the energy policy decisions with the goals of the Paris Agreement, based on modelled pathways consistent with limiting global warming to 1.5°C. The training shall provide an in-depth understanding of regulatory roles towards energy transition focusing on fundamentals, features, new developments, main drivers and outstanding challenges of energy transition, international policies and regulations culminating in a meaningful path to low carbon economy.

4. Training workshop on “Energy Management in Residential and Commercial Buildings”

Energy management, is an essential strategy widely adopted to minimize shortages and exposure to energy price volatility in addition to reducing carbon footprint. Buildings are one of the largest energy-consumers that account for near 40 % of energy use globally and are responsible for one third share in GHG emissions. Since building infrastructure has a long life, therefore, energy performance of the rapidly growing built environment will have a long-term impact on energy consumption and GHG emissions. Nearly two third of the energy consumed in buildings goes for space conditioning, while the remaining one third is mostly in the form of electricity used for appliances and lighting. Energy efficiency in buildings covers a wide range of themes. The whole building construction process is energy consuming, with visible environmental impact, and needs a life-cycle approach from design to end of life. With a view to bringing about energy conservation and improving energy efficiency in building sector in SAARC Member States, SEC plans to organize the training workshop.

The 3-days training will cover Energy efficiency in general, its importance, energy conservation and efficiency in buildings, including energy saving potential, Appliance's standardization and labeling, building energy codes, use of AI and building energy management systems, role of policy, market forces, and approaches to climate financing. The participants will be given a comprehensive overview on categories of building envelope including heating/ cooling, lighting, along with equipment standardization. In addition, participants will be apprised on health and indoor comfort, safety, and functional aspects, life cycle assessment and environmental impacts.

5. Training workshop on “Energy Modelling on LEAP software”

SAARC region has abundant energy resources, each Member State having significant indigenous resources in the form of fossil fuels and renewable energy. However, the majority of Member States

are energy starved with major rural areas yet to be electrified. The energy resource potential of each Member State, if harnessed effectively, can enable them to have adequate or even surplus energy, reduce their dependence on imported fuel and lower their high electricity costs. In this regard, LEAP (Low Emissions Analysis Platform), an integrated modelling tool can be used to track energy production, resource extraction and in all sectors of an economy, at different scales ranging from cities and states to national, regional and global applications.

The 3-days training shall help the SAARC professionals working in energy planning and analysis. The training will introduce the design and functionality of LEAP software to the professionals to enhance their capacity on energy resource modelling.

6. Training workshop on “Understanding the functioning of Electricity Exchange”

Trading of electricity through exchange has been recognized as the most efficient form of trading that ensures the transparent price discovery. This transparency is crucial in creating fair and competitive energy markets where buyers and sellers can make informed decisions. Moreover, as the electricity exchange platforms provide market participants with real-time information on prices, it helps prevent price manipulation and encourages market stability. In SAARC Region, Only Member State India has established power exchanges. Indian exchange platform includes Indian Energy Exchange Limited (IEX), Power Exchange India Limited (PXIL) and Hindustan Power Exchange Limited (HPX), which offer a variety of products and operate in the same area. As the rest Member States are evolving towards the competitive regime of electricity trading sector, professionals from Member States are required to be equipped with necessary knowledge and information of exchange platform.

The 3-days training will focus on functioning of market covering bidding, determination of market clearing price and volume, scheduling and dispatching of electricity, balancing the supply demand after dispatch, deviation settlement mechanism, payment securing mechanism of participant etc. The training will impart the knowledge on pre requisites for establishment of exchange platform, resource management, and coordinating role with other stakeholders of power sector such as generators, system operator and regulator. To make the training more impactful, effort will be made to select the venue at the established exchange premises so that the participant will have more opportunity to gain knowledge with the real time data.

7. Training workshop on “Electric Vehicle and its Charging Infrastructure”

Rising energy prices, pollution concerns, and oil and gas import bills are driving the demand for Hybrid and Electric Vehicles (EVs) and related infrastructure. Electric vehicles are no longer just a novel means of transportation; they have become an essential building block in the energy transition. This transition from Internal Combustion Engine vehicles to Electric vehicles will bring about significant changes in the technical, digital, and social aspects of energy and transportation

infrastructure. The associated charging stations are a crucial component of electric vehicles and there is immense potential in this market for technological and business advancement. In recent years, in order to reduce emission of automobiles, the adoption of EVs had been taken place rapidly in various economies. The rapid development was mainly due to two reasons. One was the development of technologies related to EV as the research in power electronics, machines, batteries and control engineering got mature for EV. The other was well-established policies of economics directing the initialization of adopting EV. This included governments' schemes of building charging facilities, subsidies/tax reduction encouraging consumers using EV and research programs for making an electric vehicle more competitive with a gasoline vehicle.

The 3-days training shall focus on the policy, infrastructure, standardization and technology of electric vehicle. It will explore the most important aspects of this new market, including the state-of-the-art technology and infrastructure of electric vehicles and charging systems.

8. Training workshop on “Financial modelling for Renewable Energy Projects”

Financially viable and environmentally sound exploitation of Renewable Energy (RE) is the need of the day for a sustainable future. RE projects such as solar, wind, and hydro etc. do not cause much pollution to the environment compared to fossil-fuel based energy systems. However, they require significant amount of capital costs and possess considerable risks. Therefore, the techno-financial analysis of these projects is to be carried out to evaluate the project's profitability and cost effectiveness. During analysis, it is required to forecast availability of RE sources, calculate generation and generation curtailment, size debt, structure the repayments etc. In order to carry out the financial analysis of RE projects, it is necessary to develop a best-practice financial model and optimize it for both debt and equity investors.

The 3-days training shall include presentations, demonstration of module and case studies, hands on exercises on various relevant modules, and the interactive discussion session. After the training, participants are expected build an appropriate model and to compare and select the most suitable from the alternatives.

9. Training Workshop on "Role and Potential of Renewables in Achieving Nationally Determined Contributions Targets in South Asia: Challenges and Opportunities"

Crafted as part of the Paris Agreement, Nationally Determined Contributions (NDC) represent each country's commitment to reduce greenhouse gas emissions and promote sustainable development. The energy sector is considered as a promising area for intervention to achieving the NDC targets. In South Asia, NDC targets mainly focus on increasing the share of renewables in the energy mix and implementing robust adaptation and mitigation measures to address climate change. However, various challenges including absence of supporting policy, inefficient regulatory framework,

implementation, inadequate infrastructure, lack of financing mechanisms, and limited professional capacity have been hindering the effective development of renewable projects and efficient energy supply chain and utilization. This Training Workshop shall equip the participants from Member States to help address the critical issues surrounding the energy sector's role to achieve the NDC targets.

The workshop will discuss the status of progress made by the SAARC Member States to achieve the NDC targets. The experts will explore the strategies and approaches to bridge the policy and implementation gaps to achieve the intended targets. Participants will engage in discussions on successful case studies and best practices from both regional and global contexts, exploring lessons learned in effective policy formulation and implementation for effective development and integration of energy projects and enhanced energy efficiency in the entire energy supply chain. Interactive sessions will facilitate collaborative brainstorming to overcome existing challenges, including financing strategies, stakeholder engagement, and capacity building.

10. Training Workshop on "Nature-Based Solutions for Urban Energy Demand and Pollution Reduction"

Nature-based solutions (NBS), such as green roofs, urban forests, rain water harvesting, and sustainable drainage systems, offer innovative ways to manage urban energy demand while mitigating pollution levels. By adopting NBS, cities can naturally regulate temperature, reduce energy consumption, and lower pollution levels. These solutions work with ecosystems to absorb pollutants, provide shade, and manage stormwater, thus easing the load on urban energy systems and improving air quality. As cities in South Asia seek sustainable ways to grow, NBS offer a practical, eco-friendly pathway to create healthier, more resilient urban spaces.

This Training Workshop shall explore what NBS are and why they are critical for developing sustainable urban infrastructure that can help in reducing reliance on traditional energy sources. Through this training workshop, participants will learn how to integrate NBS into urban planning, examining key factors like design, implementation, and maintenance. Instructors shall also provide case studies showing successful examples of NBS in action, highlighting their economic and environmental benefits. Participants will gain practical skills and strategies to advocate for and implement NBS in their own cities, ultimately fostering a greener, more sustainable urban future for South Asia.

11. Capacity building on "Advanced & Innovative transmission system design and optimization: Professionals from Bhutan"

Advanced and Innovative Transmission System Design & Optimization, involves utilizing cutting-edge technologies and strategies to improve the efficiency, reliability, and sustainability of power transmission networks. This approach combines advanced engineering methods, digital tools, and optimization techniques to reduce energy losses, enhance grid stability, and enable seamless

integration of renewable energy sources. By implementing innovative design principles and smart automation, these systems can meet the growing energy demands while minimizing environmental impact and ensuring resilient power delivery.

The Capacity Building on Advanced and Innovative Transmission System Design & Optimization for Professionals in Bhutan, is a specialized training program designed to enhance the technical skills and expertise of Bhutanese professionals in the power transmission sector. The workshop will cover cutting-edge strategies and emerging technologies for efficient transmission system design, focusing on optimization techniques that can improve network reliability, resilience, and performance. Through a combination of theoretical sessions and practical applications, participants will gain insights into modern engineering approaches that will enable professionals effectively address the prevailing challenges and effectively manage Bhutan's electricity grids. Emphasis will be placed on innovative design solutions, digital tools, and sustainable practices that support Bhutan's commitment to reliable and sustainable energy infrastructure.