



## Webinar Series

### Disease Resilient and Energy-Efficient Centralized Air-Conditioning Systems

*Session Coordinated by ADB TA 6563*

#### **Webinar 2 - Energy-Efficient Centralized Air-Conditioning Systems**

**Date: 8<sup>th</sup> September 2021**

**Time: 4.00– 5.30 PM**

**(Manila Time – GMT +08.00 Hours)**

**Point of Contact:**

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#### Background

Studies show that transmission of viruses, such as the coronavirus causing COVID-19, can be prompted by air-conditioned ventilation. In developing member countries (DMC), the risks of virus transmission are higher because of poor hygiene including the use of old air-conditioning equipment, lack of regular maintenance, and overcrowding in closed spaces. Additionally, inefficient centralized air-conditioning (CAC) systems in many DMCs account up to 50% of energy consumption in public buildings. Advanced air-conditioning systems with energy-saving technologies used in combination with demand-side management techniques could bring up to 45% energy savings. CACs also rely heavily on hydrofluorocarbons (HFCs), a greenhouse gas potentially thousands of times more potent than carbon dioxide. Proper management of HFCs are critical to addressing greenhouse gas emissions from CAC systems.

The Asian Development Bank (ADB) is implementing a knowledge and support technical assistance (TA), Regional Support to Build Disease Resilient and Energy Efficient Centralized Air-conditioning Systems, to promote disease-resilient clean energy development in developing member countries of ADB. The TA supports DMCs of ADB to

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improve energy efficiency, mitigate the risks of virus transmission, and ensure safe working conditions in public buildings by deploying efficient, clean, and smart CAC systems.

## Objective

The webinar aims to explore the energy efficiency and virus transmission risks of CAC systems, and the operation of smart, energy-efficient, and disease-resilient CAC systems in selected DMCs in order to identify innovative centralized air-conditioning systems using digital technologies, and to develop awareness on energy conservation and containing indoor virus transmission in typical public buildings located at DMCs.

This webinar series aims to increase awareness of disease-resilience, energy-efficient, and smart CAC in DMCs.

## Registration of the event

[https://adb-org.zoom.us/webinar/register/WN\\_FKgzC78sSS6v6eetIZmQrw](https://adb-org.zoom.us/webinar/register/WN_FKgzC78sSS6v6eetIZmQrw)

## ***Disease Resilient and Energy-Efficient Centralized Air-Conditioning Systems***

***Session Coordinated by ADB TA 6563***

### ***Webinar 2 - Energy-Efficient Centralized Air-Conditioning Systems***

Date: 8<sup>st</sup> September 2021

Time: 4.00 – 5.30 PM – Manila time (GMT + 8)

Time	Topic	Speaker
4.00-04:10	<b>Introduction to TA 6563:</b> Introducing TA-6563: Regional Support to Build Disease Resilient and Energy Efficient Centralized Air-conditioning Systems	Jinmiao Xu, Energy Specialist, Energy Sector Group, Sustainable Development and Climate Change, ADB
4.10-04:25	<b>Expert Address 1:</b> Overview of Energy Efficient Centralized Air-conditioning Systems	Yanping Zhou Managing Director, energydesign (Shanghai) Co. Ltd
4.25-04:40	<b>Expert Address 2:</b> Emerging HVAC technologies for energy efficient healthy buildings in hot and humid climates	Chandra Sekhar Professor, Department of the Built Environment, School of Design and Environment, National University of Singapore
4.40-04.55	<b>Expert Address 3:</b> Alternative cooling and heating technologies	Alaa Olama Air Conditioning & Refrigeration Independent Consultant and Member of the Refrigeration, air conditioning, heat pumps Technical Options Committee (RTOC) of the United Nations
4.55-05:10	<b>Expert Address 4:</b> Energy-efficient Centralized Air Conditioning System	C Subramaniam LEED Fellow, Presidential Member, ISHRAE, and Independent Consultant at 3S Green & SSS Consultants
5:10-5:30	<b>Question and Answer Session:</b> Question and Answer from participants, Closing Remarks	Yashkumar Shukla, Executive Director, Center for Advanced Research in Building Science and Energy, CEPT University



**Jinmiao Xu**

Energy Specialist,  
Energy Sector Group, Sustainable Development and Climate Change, ADB

Mr. Xu has more than 16 years of experience in energy field. He is responsible for CCUS related work in Energy Sector Group of Sustainable Development and Climate Change Department (SDSC-ENE) and process and administer regional technical assistance, focusing on CCUS, low carbon energy technical roadmap and advanced centralized air conditioning system. His expertise includes energy and environmental technologies, policies, and programs. He received BS (2005) in Environmental Engineering from North China Electric Power University, and MS (2011) in Thermal Engineering from Tsinghua University.



**Yanping Zhou**

Managing Director, energydesign (Shanghai) Co. Ltd

Dr. Zhou has been working in the field of HVAC equipment manufacturing, building energy efficiency optimization and energy simulation since 1994, and he has served as a researcher in the R&D centres of internationally renowned air conditioning equipment manufacturers, such as Carrier and Daikin. In 2009, he joined the company energydesign, founded by Prof. M.N.Fisch, and became the Managing Director in 2013. He leads an international team that has implemented a lot of pioneering work in and around China, including the introduction of German low-carbon technologies such as ultra-low energy buildings, passive house, DGNB, and plus-energy houses, as well as providing holistic energy saving solutions for buildings and MEP systems.

He is also the first author of more than 20 publications in top domestic journals and internationally renowned journals. He led three innovative energy-efficiency projects, which were awarded by the German Federal Ministry of Economic Affairs and Energy (BWE) for implementation of Innovativer Deutscher Energieeffizienz Lösungen from 2015 to 2020. In addition, he is a DGNB China Steering Board Member, a Steering Committee Member of the industry advisory board of the Tongji CDHAW (Chinesisch-Deutsche Hochschule für Angewandte Wissenschaften), and a guest lecturer of BAYER-TONGJI Eco-construction and Material Academy..



**Chandra Sekhar**

Professor, Department of the Built Environment, School of Design and Environment, National University of Singapore  
Prog Director, MSc (Building Performance and Sustainability)  
Co-Director, Centre for Integrated Building Energy and Sustainability in the Tropics (CiBEST)

Chandra Sekhar, Ph.D., Fellow ASHRAE & ISIAQ, is currently a Professor and Programme Director (MSc-Building Performance and Sustainability) and co-director (Centre for

Integrated Building Energy and Sustainability in the Tropics) in the Department of the Built Environment at the National University of Singapore. He is also a founding director of Enhanced Air Quality Pte Ltd., a NUS spin-off company. His research interests include thermal comfort, ventilation and IAQ, airborne infection control, energy efficient HVAC systems and building energy analysis. He has about 300 publications in these fields in international journals and conferences. He is a co-inventor and holds 3 US and other patents. He has delivered several Keynote talks in international conferences around the world. He has been an ASHRAE Distinguished Lecturer since 2006 and is regularly invited as a speaker around the world. He has been recognised through several awards from ASHRAE, SHASE Japan, ASEAN and Singapore. He was a Director-At-Large (2018-2021) on the ASHRAE Board of Directors and has served the ASHRAE Singapore Chapter in various capacities, including as its President during 2010-2011 and as a BOG member. He is active in Standards and Technical committees in ASHRAE and is also actively involved in standardization activities in Singapore.



**Alaa Olama**

Air Conditioning & Refrigeration Independent Consultant and Member of the Refrigeration, air conditioning, heat pumps Technical Options Committee (RTOC) of the United Nations

Dr. Alaa received M.Sc. in 1973 and Ph.D. in 1980 from the faculty of Engineering at King's College, the University of London, in absorption refrigeration. He has been a member of the prestigious Refrigeration, air conditioning, heat pumps Technical Options Committee (RTOC) of the United Nations. He has been instrumental in the establishment of the first two district cooling company in Egypt. He has also been appointed as head of the committee writing the first refrigerants code and district cooling code for Egypt by the minister of Housing. He has also written a reference book on district cooling titled, District Cooling: Theory and Practice.



**C Subramaniam**

LEED Fellow, Presidential Member, ISHRAE, and Independent Consultant at 3S Green & SSS Consultants

Mr. Subramaniam is an independent Consultant at 3S Green & SSS Consultants, Bangalore and offers consulting services in the fields of Sustainability, HVAC & IBMS design services. In his professional career, Mr. Subramaniam has handled projects related to heating, ventilation, airconditioning, and refrigeration systems, Intelligent Building Automation Systems and Controls, Chiller Plant Management, District Cooling, Data Centre Applications, Green Buildings, LEED, GRIHA & IGBC Green Building Certification, Energy Simulation, and Commissioning Services. He has also served as a Senior Trainer in Trane Academy conducting training for Europe, Middle East, Africa and India operations. He is a LEED Fellow and presidential member of ISHRAE. He has held leadership positions in multiple societies including ASHRAE, IGBC, IAQA and AAR.



### **Yashkumar Shukla**

Executive Director, CARBSE, CEPT University

Dr. Yashkumar Shukla is Executive Director at Centre for Advanced Research in Building Science and Energy (CARBSE) at CEPT University, India. He has more than fifteen years of international experience in building energy-efficiency research and serves as a lead on several groundbreaking energy-efficiency research projects at CARBSE. He currently serves as a team lead of the technical assistance (TA) program by the The Asian Development Bank (ADB) that supports developing member countries to improve energy efficiency, mitigate the risks of virus transmission, and ensure safe working conditions in public buildings by deploying efficient, clean, and smart centralized air-conditioning (CAC) systems.

## **About the Organizer**

### **Asian Development Bank**

The Asian Development Bank (ADB) was conceived in the early 1960s as a financial institution that would be Asian in character and foster economic growth and cooperation in one of the poorest regions in the world. ADB assists its members, and partners, by providing loans, technical assistance, grants, and equity investments to promote social and economic development. ADB is composed of 68 members, 49 of which are from the Asia and Pacific region.

## **About the Technical Assistance Donors**

### **High-Level Technology Fund**

The High-Level Technology (HLT) Fund is a multi-donor trust fund established in 2017 with the Government of Japan as the first donor. It provides grant financing to promote the integration of HLT and innovative solutions into ADB-financed and administered sovereign and nonsovereign projects throughout the project cycle—from identification to implementation and operation. The fund encourages more widespread adoption of HLT to address development challenges in ADB developing member countries.

### **Clean Energy Fund (CEF) under the Clean Energy Financing Partnership Facility**

The Clean Energy Fund (CEF) under the Clean Energy Financing Partnership Facility (CEFPF) was established in 2007 to help developing member countries of the Asian Development Bank (ADB) improve their energy security and decrease the rate of climate change through increased use of clean energy. The CEF is supported by the Governments of Australia, Norway, Spain, Sweden, and the United Kingdom.