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ADB

## De-Carbonization of Cement Sector through CCUS

Date 14 October 2021

04.00 PM to 5.30 PM (Manila time)

### Background of the Event

Asian Development Bank (ADB) has been supporting Carbon Capture Utilisation and Storage (CCUS) more than 10 years in Asia since 2009 through a dedicated carbon capture and storage fund. Since inception of the fund, ADB has carried out several promotional activities including conferences, study tours, pre-feasibility reports as well as pilot project preparations.

Based on its experience, ADB realised that CCUS may be a very effective tool in hard to abate industrial sectors like Cement. ADB published [Background Study on CCUS Readiness in Power, Iron and Steel, Cement and Petroleum Sectors](#) for the green field projects in 2019. As an energy and emission intensive industry; Cement has an opportunity to reduce global GHG emission by 5 to 8%. Considering this thought, ADB took an initiative to work with the industry and explore the preliminary feasibility of a making CO<sub>2</sub> derived product. In order to make the study realistic, it took help of M/s Dalmia Cement (Bharat) Limited (DCBL), India who permitted ADB to use their data for the purpose of this study.

M/s Dalmia Cement (Bharat) Limited worked with ADB's team of consultants and evaluated CO<sub>2</sub> derived products based on a quantitative matrix. The evaluation helped in selection of Urea as a CO<sub>2</sub> derived product. The consultant team used the data provided by DCBL and prepared a techno commercial pre-feasibility report. The webinar will discuss findings of [this study](#).

### Objectives and Outputs of the Webinar

Objective of this event is to

- Introduce the findings of 'Prefeasibility Study on Carbon Capture and Utilization in Cement Industry of India' by the consultant team
- Understand the views of the cement industry regarding role of CCUS in decarbonization of the industry
- Explore the ways to promote CO<sub>2</sub> usage in hard to abate industries through carbon finance and other innovative means
- Decide way forward and carve out role of multilateral development banks in decarbonization of the industry

The expected output of the event is a clarity on the policies which will promote low carbon cement production in India and other developing member countries (DMCs) of ADB by implementing CCUS projects.

### Registration of the event

[https://adb-org.zoom.us/webinar/register/WN\\_5CGF7EMkQBuqtUrsSBXteA](https://adb-org.zoom.us/webinar/register/WN_5CGF7EMkQBuqtUrsSBXteA)



## Agenda

Time (PM Manila time)	Topic	Speaker
4.00 to 4.10	Welcome Address	<b>Priyantha Wijayatunga</b> , Chief of Energy Sector Group, ADB
4.10 to 4.25	Keynote Speech – Role of CCUS in Net Zero Future of Cement Industry	<b>Mahendra Singhi</b> , MD and CEO, Dalmia Cement Bharat Limited
4.25 to 4.55	Overview of the CCU Study in Cement Sector of India	ADB Consultants <ul style="list-style-type: none"> <li>- <b>Tony Zhang</b>, Team Leader and CO<sub>2</sub> Utilization Specialist</li> <li>- <b>Ms. Devika Wattal</b>, CO<sub>2</sub> Capture Specialist</li> <li>- <b>Ramesh Bhujade</b>, CO<sub>2</sub> Utilization Specialist</li> <li>- <b>B. C. S. Baliga</b>, Finance Specialist</li> </ul>
4.55 to 5.25	Panel Discussion	Moderator: <b>Mayank Choudhary</b> , Principal Investment Specialist, Private Sector Operations Department, ADB  Panel Members: <ul style="list-style-type: none"> <li>- <b>Ashwani Pahuja</b>, Chief Sustainability Officer and Executive Director-Manufacturing at Dalmia Cement (Bharat) Ltd</li> <li>- <b>Ms. Claude Lorea</b>, Executive Director at the Global Cement and Concrete Association (GCCA)</li> <li>- <b>Juho Lipponen</b>, Co-ordinator of the Clean Energy Ministerial CCUS Initiative</li> <li>- <b>Virender Kumar Duggal</b>, Principal Climate Change Specialist, SDCC, Asian Development Bank</li> <li>- <b>Tongbo Sui</b>, Vice President, Sinoma International, CNBM</li> </ul>
5.25 to 5.30	Conclusion	<b>Jinmiao Xu</b> , Energy Specialist, ADB

Speakers and Panelists



**Priyantha Wijayaunga**

Chief of Energy Sector Group,  
Department of Sustainable Development and Climate Change  
Asian Development Bank

Priyantha D C Wijayatunga, holds a degree in Electrical Engineering from Sri Lanka and a PhD in Power Economics from Imperial College London where he was a Beit Scientific Research Fellow. He joined the Asian Development Bank in 2008. He has contributed extensively in energy sector policy and regulatory activities over 25 years and has co-authored over 75 publications. He was the founder Director General of the Public Utilities Commission of Sri Lanka. He was a lead author of the Sri Lanka Energy Policies and Strategies and the Sri Lanka Initial National Communication on Climate Change. He was a Senior Professor of Electrical Engineering and the Chairman of South Asia Forum for Infrastructure Regulation. He is a Member of Institute of Engineering Technology (IET), London, a Chartered Electrical Engineer and a Fellow of the Institution of Engineers Sri Lanka. Also, he is a Senior Member of the Institution of Electrical and Electronic Engineers (IEEE), US.



**Mahendra Singhi,**

MD and CEO,  
Dalmia Cement Bharat Limited

Mr Singhi is Managing Director and CEO of Dalmia Cement, Dalmia Cement has already committed in 2018 to become carbon negative company by 2040. Dalmia Cement follows the business philosophy of Clean and Green is profitable and sustainable & is having one of the lowest carbon footprints in cement globally.

In the past, he headed Shree Cement Ltd. For 20 years which was adjudged as New Sustainability Champion by WEF during his tenure at Shree in 2012. He has represented the business and cement sector globally in the most recognized multi-country platforms such as the UN Climate Ambition Summit 12th Dec. 2020, Climate Action Summit of UN General Assembly on 23rd Sept. 2019 on the invitation of UN Secretary-General; Paris Climate Agreement Ceremony on invitation from Ex. UN Secretary-General, Mr Ban ki-Moon; Global Climate Action in COP-24 on the invitation of UNFCCC Executive Secretary, Ms Patricia Espinosa; High-Level Govt.-Business dialogues invited by French Presidency. Mr Singhi has more than 40 years of work experience in the cement sector.



**Claude Lorea,**  
Executive Director,  
Global Cement Concrete Association

Ms Loréa leads all aspects of GCCA’s work related to cement. She drives the association’s work to continuously improve the sustainability performance of the industry through innovation, as well as developing and sharing good practices and global guidelines. Ms Loréa also leads GCCA’s innovation workstream and managed the establishment of Innovandi, the Global Cement and Concrete Research Network. She has developed a special interest and expertise in CCUS and international climate policy, as well as regulatory requirements and trends.

Ms Loréa is a member of the GCCA executive team based at the headquarters in London and recently launched the ‘women in cement and concrete network’. Ms Lorea joined the GCCA from the European cement industry body, CEMBUREAU where she led on key work for more than a decade.

Over her career, Ms Loréa has built a detailed knowledge of the cement industry, including the sector’s sustainability agenda where, among other achievements, she has led the development of the European Cement Industry Low Carbon Economy Roadmap and the Best Available Techniques Reference document for cement production.

Ms Loréa gained a degree in Civil Engineering from the University of Brussels before working as an environmental consultant and auditor. She gained her first hands-on experience of the cement industry as an environmental engineer with Cimenteries CBR in Belgium.








**Juho Lipponen**  
Co-ordinator of the Clean Energy Ministerial CCUS Initiative

Mr Juho works closely with the four co-chairs and all Initiative Members, and is responsible for the day-to-day running of all the activities of the Initiative. Prior to this, between 2010-2018, Juho was Head of Carbon Capture and Storage Unit at the International Energy Agency, and acting Head of Energy Technology Policy Division. Before joining the IEA, Juho held several positions at Eurelectric in Brussels.




Juho holds a M.(Sc) in political science, economics and constitutional law from University of Turku, Finland. He is based in Paris, France.



	<p><b>Tongbo Sui</b> Vice President, Sinoma International, CNBM</p> <p>Dr Sui has been intensively engaged for over 20 years in R&amp;D of low energy &amp; low CO2 clinker cements. Before joining Sinoma in 2010, he worked as vice president of China Building Materials Academy during 2006-2010.</p> <p>He is now also visiting professor at University College London of UK and senior advisor of China Cement Association, and active in international organizations as co-chair of WKG5 for Cement Innovation under GCCA, and Fellow of ICT.</p>
	<p><b>Ashwani Pahuja</b> Chief Sustainability Officer &amp; Executive Director, Dalmia Cement (Bharat) Ltd.</p> <p>Mr Ashwani Pahuja has been associated with the growth and development of the cement sector in India for the last 41 years. He leads the sustainability actions at Dalmia Cement ( Bharat ) Ltd as the Chief Sustainability Officer and Executive Director. Dalmia Cement is well recognized globally for its lowest carbon footprint cement, water positive operations and bold ambitions of carbon negative by 2040. He is leading the development and implementation of Carbon negative roadmap of Dalmia Cements, which is the first of its kind in global cement fraternity. He is actively involved in various sustainability and climate mitigation actions being taken up through initiatives such as reducing the carbon footprint through new products and technology advancements, material circularity, utilization of wastes, alternate green fuels including industrial wastes and bio-mass, low carbon technologies and products etc</p>
	<p><b>Tony Zhang</b> Team Leader and CO2 Utilization Specialist</p> <p>Consultant Tony has more than 12 years experiences in CCS. Tony leads client engagement activities in Oceania, Southeast Asia', and South Asia. He manages operational and strategic relationships with members, clients and partners. His expertise includes strategic partnerships, climate change policy, technology transfer, project finance, CCUS technology, and commercialization.</p> <p>He has advised governments, development banks, and investment banks on CCS policies, projects, and finance. He has worked on various carbon capture and gas separations projects with oil/gas, iron/steel, mining, and power companies. He founded an industry-funded start-up company which had successfully developed and demonstrated a novel emission reduction technology. He has several patents and has published academic papers.</p> <p>Tony has a PhD in Engineering Science and a master's degree in law (LLM).</p>

	<p><b>Ramesh Bhujade</b> CO2 Utilization Specialist</p> <p>Chemical engineer, having experience of over 40 years in Bioeconomy, CO<sub>2</sub> management, and Hydrocarbon-based industry. The experience covers entire gamut of process technology value chain - from heading the R&amp;D to engineering and production management.</p> <p>Subject Matter Expert in Process Design, Technology development and Scale-up, Techno-economic analysis, Life cycle analysis, Due Diligence, and Process Safety.</p> <p>Technologies handled include: CO<sub>2</sub> utilization, Algae to fuel and feed, Thermochemical/Biochemical technologies for waste to renewable fuels, Refinery, Petrochemicals, Polymers, Hydrogen, Flare and Process optimization.</p> <p>Has over 35 patents, several papers and presentations to his credit. Superannuated from Reliance Industries India in July 2020, as Vice President – R&amp;D. Currently engaged as Independent Consultant in the areas of Technology assessment, Scale-up and Commercialization of Sustainable and Climate friendly technologies.</p>
	<p><b>Devika Wattal</b> Innovation Consultant Innovandi Open Challenge Global Cement and Concrete Association (GCCA), UK</p> <p>Devika is a leading expert in CCS &amp; CCUS in India. In over 10 years of her experience, she has worked with companies such as Asian Development Bank (ADB), Reliance Industries Limited, Battelle Science and Technology Limited and Indian Space and Research Organization (ISRO). Her work includes Techno-economic assessments, feasibility studies, process engineering, technology and market trend landscapes for CO<sub>2</sub> capture and utilisation. She has also mentored/consulted technology-based start-ups with proof-of-concept experiments, process optimization, prototyping and scale-up, and business strategy and operations.</p> <p>She has a master's in Chemical Engineering from Indian Institute of Technology (IIT), Delhi.</p>
	<p><b>B. C. S. Baliga</b> Finance Specialist</p> <p>Mr. B. C. S. Baliga is a Finance Specialist with more than 25 years' experience. He currently works with the Namami Gange Program of Government of India (GOI) as Senior Financial Management Specialist (Consultant). Previously, he was Director (Finance) in Himachal Pradesh Power Corporation and supervised financial management of ADB assisted hydropower projects under the Himachal Pradesh Clean Energy Development Program. Earlier, he</p>



	<p>supervised financial management of UNDP assisted GOI Project for Removing Barriers to Energy Efficiency in Steel Re-rolling mills. As General Manager in National Housing Bank, he supervised the function of regulation &amp; supervision of housing finance companies of India.</p> <p>Mr. Baliga received B. Tech (Chemical Engineering) from Indian Institute of Technology Madras and MBA (Finance) from University of Massachusetts at Lowell, USA.</p>
	<p><b>Virender Kuma Duggal</b> Principal Climate Change Specialist, SDCC, Asian Development Bank</p> <p>Mr. Virender Kumar Duggal leads ADB’s Carbon Market Program providing carbon finance &amp; technical capacity building support for climate mitigation actions in Asia &amp; the Pacific. Mr. Duggal is spearheading ADB’s efforts to mobilize Carbon Finance through the Japan Fund for Joint Crediting Mechanism providing financial &amp; technical support to foster diffusion of advanced low-carbon technologies, and Future Carbon Fund, providing upfront finance to support mitigation actions. He is also the team leader of ADB’s Article 6 Support Facility which is enhancing the readiness of ADB’s developing member countries to participate in next generation carbon markets, and the Technical Support Facility, providing technical support to promote Life Cycle Management of Fluorocarbons.</p>
	<p><b>Mayank Choudhary</b> Principal Investment Specialist, Private Sector Operations Department, Asian Development Bank</p> <p>Mayank Choudhary is Principal Investment Specialist, with the Private Sector Operations Department at the Asian Development Bank and is the Unit Head, Infrastructure Financing for South Asia. Mayank has twenty years of corporate finance, investment banking, private equity and project finance experience and deep domain knowledge in the energy and infrastructure sectors. Prior to ADB, he has worked at Macquarie Capital, SUN-Apollo Real Estate, International Finance Corporation (IFC) and Chevron Corporation. He has an MBA degree from the Indian Institute of Management (Ahmedabad) and an engineering degree from Marine Engineering and Research Institute (Kolkata).</p>
	<p><b>Jinmiao Xu</b> Energy Specialist Energy Sector Group, Department of Sustainable Development and Climate Change Asian Development Bank</p> <p>Mr Jinmiao Xu is an energy specialist with more than 16 years of experience in energy field. He works in energy sector group of sustainable development and climate change of ADB and responsible for (i) contribute to ADB’s energy</p>



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	<p>sector quality-at-entry and innovations, focusing on renewable energy and conventional clean energy power generation including cutting edge technology, system integration technologies and energy policy; (ii) provide technical advice and support to lending and non-lending operations in the regional departments; (iii) process and administer regional technical assistance; (iv) contribute to the formulation and implementation for regional cooperation and integration; (v) conduct knowledge work.</p> <p>Prior to ADB, he had abundant working experience on leading R&amp;D projects, designing and managing thermal power plant mechanical engineering. His expertise includes domestic and global energy and environmental technologies, policies, and programs.</p> <p>Mr. Xu received BS (2005) in Environmental Engineering from North China Electric Power University, and MS (2011) in Thermal Engineering from the Tsinghua University. He has more than 15 published academic papers, 2 authorized patents and 2 ministerial awards.</p>
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**About the Organizers**

**UK Government**

As COP26 Presidency, the UK is committed to working with all countries and joining forces with civil society, companies and people on the frontline of climate action to inspire ambition ahead of COP26. The UK Prime Minister has committed to double the UK International Climate Finance to at least £11.6 billion between 2021/22 and 2025/26. The UK is playing an important role in accelerating clean energy innovation through its leadership of Mission Innovation and by acting as Chair of its Steering Committee, it pledged to double its spending on clean energy innovation to £400m by 2020/2021.

**Asian Development Bank (ADB)**

The Asian Development Bank 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.