

Virtual Roadmap Workshop for Decarbonisation of Cement Sector in India

20-22 December 2021



Summary Report of Workshop

The image displays a virtual meeting grid on the left, featuring participants from various organizations including 'Sachin GokulMehra', 'Anupama Mukick', 'Dhanya Chawan', 'Mahendra Singh', 'Aj Kumar Ghorai', 'Somya Zohar', 'Leadit', and 'Giz'. On the right, a news article from 'THE ECONOMIC TIMES | Industry' is shown, titled 'Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries'. The article, dated 20 Dec 2021, discusses the need for fundamental changes in the cement industry in India to meet the Paris Agreement goals. It mentions a three-day online workshop organized by TERI, Leadit, and the Strategic Partnership for the Implementation of Paris Agreement.

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High-Level Opening Session: Roadmap Workshop for Decarbonisation of Cement Sector in India

Relevance & Context of the Roadmap Workshop

The cement sector is the building block of modern infrastructure and will remain so for the foreseeable future. Although material substitution will play a significant role in cutting emissions from this sector, cement will be needed in a massive quantum to construct buildings and infrastructure. The cement sector has a large carbon footprint. Although technological solutions exist that would allow for close to zero-emissions production of cement, decarbonization of the cement sector constitutes more than a technological transition. The sector is deeply embedded in our economies and societies. Cement sector decarbonization represents a major socio-technical transition, involving co-evolutionary shifts in markets, business models, policies, infrastructure, consumer behaviour, norms, and institutions. The transition to a more decarbonized cement sector is also deeply political and local context-specific.

One approach to build momentum and overcome inertia around transition is using roadmaps, which provide a predetermined goal or target associated with a desirable future and set out possible pathways, strategic plans, actions, and policies required reaching that point. Such industry transition



roadmaps can serve as analytical tools for understanding, framing, and shaping complex transition processes. They offer an opportunity to set out the timing and sequencing of policy, investment, and innovation in such a way that reduces the risk of industries being locked into higher emission trajectories due to the long lifespans of industrial assets.

Underscoring the need for definitive road mapping to decarbonise the cement sector in India - one of largest emitters of Greenhouse Gases - stakeholders, industry representatives, and experts participated in the virtual roadmap workshop jointly organised by The Energy and Resources Institute (TERI), Leadership Group for Industry Transition (LeadIT) Secretariat, and the Strategic Partnership for the Implementation of Paris Agreement (SPIPA), in New Delhi on Monday, 20th December 2021.

Key Messages: Opening Session of the Roadmap Workshop

Delivering her welcome address at the three-day workshop on ‘Virtual Roadmap Workshop for Decarbonisation of Cement Sector in India’, Dr. Vibha Dhawan – Director-General TERI, pointed out that the Indian industry has made important progress in reducing energy emissions. “But to attain long-term sustainable growth more fundamental changes are required,” Dr. Dhawan said. The building block of modern infrastructure -- the cement sector -- leaves behind a large carbon imprint. Technological solutions which would allow for close to zero-emissions production of cement are within reach. The Leadership Group for Industry Transition (LeadIT), launched by Sweden and India at the UN Climate Action Summit in New York in 2019, along with local partner TERI, is working towards preparing a sectoral roadmap for the cement and steel sector by facilitating dialogues as well as technical and methodological guidance.

Dr. Måns Nilsson, Executive Director, Stockholm Environment Institute (SEI), highlighted the challenge for heavy industries in reducing greenhouse gas emissions to meet the 1.5°C global warming target in the Paris Agreement and the need for strategic planning and coherent efforts for decarbonizing these industries, particularly for developing countries. Dr. Måns said that LeadIT commits to supporting governments and industries to co-produce stakeholder-led roadmaps to achieving low-carbon industry transformation. Industry transition roadmaps address the industrial transition of sectoral value chains and provide actionable measures on technology, policy, public-private partnership, and finance to accelerate transition, also considering the industry sectors competitiveness and socioeconomic aspects of transition (e.g., jobs, social protection measures, re-skilling Industrial workers, etc.).



In his special address, Mr Klas Molin, Ambassador, Embassy of Sweden, asserted it is time for “actual commitments and plans”. “Sweden is happy to team up with India, a key nation in every way, in an area that is vital for our very survival,” said Mr Molin. Mr Molin talked about the importance of developing partnerships between government, industry, and other key actors within the civil society to propose and implement action plans for industry decarbonization and highlighted success stories from Fossil free Sweden and roadmaps for Swedish industry.

In his special address, Mr Ugo Astuto, Ambassador of the European Union to India, said it is imperative to “implement the promises made in Glasgow as rapidly as possible”. “We welcome the

engagement of the LeadIT on de-carbonizing this important sector, in line with commitments taken at COP 26. Under the SPIPA project, the EU will work together with the Ministry of Environment, Forest, and Climate Change to support the LeadIT initiative, through technical inputs and studies,” Mr Astuto added.

The LeadIT secretariat has developed analytical tools for road mapping industry transitions. In her opening remarks, Dr. Gökçe Mete, Head of LeadIT Secretariat at Stockholm Environment Institute (SEI), said, “We have the industry transition tracker as an example where you can track and trace over 100 roadmaps from around the world on heavy industry.” At the recently concluded COP26 at Glasgow, ministers and CEOs from around the world had collectively agreed to update and design roadmaps for industrial transition as an enabler for the decarbonization of heavy industries, added Dr Mete.



In her presentation, Dr. Somya Joshi, Head of Global Agendas, Climate & Systems Division, emphasised industry roadmap planners are crucial for knowledge sharing, adopting a structural approach to setting and achieving targets, as well as avoiding bottlenecks. “Ambitious targets are often put in place, but it is important to plug the gap between rhetoric and reality,” she said.

Cement industry representative Mr Mahendra Singhi, MD & CEO, Dalmia Cement (Bharat) Ltd, pointed out that carbon capture, its utilization or storage, is crucial to make the Indian cement sector net-zero. Mr Singhi talked about the suitability and feasibility of Carbon Capture technology due to the issue in India with carbon storage and the importance of best practice sharing and the continuous

development of solutions and technology improvement. Mr Singhi emphasized the need to develop renewable energy in place of fossil-based energy and the importance of carbon credit and green financing. He also pointed out the need for green procurement and favorable policies to encourage the usage of low carbon cement.

Dr Muthukrishnan, Airport Sector-Head of Environment & Sustainability GMR group, observed that from a business perspective, it is important to consider the economic feasibility of green cement whilst ensuring green supply chain. He further highlighted that policy is key in developing green



supply chain and procurement.

Mr Jai Kumar Gaurav, Senior Advisor, Climate Change and Circular Economy, GIZ India, highlighted the need to finance the technology needed to decarbonise the sector.

Mr Kaustubh Phadke, General Manager and India Head, Global Cement and Concrete Association, GCCA India, shared some of the experience on GCCA Cement and Concrete Roadmap 2050 and emphasized on the continuous commitment of the GCCA members to reduce CO2 emission and to achieve carbon neutral concrete by 2050.

The following details are enclosed with the Annexures of the workshop report. *Annexure 1-* Agenda of the workshop, *Annexure 2-* List of the Participants and *Annexure 3-* Press Coverage.

Plenary discussion: Status of sustainability of cement sector in India

From here on and onward, the workshop adopted the Chatham House rule where participants were free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed. The rule was adopted to foster a trusted environment and to promote openness and the sharing of information.

Dr. Gökçe Mete invited the participants to share their views on the definition of green cement, the standards used, the technology solutions and what net-zero for cement sector means and the key conditions that will have to be met to achieve it. The participants were encouraged to share their thoughts and experience on current regulations and guidelines that the cement sector complies with today that contribute to decarbonization.

Major perspectives and suggestions from stakeholders

- On the **definition of green cement**, one company representative said that currently there was no clear definition in India. Although, the company developed internally a set of standards on green cement such as a minimum of 30% lower carbon footprint than current ordinary cement for a product to be considered green cement.
- Another company representative pointed that considering the technologies which are currently available (**the policy lever and the circular economy situation**), India cement sector is relatively green with 'green cement' products and that the definition of green cement will have to evolve.
- The participants emphasized on the industry's need for an enabling framework to ensure progression and the changes in the definitions of green cement towards net-zero.
- Another interesting thought was shared by another company representative highlighting the lack of consumer's knowledge and the importance of standards and labelling for green cement which currently are not in existence. The representative further mentioned that standardization and consumers' labelling for green cement were vital together with green public procurement to reach 2050 net-zero targets.
- The importance of **green public procurement** was mentioned by several participants, and many highlighted the need for policy intervention and green supply chain with legislations being vital in developing sustainable supply chain. The importance of technology development and green financing were mentioned several times by the participants, with few saying that the current legislation was not so supportive for new technology development and investment.
- The need to **switch to renewable and sustainable energy** such as solar and wind power was also brought up into the discussion.

Day-2 Roadmap Tool - Visions and Foresight

Day-2 began with a recap of day-1 followed by a breakout session and an open discussion on the roadmap tool developed by SEI that was presented on day-1. The day was closed with a Q&A session. Participants were invited to share their impression of the roadmap tool and any suggestions for improvement. Specific feedback was sought on the characteristics of India cement sector, challenges, opportunities will be used to customize and fine tune the roadmap tool for India cement sector. Good feedbacks were shared during the discussion with a common thread on the need to include the demand side (procurement, cost impact, as well as standards and labelling) when designing a roadmap for the cement sector decarbonisation.

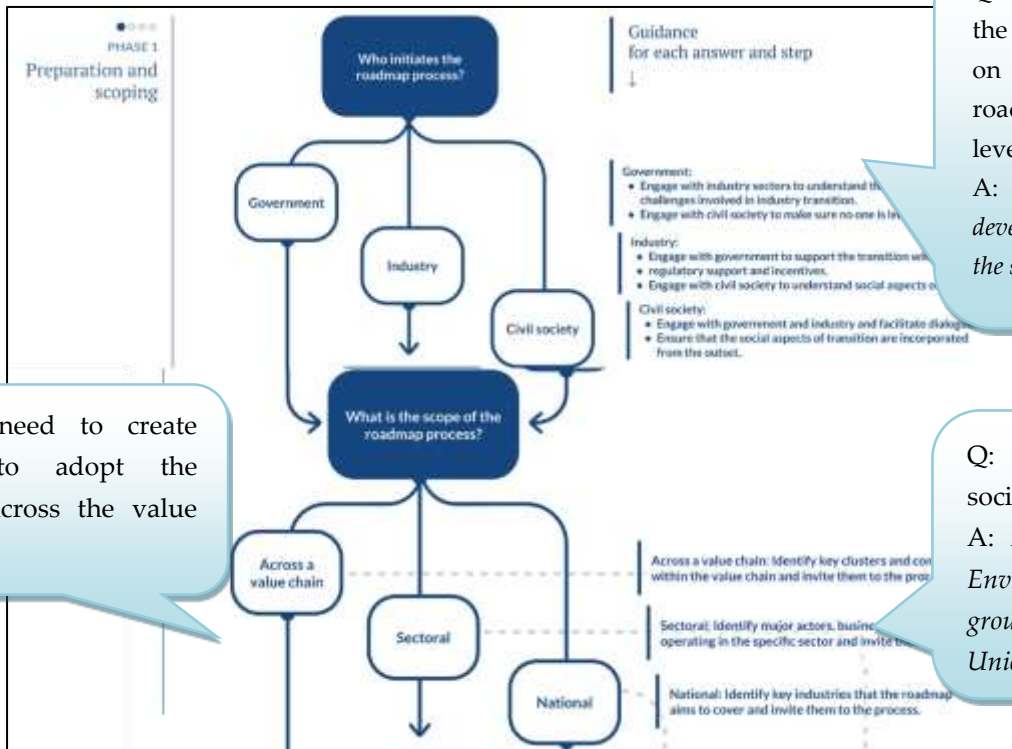
Key points from industry & public sector representatives

- A company representative stressed that they would like to explore the possibilities for carbon neutral without cost implication and if this was included in the roadmap tool.
- Few representatives from the industry brought up the prerequisite of integrating the cement sector roadmap with the energy scenarios and the urgency in switching from fossil fuels based energy to renewable and sustainable energy (wind and solar power).
- The need for alignment and synergy of different energy scenarios and cement sector roadmap was mentioned by few participants across the workshop as being vital to achieving net-zero.
- Representatives emphasized the need for an enabling policy framework to implement renewable energy and the cost impact.
- A representative from the industry emphasized the relevance of just transition and job creation and new opportunities in the Indian context – which would be important for the cement sector roadmap.
- Few representatives from the industry brought up the issue of green financing to help accelerate the development of green technology to achieve net-zero targets, as well as the role of roadmap and green financing Standards and labelling of green cement were brought up again on day-2 as well with emphasis on increasing consumption of green cement and maintaining competitiveness.
- Representatives agreed that financing mechanisms for supporting the low carbon transition and R&D in industry decarbonization are needed.
- The representatives called upon support from the government to develop a framework of decarbonization in the cement sector. Representatives highlighted the need to incentivize adoption of technologies such as waste heat recovery, CCUS and alternative fuels, while creating awareness on demand-side and promoting the use of alternative construction materials.
- Highlighting the fact that 50-60% demand is created by government, the representatives acknowledged that government, urban local bodies, Standardization Bodies are the major influencers in the transition. but architects and engineers should also be included as the key actors.
- The representatives highlighted the need to create market demand for low carbon construction; thereby emphasizing that the adoption of the roadmap should be across the value chain.
- Regarding the time horizon of the roadmap, representatives suggested that for effective adoption long-term targets are the best with the interim targets of 5-6 years.

Key points from civil society representatives

- Representatives acknowledged that the roadmap tool is unique in providing a bespoke design of the roadmap which can evolve with time and situation.
- A representative highlighted the need to separate the long-term and short-term plans separated when using the roadmap tool.
- Representatives shared that green cement is more expensive than ordinary cement in the short-term as the hidden cost of cement production were not captured in the cost of ordinary cement today. Representatives emphasized the necessity to consider the entire value chain to reflect and showcase the true cost of cement production.
- Another representative said that just transition is a must and need to be incorporated in the roadmap tool. Herein representatives shared few examples including the use of agricultural waste (biomass) from nearby farms or municipal solid waste from neighbouring urban areas as a source of energy for the cement industry.
- Few representatives highlighted the key role of technology development not only in reducing carbon footprints but also in alleviating poverty and job creations and the need for green financing.
- Policy initiatives for eco-labelling are necessary. Public procurement can help increasing the awareness of end-users. Organizations should work together to gain insights on the workings of public procurement. There is a need for learning from existing sister initiatives, and building upon existing knowledge. The learning from existing roadmaps and customizing these learnings to the Indian cement sector will be essential for the decarbonization.
- Finally, the importance of innovation was also highlighted. Research, academia and civil society can play a key role in creating an ecosystem for taking concrete action.

Feedback of the Roadmap Planner Tool



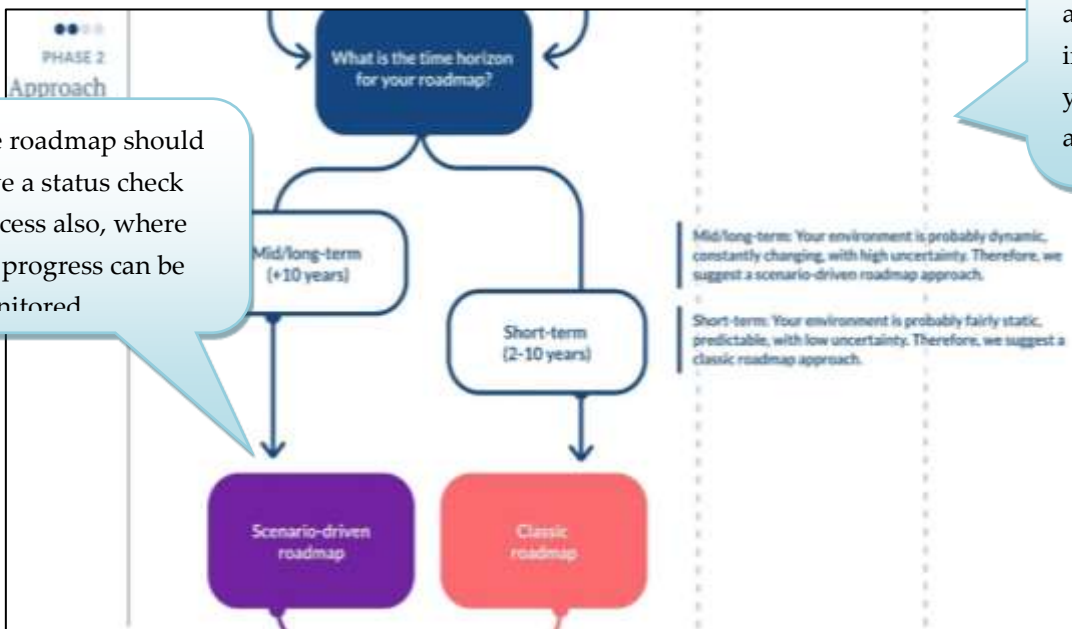
There is need to create demand to adopt the roadmap across the value chain

Q: What is the scope of the Tool and if it focuses on building a sectoral roadmaps or company level roadmaps?

A: The Tool is aimed at developing a Roadmap for the sector

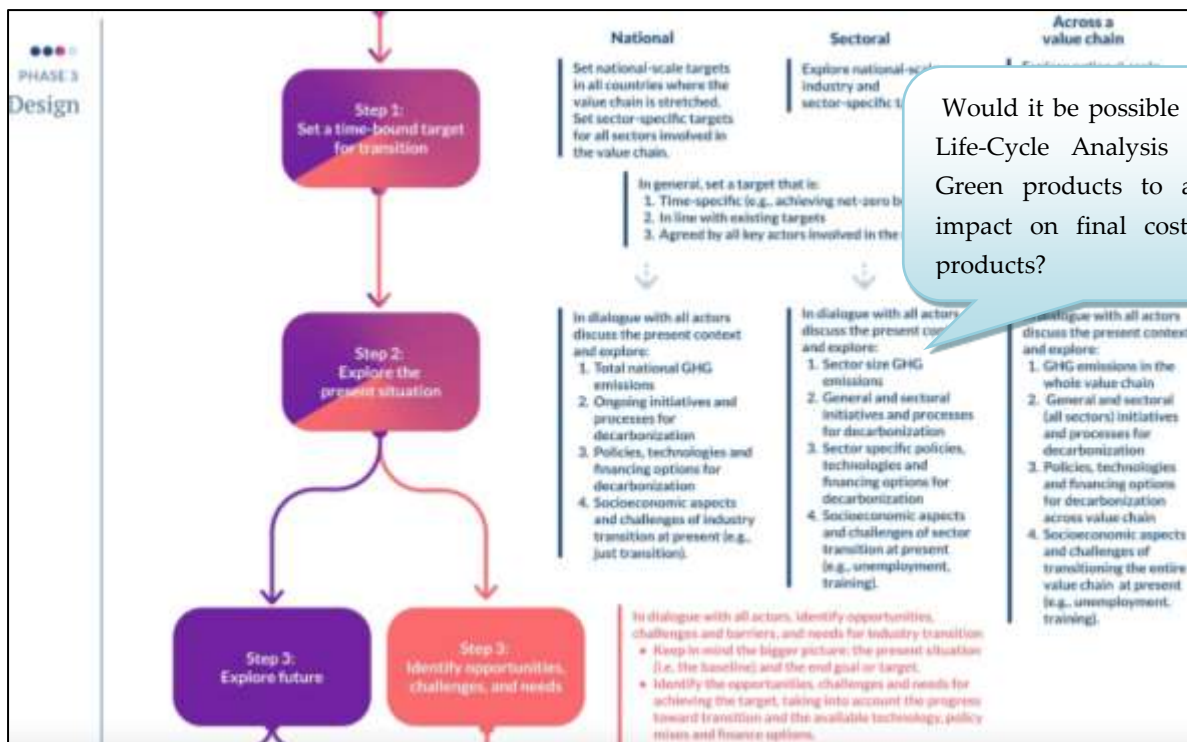
Q: Who are the civil society stakeholders?

A: Involvement of Youth, Environment protection groups, Just transition, Union Labour

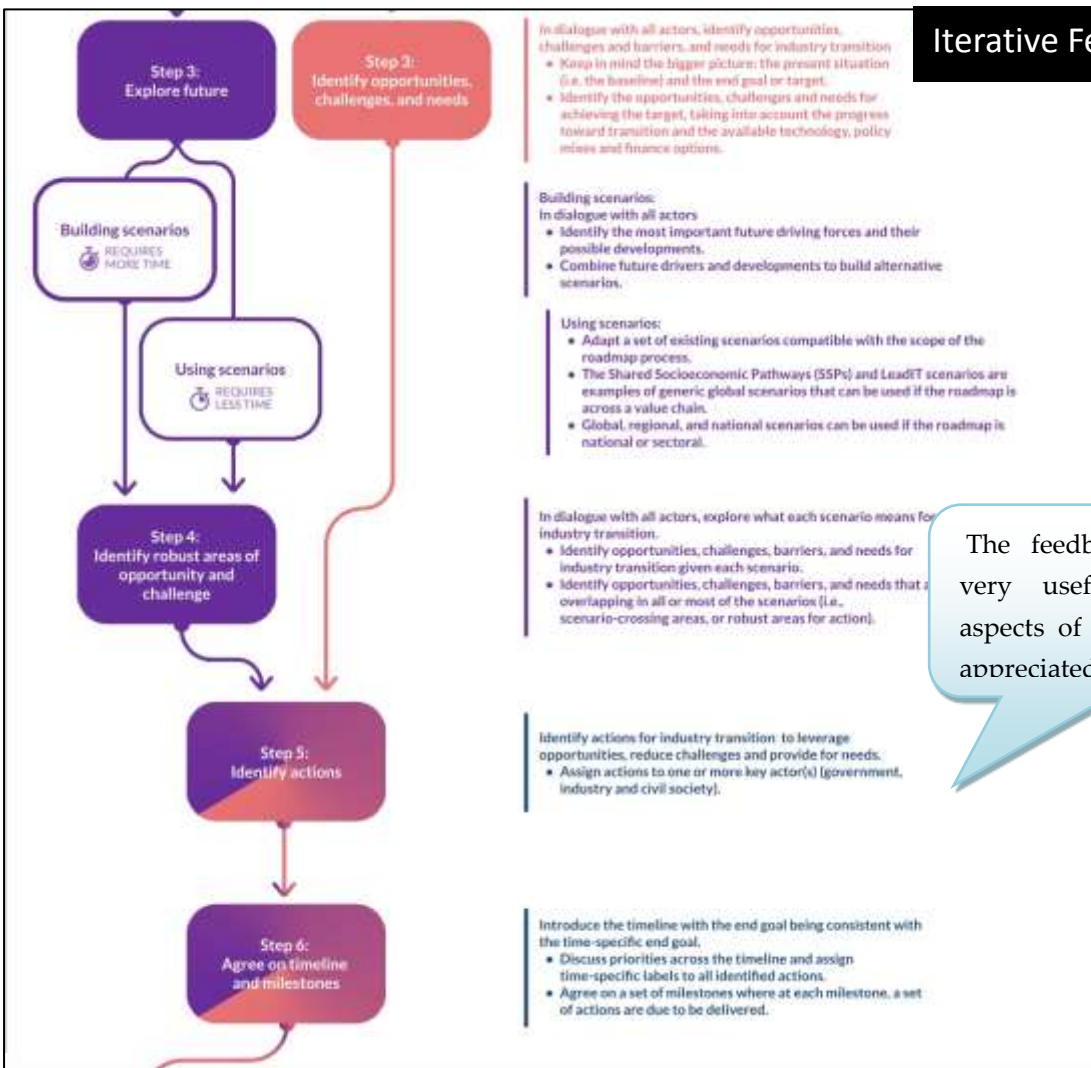


The roadmap should have a status check process also, where the progress can be monitored

The long-term targets of 10 or more years are the best with the interim targets of 5-6 years. These targets are easy to achieve.

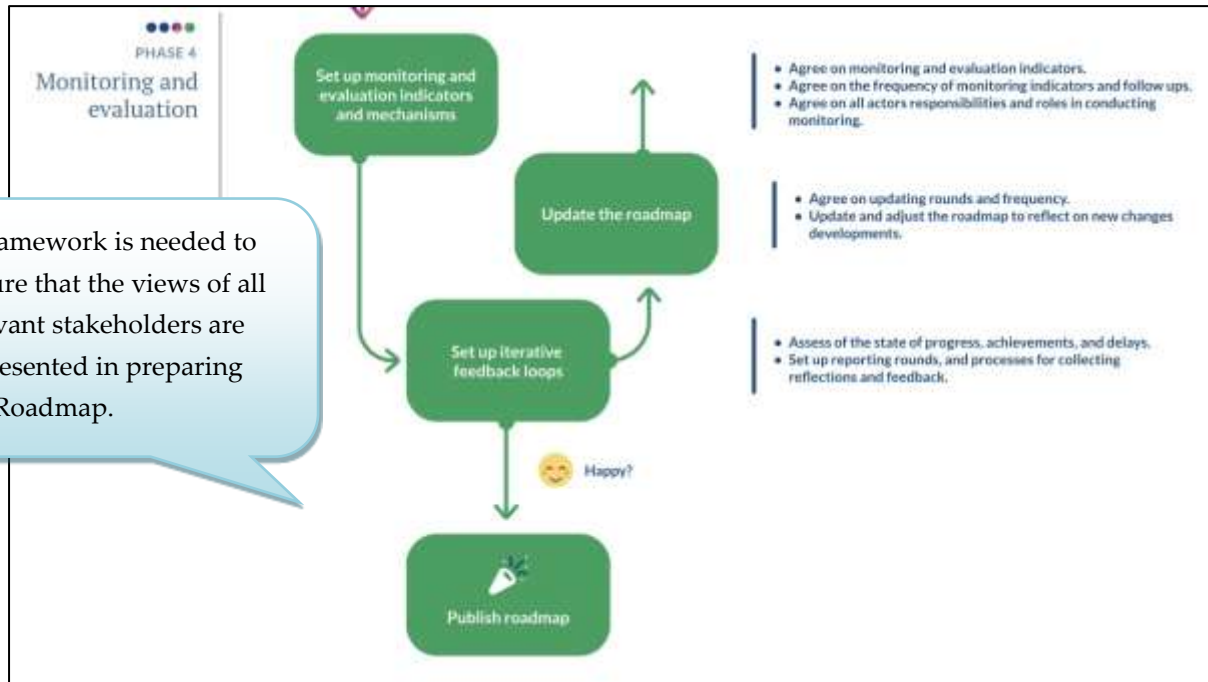


Would it be possible to present Life-Cycle Analysis (LCA) of Green products to assess the impact on final cost of these products?



Iterative Feedback Loops

The feedback mechanism is very useful. The dynamic aspects of the Tool were also appreciated.



A framework is needed to ensure that the views of all relevant stakeholders are represented in preparing the Roadmap.

Day-3 The importance of roadmap tool and climate finance

Day-3 opened with a review of the past two days of the workshop, followed with a plenary discussion on policy, economic, technology and social opportunities and challenges. Similar issues were raised during the breakout sessions such as on technology development and transfer (short-, mid-, and long terms) and climate finance, alternative energy (waste heat, solar and wind power) and connecting the dots and circular economy. Cooperation across the supply chain and accelerating actions from the demand sides were also mentioned. Integration and alignment of energy roadmap and cement roadmap was agreed to be crucial.

Plenary discussion: Policy, economic, technology & social - opportunities and challenges

Dr Rene Van Berkel, UNIDO, Regional Office in India, said on financing of the technology, UNIDO are looking at market transformation and working to find a replicable technology solution for certain clusters, replicate it, and then finance it for usage. Dr Van Berkel reiterated the focus of UNIDO being optimization and customization of specific technologies.

The salient points covered by Dr Van Berkel on UNIDO's work in industry transitions and specific to cement sector are as following:

- UNIDO is currently working on technology breakthrough such as green hydrogen. UNIDO is committed to improve and accelerate local innovation i.e. homemade low carbon solutions which are customized for local needs. This includes working on renewables such as solar power and high temperature processes.
- UNIDO recognizes that there are short term opportunities to be gained with regards to energy efficiency even in Indian cement sector and UNIDO has put in a lot of work with the monitoring and the improvement of energy efficiency. Whereas in the UK and other countries, UNIDO are looking at technology pathways and the potential of green public procurement.
- Specific on cement sector, UNIDO are looking at alternative energy and processes to reduce carbon footprints as well as improving resource efficiency.
- Raw cement is often lost along the supply chain and the utilization. UNIDO also focuses on buying in bulk procurement which will reduce the cost substantially. UNIDO are looking at the cement standard and construction standard as well as green procurement.

Major perspectives and suggestions from stakeholders

- A representative from the civil society urged that more work is needed on the demand side to create low carbon market and to bring industries as early adopter and consumer of low carbon energy.
- Few representatives from the industry and the civil society highlighted the importance of standards and a good cooperation between the government and the industry and industry association. They talked about the vital role that independent bodies play in providing policy recommendations.

- The participants also pointed out that the need to establish a common framework for diverse actors to engage in the roadmapping exercise which must be owned and implemented by the industry.
- Representatives shared experiences of facilitating cement producers and buyers to have discussion in India with the goal to establish green procurement together with construction and automotive working groups.
- Few participants highlighted the vital role of building material in reducing emissions and the need to address the rapid changes within the construction sector and green building in the long-term roadmap.
- Indian cement production is efficient, but there is a long-way to go when it comes to decarbonizing the operations. A major source of emissions in the sector is the production process, primarily calcination. Another significant source is fuel use. The fuel primarily used is coal and petcoke. Cement sector players can set targets to replace fossil fuels with other less carbon intensive fuels.
- Representatives highlighted that it is key to encourage businesses to transition to renewables energy and energy efficiency. The switch from fossil fuels to renewable energy is being examined globally by the cement industry. Waste Heat Recovery System (WHRS) and use of solar energy are key components in achieving these targets.
- Also, the use CCUS method can help in capturing the CO₂ from industrial emissions and can either be recycled in further industrial processes and usage. But, as the development of technologies such as carbon capture, use, and storage (CCUS) and carbon-cured concrete could take up to ten years, investments on R&D should be made as soon as possible.
- The Life-Cycle Analysis (LCA) could boost demand for these green products today. From a short-term analysis Green Steel/Cement may be seen as more expensive. However, if the associated hidden costs of not procuring green cement are visualized the benefits may outweigh the costs of procuring green cement. Therefore, visualising these hidden costs would be a useful exercise to identify and remove the bottlenecks and gaps.
- Representatives pointed out that India is the world's 2nd largest producer of cement and to enable the transition of the sector, there is a need to spend on research in newer technologies and alternative fuels. Representatives reiterated that there is need to subsidise and to have a better framework for WHR technology. This will enhance the demand of the usage of the WHRS as the technology itself is very expensive. Representatives shared that in Sweden, several start-ups are examining the potential for using waste heat from Industry as a source of fuel for other purposes. To make this switch possible, supply-chain changes, innovation and civil society contributions are needed.
- Representatives agreed that other alternative fuels such as Agricultural waste could also be used, but would need to be produced at scale. The agricultural residue is high in silica content - an important component for the cement industry. One can also explore other uses for these waste products in addition to energy use (source of fuel); this connection may also lead to secondary/enhanced demand. The legislative support for Refuse Derived Fuel (RDF) and closing the loop for chlorine dust is required from future perspective.
- There is a need to assess how we can closely align energy transition Roadmaps with the decarbonization Roadmaps for the Cement and Steel sectors and study the potential for better engaging civil society and industry in this process.

Way Forward & Next Steps

Conclusions and recommendations

- It is imperative for heavy industries and the cement sector to join forces together with the government and the public sector in reducing greenhouse gas emissions to meet the 1.5°C global warming target in the Paris Agreement. Establishing a common multistakeholder platform for this cooperation is crucial for the sector roadmapping exercise.
- Industry transition roadmaps provide actionable measures on technology, policy, public-private partnership, and finance to accelerate transition, also considering the industry sectors competitiveness and socioeconomic aspects of transition (e.g., jobs, social protection measures, re-skilling industrial workers, etc.).
- In designing the roadmap, it is imperative to ensure that just transition is achieved.
- In designing the roadmap, it is important to look at the synergies and alignment of energy transitions and cement sector roadmap and the urgency in switching to renewable and green energy.
- It is important to include factors from the demand side (construction sector, green building, etc.) in the roadmap building as well as in establishing the standards and labelling for green cement. The entire value chain needs to be considered when designing the roadmap for India cement sector.
- Green procurement is crucial to showcase the true cost of cement production and it is of significant importance to create an enabling policy framework and access to green financing to not only establish a sustainable supply chain, but also drive the innovation ecosystem and investments.
- Participants from the demand side are needed in the next workshop in Spring of 2022 to ensure no important points are left out in the roadmap building for India cement sector.

Future actions

The first workshop will be followed by synthesis reporting, iterative feedback and tasks and exercises such as questionnaires to keep the stakeholders engaged for the entire duration of the roadmapping process. A second in-person workshop scheduled in April 2022 will enable the group to collectively make progress towards cement sector decarbonization roadmap as an outcome. The next workshop will be held in the form of participatory workshop which will be steered through structured brainstorming and clustering techniques to facilitate dialogue and consensus among the key actors. Stakeholders will be encouraged to make commitments during the workshops to the actions and measures in their area of responsibility. The result of the final activity will be synthesized in a report and communicated with the public via LeadIT & TERI's communication channels. The report will also be presented to the Government of India and disseminated among the participants.

In March 2022, TERI & LeadIT Secretariat, supported by GIZ, will kick-start the steel sector roadmapping participatory workshops process, integrating lessons learned from the cement sector roadmapping workshops, and adopting the same methodological approach. The outcome of the activities will be presented at the Stockholm + 50 event in June 2022.

Annexure

Annexure 1: Agenda of the Roadmap Workshop

Virtual roadmap workshop for decarbonisation of cement sector in India

20-22 December 2021

Day 1 – Monday, 20 December 2021 at 14:00 – 16:30 IST

Participants should be online at 13:45

Opening Session

Timings (IST)	Particulars
14:00 hrs to 14:05 hrs	Opening Remarks by Session Moderator <ul style="list-style-type: none"> Dr. Gökçe Mete, Head of LeadIT Secretariat at Stockholm Environment Institute (SEI)
14:05 hrs to 14:15 hrs	Welcome Remarks <ul style="list-style-type: none"> Dr Vibha Dhawan, Director General, TERI Dr. Måns Nilsson, Executive Director, Stockholm Environment Institute (SEI)
14:15 hrs to 14:30 hrs	Setting the Context Lead Presentation by <ul style="list-style-type: none"> Dr. Somya Joshi, Head of Global Agendas, Climate & Systems Division, SEI Remarks by <ul style="list-style-type: none"> Mr. Jai Kumar Gaurav, Senior Advisor, Climate Change and Circular Economy, GIZ India
14:30 hrs to 14:45 hrs	Indian CXO Perspectives by Cement Sector CEO <ul style="list-style-type: none"> Mr. Mahendra Singhi, MD & CEO, Dalmia Cement (Bharat) Ltd; Chair of Global Concrete and Concrete Association (GCCA) India User Industry CXO <ul style="list-style-type: none"> Dr M Muthukrishnan, Airport Sector - Head of Environment, Health, and Safety and Sustainability, GMR Group
14:45 hrs to 14:50 hrs	Perspectives on Indian policy landscape by <ul style="list-style-type: none"> Ms. Rajasree Ray, Economic Adviser, Ministry of Environment, Forest & Climate Change, Government of India
14:50 hrs to 14:58 hrs	Special Address by <ul style="list-style-type: none"> H.E Klas Molin, Ambassador, Embassy of Sweden H.E Ugo Astuto Ambassador of the European Union to India
14:58 hrs to 15:00 hrs	Vote of Thanks <ul style="list-style-type: none"> Mr Arupendra Nath Mullick, Vice President, TERI Council for Business Sustainability

Beginning with the baseline

Moderator: Dr. Gökçe Mete, Head of LeadIT Secretariat at Stockholm Environment Institute (SEI)

15:00 hrs to 15:15 hrs Short round of introductions

15:15 hrs to 15:20 hrs **Special Remarks by Dr SS Gupta, Senior Development Officer, DPIIT, Ministry of Commerce and Industry, Government of India**

15:20 hrs to 15:35 **Presentation by Mr Kaustubh Phadke, General Manager, GCCA India** on the Indian Chapter of the Global Cement and Concrete Association on their roadmap

15:35 hrs to 16:30 hrs Plenary discussion on status of sustainability of cement sector in India (60 mins)

Visions and Foresight activities

Day 2 – Tuesday, 21 December 2021 at 14:00 – 16:30 IST

Breakout rooms

14:00 hrs to 14:10 hrs Recap and Introduction & Instructions for breakout sessions by Dr. Gökçe Mete, Head of LeadIT Secretariat at Stockholm Environment Institute (SEI)

14:10 hrs to 14:20 hrs Introduction and Overview of the Tool by SEI

14:20 hrs to 14:30 hrs Q&A

14:30 hrs to 15:30 hrs Participants will be separated into 3 breakout groups for carrying out a Roadmap Panning exercise via LeadIT's interactive tool.

Each breakout group will have a moderator (Somya, Girish or Gökçe), leading the participants through the interactive tool, and synthesizing discussions to bring to the plenary. In this exercise it is important to identify gaps, bottlenecks and levers that can be pulled to accelerate and create more accountability.

- Room 1: Industry representatives — **moderated by Gökçe Mete, SEI & Arupendra Mullick, TERI**
- Room 2: Public sector and civil society representatives – **moderated by Somya Joshi, SEI & Girish Sethi, TERI**

In this critical segment we will also bring back-casting exercises to chart trajectory and identify gaps between vision, ambitions and action.

Plenary discussion | Session Moderators: Gokce and Somya SEI

15:30 to 15:40 Expert Remarks by Mr. Rajesh Miglani, Senior Climate Business Specialist, IFC

15:40 to 16:30 Return of the plenary for presentation of the outcome of roadmapping exercise by representatives of each group

Plenary discussion & next steps

Day 3 – Wednesday, 22 December 2021 at 14:00 – 15:30 IST

Session Moderators: Gokce and Somya SEI

14:00 Plenary discussion on policy, economic, technology and social opportunities and challenges

14:00 hrs to 14:10 hrs **Perspectives on global collaborations and partnership by Dr Rene Van Berkel, UNIDO Representative. UNIDO Regional Office In India.**

Closing remarks & next steps

15:00 **Perspectives from Youth Community by Ms. Archana Soreng, UN Secretary General's Youth Advisory Group on Climate Change**

15:05 hrs Dr. Somya Joshi & Mr. Girish Sethi

Annexure 2: List of Participants

No.	Stakeholders	Name	Designation	Organisation
1	Academic / Research / Civil Society	Abhijit Neogy	Director	Brunswick Group
2	Academic / Research / Civil Society	Sumit Dhiman	..	Development Alternatives Group
3	Academic / Research / Civil Society	Fanny Radstrom	Second Secretary, Political Affairs India, Nepal and Bhutan	Embassy of Sweden
4	Academic / Research / Civil Society	Johan Schierwagen	Second Secretary	Embassy of Sweden
5	Academic / Research / Civil Society	Klas Molin	Ambassador	Embassy of Sweden
6	Academic / Research / Civil Society	Yasmin Zaveri Roy	Senior Advisor	Embassy of Sweden
7	Academic / Research / Civil Society	Tavleen Kaur	Energy Specialist	Embassy of Sweden
8	Academic / Research / Civil Society	Anand shukla	Senior Thematic Advisor- Energy Climate Change and Development Division	Embassy of Switzerland
9	Academic / Research / Civil Society	Tanisha Gupta	Program Manager	Environmental Defense Fund
10	Academic / Research / Civil Society	Shashank.bishnoi	Professor, Department of Civil Engineering	Indian Institute of Technology Delhi
11	Academic / Research / Civil Society	Atul Kumar	Professor, Energy Studies Programme, School of International Studies	Jawaharlal Nehru University
12	Academic / Research / Civil Society	Sachin Kumar	Associate Director – Energy Efficiency Programme	Shakti Sustainable Energy Foundation
13	Academic / Research / Civil Society	Yvonne Leung	Project Lead, Concrete Action for Climate	World Economic Forum
14	Cement Industry - Manufacturers & Technology Suppliers	Himanshu Mishra	Vice President	ACC Cement Holcim
15	Cement Industry - Manufacturers & Technology Suppliers	Monika Shrivastava	Chief Manager	ACC Ltd
16	Cement Industry - Manufacturers & Technology Suppliers	P Sreenivasa Raju	General Manager	ACC Ltd
17	Cement Industry - Manufacturers & Technology Suppliers	Suresh Krishna	Chief Manager - Energy, Environment and Sustainability	ACC Ltd
18	Cement Industry - Manufacturers & Technology Suppliers	Nidhi Nair	Head Business Development	ACC Ltd (Geocycle)
19	Cement Industry - Manufacturers & Technology Suppliers	Avi Sharma	Assistant Manager	Ambuja Cement
20	Cement Industry - Manufacturers & Technology Suppliers	Sanjay Kumar Singh	Head (Environment and Sustainability)	Ambuja Cement Ltd -Holcim Group

No.	Stakeholders	Name	Designation	Organisation
21	Cement Industry - Manufacturers & Technology Suppliers	Anupam Badola	Assistant General Manager	Dalmia Cement (Bharat) Ltd
22	Cement Industry - Manufacturers & Technology Suppliers	Mahendra Singhi	MD & CEO	Dalmia Cement (Bharat) Ltd
23	Cement Industry - Manufacturers & Technology Suppliers	Anil Jain	Head Environment and Sustainability	JK Cement Works
24	Cement Industry - Manufacturers & Technology Suppliers	Manoj Rustagi	Dy.General Manager · JSW Energy	JSW Cement
25	Cement Industry - Manufacturers & Technology Suppliers	Moumita Chakraborty	Head Geocycle Asia at Holcim	LafargeHolcim
26	Cement Industry - Manufacturers & Technology Suppliers	Ajay Agarwal	Manager (Sustainability)	Shree Cement Ltd
27	Cement Industry - Manufacturers & Technology Suppliers	Sanjay Gupta	AGM (QC)	Shree Cement Ltd
28	Cement Industry - Manufacturers & Technology Suppliers	Dilip Yadav	Sr.Officer Quality Control	Shree Cement Ltd
29	Cement Industry - Manufacturers & Technology Suppliers	Milan R Trivedi	Sr. General Manager	Shree Digvijay Cement Company Ltd
30	Cement Industry - Manufacturers & Technology Suppliers	Mukesh Saxena	Sr. Vice President	Star Cement Ltd
31	Cement Industry - Manufacturers & Technology Suppliers	Vishal Bhavsar	Head - Corporate Sustainability	UltraTech Cement Ltd
32	Government representatives / public sector	Rajesh Kumar Miglani	Senior Climate Business Specialist & Climate anchor, South Asia	International Finance Corporation
33	Government representatives / public sector	Ashutosh Saxena	Jt Director	National Council for Cement & Building Materials
34	Government representatives / public sector	Ivan Jaques	Senior Energy Specialist	The World Bank
35	Government representatives / public sector	Rene Van Berkel	UNIDO Representative in India	UNIDO
36	Industry Chambers / Associations	Sweta Jha	Research Analyst	CEEW
37	Industry Chambers / Associations	Rachana Sharma	Senior Manager - Environment	Cement Manufacturers Association - India
38	Industry Chambers / Associations	Vaibhav Gupta	Manager - Energy & Mines	Cement Manufacturers Association - India
39	Industry Chambers / Associations	Kaustubh Phadke	Country Head	GCCA India
40	User Industry (demand side)	Avinaw Prasad	Associate Director	Deloitte
41	User Industry (demand side)	Gokul Pandian	Associate Director	Deloitte
42	User Industry (demand side)	Charu Gupta	Director	Deloitte Touche Tohmatsu India LLP
43	User Industry (demand side)	Anil J Kurian	Sr Manager, Environment	DMRC
44	User Industry (demand side)	Raj Bardhan	JE/ENVIRONMENT	DMRC
45	User Industry (demand side)	Varun Dilip Boralkar	Sr. GM (Head Commercial)	Geocycle (Holcim)
46	User Industry (demand side)	Rekibuddin Ahmed	Manager - Environment	GMR Group
47	User Industry (demand side)	M Muthukrishnan	Head of Environment, Health,	GMR Group (DIAL)

No.	Stakeholders	Name	Designation	Organisation
			and Safety and Sustainability	
48	User Industry (demand side)	Aditya Chunekar	Fellow	Prayas (Energy Group)
49	User Industry (demand side)	Aniruddha Ketkar	Research Associate	Prayas (Energy Group)
50	User Industry (demand side)	Suresh Kumar Patel	Head - Cement Plant	Tata Chemicals Ltd
51	User Industry (demand side)	Ravi Dharsandiya	Deputy Manager	Tata Chemicals Ltd
52	User Industry (demand side)	Avinash Acharya	Manager	The Climate Group
53	User Industry (demand side)	Raad Pharaon	Project Manager - Industry	The Climate Group
54	Organizer / Partner	Jai Kumar Gaurav	Senior Advisor (Climate Change and Circular Economy)	GIZ
55	Organizer / Partner	Kundan Burnwal	Advisor - Climate Change	GIZ
56	Organizer / Partner	Saurab Babu	Junior Technical Expert	GIZ
57	Organizer / Partner	Amelinda Lindberg	Research Fellow	Stockholm Environment Institute (SEI)
58	Organizer / Partner	Gökçe Mete	Research Fellow and Head of LeadIT Secretariat	Stockholm Environment Institute (SEI)
59	Organizer / Partner	Måns Nilsson	Executive Director	Stockholm Environment Institute (SEI)
60	Organizer / Partner	Somya Joshi	Head of Global Agendas, Climate & Systems Division	Stockholm Environment Institute (SEI)
61	Organizer / Partner	Aditya Raghwa	Assistant Manager	TERI
62	Organizer / Partner	Anima P	Media and Communications Lead	TERI
63	Organizer / Partner	Arupendra Mullick	VP, TERI Council for Business Sustainability	TERI
64	Organizer / Partner	Diksha Gairola	Research Associate	TERI
65	Organizer / Partner	Vibha Dhawan	Director General	TERI
66	Organizer / Partner	Girish Sethi	Sr Director, Energy Program	TERI
67	Organizer / Partner	Kavita Sisodiya	Sr Secretary	TERI
68	Organizer / Partner	N Vasudevan	Sr Fellow	TERI
69	Organizer / Partner	Pankaj Kalyani	Research Associate	TERI
70	Organizer / Partner	Ritu Ghai	Programme Executive	TERI
71	Organizer / Partner	Shruti Dayal	Research Associate	TERI
72	Organizer / Partner	Sonal Bajaj	Manager (Planning & Mktg)	TERI
73	Organizer / Partner	Sumit Bansal	Project Coordinator	TERI

Annexure 3: List of Press/ Media Coverage

The press release of the workshop was picked by the Press Trust of India (PTI) in English as well as in Hindi. The following major media links have been added: The Economic Times, The Print, The Tribune, ET Energyworld, Navbharat Times, Lokmat and Bharat Republic World.

Date	Publication	Headline & Weblinks
28 Dec 21	The Economic Times	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	The Print	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	The Tribune	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	Devdiscourse	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	LatestLY	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	Nyooz	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	Vishwadha News	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	Hi India.com	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	Techi AI	Experts stress collaborative approach to deal with challenges in decarbonisation of heavy industries
28 Dec 21	Granthshala India	Coordinating initiatives needed to tackle the challenges in decarbonizing heavy industries: Experts
28 Dec 21	Navbharat Times	भारी उद्योगों को कार्बनमुक्त करने में चुनौतियों से निपटने में समन्वयकारी पहल जरूरी: विशेषज्ञ
28 Dec 21	Bharat Republicworld	भारी उद्योगों को कार्बनमुक्त करने में चुनौतियों से निपटने में समन्वयकारी पहल जरूरी: विशेषज्ञ
28 Dec 21	Lokmat	भारी उद्योगों को कार्बनमुक्त करने में चुनौतियों से निपटने में समन्वयकारी पहल जरूरी: विशेषज्ञ
28 Dec 21	LatestLY	भारी उद्योगों को कार्बनमुक्त करने में चुनौतियों से निपटने में समन्वयकारी पहल जरूरी: विशेषज्ञ
28 Dec 21	IBC 24	भारी उद्योगों को कार्बनमुक्त करने में चुनौतियों से निपटने में समन्वयकारी पहल जरूरी: विशेषज्ञ
29 Dec 21	ET Energyworld	Road mapping crucial to de-carbonisation of India's cement sector

The press release dissemination of the inaugural of three-day workshop on 'Virtual Roadmap Workshop for Decarbonisation of Cement Sector in India', was also featured by other media including Indo-Asian News Service (IANS) and other local & regional media agencies.

Date	Publication	Headline & Weblinks
27 Dec 21	APN News	Road mapping crucial to greening the heavy industry sector, experts at the inaugural of the three-day workshop on 'Virtual Roadmap Workshop for Decarbonisation of Cement Sector in India'
27 Dec 21	Media Bulletins	Road mapping crucial to greening the heavy industry sector, experts at the inaugural of the three-day workshop on 'Virtual Roadmap Workshop for Decarbonisation of Cement Sector in India'
27 Dec 21	Daiji World	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Social News XYZ	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Telugu Stop	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Forever News	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Ommcom News	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	India Updates	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Web India 123	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Andhram	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Andhravilas	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Buziness Bytes	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Can India	Road mapping crucial to de-carbonisation of India's cement sector
27 Dec 21	Prokerala	Road mapping crucial to de-carbonisation of India's cement sector
28 Dec 21	Business News This Week	Road mapping crucial to greening the heavy industry sector, experts at the inaugural of the three-day workshop on 'Virtual Roadmap Workshop for Decarbonisation of Cement Sector in India'