When the perils of climate change are considered, the perception of people has started changing. Earlier when these were discussed general feeling was that the danger is some far away thing. Now repeated climate disasters are driving home the fact that they are here for the real. Sometimes ‘sweet are the uses of adversity’

Still when it comes to mitigation efforts, the initiatives are far from sufficient. M/s Deloitte having conducted a study recently brings out that the insufficient action on climate change is leading to deterioration in global economic growth, productivity, trade and competition. And on the other hand a concerted collective action by all nations for decarbonising economy can stimulate growth and prosperity for coming decades. The analysis highlights that, the global differences notwithstanding, collective action can benefit every region of the planet bestowing growth, jobs and income. The analysis quantifies the loss of inaction as $178 Trillion in GDP destruction in another 50 years as against a gain of $ 43 Trillion in GDP if effective action on climate change is taken during this period.

We the energy professionals can play a major role in this transition and contribute to this transformation in whichever capacity we are and serve a historical responsibility.

Jai hind!

Dr. M.C. Jain
National President, SEEM

CONTENTS
SEEM General Secretary spoke at BRICS Rural Sustainable Development People-to-People Exchange Forum
SEEM Kerala Chapter Joint Secretary spoke at Swatchta Pahkhwada day - Clean Environment and Premises
Webinar on Role of HVAC in Green Buildings
SEEM UP-UK Chapter Secretary spoke at Bihar State Pollution Control Board meet.
Stakeholder’s consultation for Net Zero pathways - Uttar Pradesh State Energy Efficiency Action Plan (UPSEAP)
BEE Refresher course –Phase 3
Preparatory course on BEE EA/EM Examination
SEEM AWARDS 2021
SEEM Indian Energy Conclave
JSW Steel to maintain shipments to Europe without passing on cost of India’s new export tax
Coal India to import for first time in years as power shortages loom
India’s top e-recycler Attero to spend $1 bln to expand as EVs take off
INNOVATION: IIT-Madras team develops zinc batteries for electric vehicles
Gail India to invest Rs 6,000 crore on renewables in next three years
The pandemic had its toll on the planet on all the countries and all segments of economy. None were spared, while the impact varied across sectors. The global energy sector was among the worst hit. The progress signs of clean energy transition retarded. World Energy Council studied the possible post COVID development and has constructed four scenarios. These were imaginatively termed ‘Pause’, ‘Re-Wind’; ‘Re-record’ and ‘Fast Forward’. These scenarios come in handy for policy makers and administrators to plan initiatives for recovery. These scenarios explore how three critical yet uncertain factors interact to determine the pace and direction of energy transition. These factors are ambition, trust and ability to control virus.

It will be interesting to understand the implications of these scenarios.

‘Pause’ - Nations, communities and economies wake up from lockdowns and struggle to return to at least pre-pandemic levels. Vaccine gives hope of containing spread of the pandemic. The recovery pace is slow skewing the benefits of recovery favourably towards big and rich. The gradual rise of energy prices challenges large scale investments in renewable energy. Couple to this, the uncertainty and heavy debt compounds the issue acting as a deterrent to heavy investments in this field. All are inclined to think of stability rather than transformation and this slows the pace of Paris treaty measures, though nations vouch to adhere to them.

‘Re-wind’ - A marked disenchantment with globalization and concentration on resolving and repairing local economy was observed at many instances. This characterised distinct protectionist tendencies in sectors including energy. And such domestic focus widened the gap between rich and poor countries. This de-globalization phenomenon affected energy transition. The rebound of demand in rich countries spurred the increase in oil prices, which affected poor badly when rich nations were able to weather it. This left poor countries crippled to look beyond survival.

‘Re-Record’ - Human centered policies and initiatives aimed at pandemic containment and recovery lead to diverse results nation to nation and city to city. These efforts were addressing local issues of poor among the populace and thus lost the global outlook. The governments prompted by demands of low wage workers, environmentalists, and corporate social responsibility inclination by big corporate resorted to national incentives for transformations in energy landscape. This brings in a gradual flow of investments towards renewable and other pathways of circular economy.

‘Fast forward’ - There were also instances of pandemic fostering collaborations, technology enabled interventions backed by scientific methods. Resorting to renewable got recognition as a measure against rising oil prices. This prompted collaborative approach for building large scale renewable energy infrastructures. These collaborations underscore climate progress as well, though the progress may well be below desired levels.

World energy Council has termed it ‘World Energy Transition Radar’ which picks over three thousand different signals to decipher response patterns, trend lines to evolve the above scenarios. This may be a good tool for policy bodies and government leaders to appropriately design measures and accelerate the pace towards a Net Zero future.
SEEM General Secretary spoke at BRICS Rural Sustainable Development People-to-People Exchange Forum

SEEM General Secretary Dr. C. S. Azad was one of the speakers at BRICS Rural Sustainable Development People-to-People Exchange Forum on 10th May 2022.

SEEM Kerala Chapter Joint Secretary Mr. Aneesh Rajendran spoke at Swatchta Pakhwada day - Clean Environment and Premises at SCIMST main campus, Medical College- Thiruvananthapuram on 10th May 2022. He presented the awareness on the subject “Energy Conservation” in our daily life to the Resident Doctors, Health workers and staff of Sree Chitra Tirunal Institute for Medical Sciences and Technology.

Webinar on Role of HVAC in Green Buildings

SEEM Tamilnadu Chapter organised an e-course on Role of HVAC in Green Buildings on 25th May 2022 at 06:30 to 08:30pm. Dr. Sonal Desai, Energy & Green Building Consultant, was the speaker of this webinar. Basics of Green Building and ratings in brief, HVAC Design Features and Case studies were the key takeaways. The topics covered in the course were World Rating System for Green Building, HVAC Design for Green Building, Packaged & Ductless HVAC Systems (DX) for Green Building, Role of refrigerant in Green Building, Radiant Cooling System for Green Building, EMS for Green Building and Thermal Energy Storage for Green Building. E Certificates are provided to the participants on completion of training.
SEEM UP-UK Chapter Secretary spoke at Bihar State Pollution Control Board meet.

SEEM UP-UK Chapter Secretary and Managing Director of Green Tree Global, Mr. Anurag Bajpai was one of the speakers at Bihar State Pollution Control Board meet on IPCC AR6 WGIII Report on May 4th, 2022.

Stakeholder’s consultation for Net Zero pathways - Uttar Pradesh State Energy Efficiency Action Plan (UPSEEAP)

Uttar Pradesh taking lead for Net Zero Actions at Sub-regional level for realizing “Panchamrit” and Net-Zero: 2070 commitment made by Hon’ble Prime Minister of India in CoP 26.

“It’s now or never, UP will redefine the energy efficiency and climate change goal targets. Stay tuned for the next storm of change!!”

It is grateful to Sh. Arvind Kumar Sharma, Hon’ble Minister of Energy & Additional Energy, GoUP and Dr. Arun Kumar Saxena, Hon’ble Minister of State (IC) Department of Environment, Forest & Climate Change (DoEF&CC), GoUP for inaugurating the Stakeholder’s Consultation for Net Zero Pathways – Uttar Pradesh State Energy Efficiency Action Plan (UPSEEAP).

The workshop is being organized with the vision that “Well Planned is Half Done”. As the energy efficiency is an overarching issue, the technical sessions have been designed to minutely cover the sectoral issues. The discussions in the technical sessions will help develop a robust UPSEEP on one hand and generate awareness, ownership, participation and synergies in the policy planning and implementation of various stakeholders on the other.

The DoEF&CC, GoUP and UP Climate Change Authority is playing the pivotal role and coordinating the preparation of UPSEEP in the State. Ministry of Power (MoP) and Bureau of Energy Efficiency (BEE) have initiated preparation of UPSEEP in consultation with all stakeholder departments. UPSEEP is being developed jointly by UPNEDA, DoEF&CC, GoUP and ASSOCHAM-Design2Occupancy who has been assigned by BEE for preparing the action plan. The UPSEEP will have a short-term plan (5 years) and a long-term plan targeting high impact energy efficiency strategies by the year 2030, covering priority sectors and will help in allocation of resources as per the requirement of the state.
Preparatory course on BEE EA/EM Examination

SEEM, associated with Greentree, proudly announced the launch of Preparatory Course on BE EA/EM Exam2022 for Energy professionals to get certified as energy auditor/manager by BEE.

Registration
Link: [https://forms.gle/ngu5993kcVp5T7iT9](https://forms.gle/ngu5993kcVp5T7iT9)
For More details contact: councellor@greentree.global, 09315816567

Original Fee - Rs.7500/- + GST
For SEEM Members - Rs.5500/- + GST

Get Started your career in Sustainability Industry.
- Online self-paced classes
- Live & pre-recorded sessions
- Practice tests & assessments
- Certificate on completion of course

Please arrange to publish in your professional/personal groups to get maximum visibility.
PROGRAM

PROUD TO BE SELECTED FOR 3RD TIME IN A ROW

BEE REFRESHER COURSE PROGRAM

FOR CERTIFIED ENERGY AUDITOR & ENERGY MANAGER

ABOUT

Bureau of Energy Efficiency (BEE) issues certificate to the qualified Energy Managers/ Energy Auditors. Under Regulation 8 of the Bureau of Energy Efficiency (Certification Procedures for Energy Managers), 2010, this certificate has to be renewed after every five years, by attending a refresher training course conducted by the Bureau or approved institute or organization.

THE FEATURES

- 80+ training programs to be conducted pan India
- Mandatory training program for certified EA EM for renewal of certification
- 2-day intensive program followed by assessment by NPC and BEE

CHECK YOUR ELIGIBILITY
http://refreshercourse.in/Ref_Application5.aspx

ADDITIONAL INFO

TRAINING LOCATIONS

Mumbai, Pune, Jaipur, NCR, Chandigarh, Ahmedabad, Bangalore, Chennai, Kolkata, Hyderabad, Trivandrum, Baroda, Kochi, Guwahati & more.

QUALIFYING CRITERIA

All EA EM candidates, who have passed the National Certification Examination of BEE between 1st to 16th Exam are required to attend the refresher course program.

BOOK YOUR SLOT TODAY!

9315816567
counsellor@greentree.global

TO BOOK YOUR SLOT
https://academy.greentree.global/
SEEM AWARDS 2021

INVITING YOUR NOMINATION

Apply before 30 June 2022

VENUE: ISLAMIC CULTURE CENTRE, NEW DELHI
SEEM Awards 2019
A Glimpse of previous award event.
SEEM
Inspiring Energy Efficiency

Instituted in 2014, SEEM National Energy Management Awards recognize and support best efforts taken by various sectors for improving energy efficiency, thereby supporting India’s journey towards climate change mitigation, de-carbonization and sustainable development.

SEEM National Executive Council invites applications for the prestigious SEEM Awards 2021.

Unlike other awards, SEEM Awards do not focus just on the percentage of energy saving achieved during the assessment year. Instead, systematic actions towards sustainable energy performance are considered for recognition. This approach ensures that assessment does not get skewed based on production levels.

SEEM, the professional body of certified energy professionals in India, supports the country’s energy efficiency movement since its inception. Being the largest group of Certified Energy Auditors & Certified Energy Managers in India. Our members tirelessly support the cause of energy efficiency in the country directly and indirectly.

SEEM Awards 2021
Corporate profile

SEEM Energy Management Awards 2021 is the most valuable and popular award in among energy industry. Last seven years SEEM organising award functions and many prominent companies from various industries achieved this awards all over India. The number of award winners are increasing every year.

Our award functions are happening at New Delhi every year except 2021, because it was a virtual award function due to Covid pandemic. This year we are organising the function at New Delhi on 16th September 2022.

SEEM Energy Management Awards do not focus on the percentage of energy saving achieved during the assessment year. Instead, systematic actions towards sustainable energy performance are considered for recognition. This approach ensures that assessment does not get skewed based on production levels.

There is a conclave also organised based on energy management on same day of the award event. Many national and international speakers are attending the function.
Who Can Apply?

Applications are sought for the following segments.

**Individuals**

- Certified Energy Manager
- Certified Energy Auditor

Award Category:

**Best Performance Awards**

Applications in the category of individuals should be made separately irrespective of the application submitted by organizations in the other categories.

**ENCON Promoters**

- Energy Service Companies
- NGOs
- Government agencies
- Registered trusts
- Energy audit firms etc.

Award Category:

**Best Performance Awards**

Applications in the category of individuals should be made separately irrespective of the application submitted by organizations in the other categories.

**Industries**

- Aluminium
- Chlor Alkali
- Fertilizer
- Steel
- Textile
- Automobile
- Consumer goods
- Food processing
- Pulp & paper
- Refinery
- Sponge iron
- Thermal power plant
- Cement
- Pharma
- Petrochemical
- Chemicals
- Glass
- Tea
- Tyre
- All others

Award Category:

**Silver / Gold / Platinum**

Any industry/facility can apply in this category irrespective of size/service/product.

**Corporate Houses**

- All Corporate or business houses in manufacturing/Service sectors

Award Category:

**Best Performance Awards**

- Banking
- Airline
- Railway
- IT/ITES
- Hotel
- Hospital
- Mall
- Educational Institution
- Business Center
- Prints/Visual Media etc.
How to Apply?

To apply for the awards please register in the pre-registration link for the 1st Level Assessment.

Click to submit nomination

After Pre-registration for First level assessment, selected participants will be asked to submit the details for evaluation and a Unique Identification Code (UID) will be issued.

Upon receipt of the UID participants can submit all relevant documents along with application fee.

Nomination Fee :

**Corporate Houses**
Rs. 30,000 + GST 18%

**Industries & Facilities**
Rs. 12,500 + GST 18%

**ENCON Promoters/Energy Audit Firms**
Rs. 5,000 + GST 18%

**Individuals**
Rs. 2,000* + GST 18%

*50% special discount in individual category for SEEM members.

Application will be considered as complete only when the application form along with mandatory enclosures and fee are received at National award secretariat.

Processing of Applications:

**Procedures**

- Processing of the applications will be started from June 2022.

- Applications will be reviewed by a jury comprised of eminent experts in the Indian Energy Sector.

- Clarifications / Validations by the jury could be part of the review process.

- The results of SEEM Awards 2021 will be published during August 2022.

- The awards ceremony will be held in New Delhi during September 2022.
SEEM India Energy Conclave & SEEM Awards 2021

Society of Energy Engineers and Managers (SEEM) is a national network of energy professionals in India, established in 2005 as a not-for-profit society to support and inspire the cause of energy efficiency in various sectors. SEEM network is spread across 22 Indian states with 15 chapters and 7 units, and more than 900 members. Since its inception, SEEM has been carrying forward its objective through international, national and state level programs, publications including exclusive technical magazine energy manager, monthly e-newsletter SEEM News, and other initiatives.


The award ceremony will be attended by about 300 - 350 energy auditors and managers from across the country, representatives from large or small industries and government agencies like SDAs, DCs and other working energy
professionals from various industries and policy bodies.

This event is being held as part of the efforts to encourage and motivate Certified energy auditors, Certified energy managers, Energy audit firms, industries and facilities who have made remarkable contributions to promote energy conservation in Indian organizations during the year 2021-2022.

In our national annual event branded as - India Energy Conclave, SEEM India is organizing a training cum exposition program in tandem with the National Energy Management Awards Ceremony to familiarize genuine service/equipment system providers to an interested group of energy industry professionals. It is a felt need assessed by energy auditing fraternity that many genuine energy saving equipments, services and measurement devices and monitoring systems still remain unexposed to a large sections of energy professionals who still grope in dark or play into hands of black sheep.

This year we are having a Energy Start up Panaorana in IEC where we offer selected startups in innovative services and products leading to de-carbonization and strive towards Net Zero.

We will be giving opportunity to 15-20 selected Energy Efficient Equipment, Energy Monitoring Equipment, Energy Service provider during this function to present their product after an initial scrutiny by experts. Those who are willing to undergo this process of endorsement will be given an opportunity to show case their product through various Forums of SEEM (Such as Print Magazine, Web, Monthly News Letter etc.) other than the venue where presence of more than 300 experts are assured, at a very reasonable cost. These firms will have a priority considerations in our various functions at State and National levels where energy professionals congregate.

---

**Salient offerings:**

- Co branding of IEC & SEEM Award.
- Part of inaugural session.
- Speaking slot in any one session.
- Logo branding on Podium.
- Logo on the main backdrop.
- Logo branding on registration desk.
- Exhibition space at venue.
- Logo branding on conference website with small brief.
- Logo branding on social networking websites.

**Additional Benefits:**

- 5 Delegate Passes.
- Attendee Database.
- Exclusive Standee.
- Promo inside delegate kit.
- Ad on newsletter that reaches 50k+ emails (12 months in 2022-23).
- Inside page color Ad in quarterly magazine ‘energy manager’ 2022-23.
- Special interview coverage with CEO in ‘energy manager’ magazine.
- Free advertorial coverage in one issue of ‘energy manager’.

---

**Power Partner**

Exclusive opportunity for one partner for a grand coverage during SEEM Awards 2021.

**Salient offerings:**

- Part of inaugural session.
- Speaking slot in panel session.
- Logo on the main backdrop.
- Logo branding on registration desk.
- Exhibition space at venue.
- Logo branding on conference website with small brief.
- Logo branding on social networking websites.
Salient offerings:

- Speaking slot in any one session.
- Logo on the main backdrop.
- Logo on conference website.
- Logo branding on social networking website.
- Speaking or Presentation slot in any one session.
- Exhibition space at venue for showcase product or service.

Additional Benefits:

- 2 Delegate Passes.
- Attendee Database.
- Promo inside delegate kit.
- Ad on newsletter that reaches 50k+ emails (6 months in 2022–23).
- Half page color Ad in quarterly magazine ‘energy manager’ 2022 (2 issues only).
Opportunities in SEEM

1. Become SEEM Member
2. Get updated professionally and on sustainability
3. Show case your passionate self as Faculty in SEEM programs
4. Get elected as a leader - State and National Levels
5. Write for SEEM’s Energy Manager Magazine. Be on editorial forum
6. For a creative media person, SEEM is the right place
7. If you a PR person for sustainability – SEEM is your hometown!
8. Be an ambassador for the right organisation to win SEEM Awards
9. Be a member of delegation on international exchange programs
10. Work on international programs as a team member, leader
11. Work as Energy Auditor, lend your instruments, resource persons
12. Work for energy surveys, policy studies
13. Work on chapter and membership development
14. Work for student chapters – existing and create new ones
15. Create new state and international chapters
16. Collaborate with SEEM for professional programs, studies

SEEM is for...

SEEM’s aim is to provide a clean and green earth by integrating energy efficiency and conservation of natural resources into activities

- Foster energy efficiency in all sectors of the economy
- Immense & distinctive initiatives
- Students to establish & flourish their skills in the Energy sector
- Create opportunities for industry professionals, consultants, entrepreneurs, experts
- To create skill development opportunities to members
- Organizing training programs, workshops
- Organizing technical digest service
- For Certified Energy Managers
- For Auditors and energy professionals
- Organize energy related research
- Energy Equipment Manufacturers, Distributors, Marketing Agencies

Present Network of SEEM

- More than 2567 energy industry professionals
- A network with International / national energy agencies; state designated / nodal agencies and non-government organizations
- Building a network of student chapters

Click here to Join SEEM

Become a part of the SEEM tree which is growing to make the earth green....
JSW Steel to maintain shipments to Europe without passing on cost of India’s new export tax

NEW DELHI: India’s largest steel producer, JSW Steel Ltd, will continue to supply products to its buyers in Europe without passing on any increase in costs despite New Delhi’s decision to impose an export tax, a senior company official said on Monday.

India recently imposed an export tax of 15% on some steel products from zero, at a time the country’s steelmakers were looking to make up for tepid local demand by increasing market share in Europe, where the Ukraine conflict has hit supplies.

The government also scrapped import duty on coking coal, a key steelmaking raw material, and raised export tariffs on iron ores and concentrates to 50% from 30%. After New Delhi’s decision to slap the export tax, analysts had warned that the move would force steel companies to curtail overseas shipments.

But JSW Steel would still supply to its European buyers, Seshagiri Rao, joint managing director and the group financial head of JSW Steel, told Reuters in an interview.

“They (European buyers) were expecting India will accelerate (steel shipments),” Rao said. “The customers will not see me tomorrow if I stop it (exports).”

Despite the export tax, JSW Steel would not pass on any extra costs to its buyers, Rao said. "I have to take that loss," he said, adding India could consider waiving the steel export once inflation eases.

The Mumbai-based company is looking to gain from a drop in domestic iron ore prices and the scrapping of import duty on coking coal to negate the impact of the steel export tax.

In the fiscal year to March 2022, JSW Steel produced a record high 17.62 million tonnes of crude steel. The steelmaker exported an overall 4.57 million tonnes of steel, an increase of 8% year on year, and exports accounted for 28% of its total sales.

Indian steel mills exported 18 million tonnes of steel in 2021/22, with 4 million tonnes of shipments to Europe.


---

Coal India to import for first time in years as power shortages loom

The government has asked state-run Coal India to aggregate and import coal for blending purposes by all power generation companies.

The power ministry has sent letters informing states about the decision and has asked them to wait for price discovery by Coal India.

Discussions were also held on socialising the imported coal costs through bundling costs of domestic coal with imported coal, a senior government official said.

Recovering the costs later from distribution companies will be easier, he said adding there was a similar direction in 2012.

The coal will be imported on behalf of power plants, may of which earlier complained that tendering and coal imports was not their core expertise.

ET had on May 22 reported that state governments and power project developers have asked the government for coal imports through an aggregating agency, preferably Coal India, for ease in procurement and cost pass through, sources said.
The decision comes at a time when most states are finding it difficult to float tenders, find suppliers and negotiate for coal imports. Uttar Pradesh has advised all its power plants against coal imports citing higher tariffs.

Coal stocks at power stations registered a marginal increase to 22 million tonnes, adequate for eight days at the current rate of consumption. Power stations had 20 million tonnes as on May 20.

The Centre is relying on coal imports to build coal stocks amid high demand projections. It this week invoked an emergency clause to allow compensation to 32 Gw domestic coal-based power projects for higher costs due to blending of imported coal till March next year. On April 28, the power ministry had asked all power plants to import 10 per cent of the coal they need to build stocks amid projections of record power demand.

India's top e-recycler Attero to spend $1 bln to expand as EVs take off

NEW DELHI: India's largest electronics recycling firm Attero Recycling will spend $1 billion in the next five years and add plants in Poland, Ohio and Indonesia starting this year, its CEO told Reuters, aiming to tap into a global boom for electric vehicles.

The World Bank-backed company, whose clients include Samsung Electronics and Hyundai Motor, also plans to prepare for an initial public offering in about a year and list in India or the United States in the next three years, Nitin Gupta said in an interview.

Attero's goal is to raise its annual lithium-ion battery waste processing capacity to 300,000 tonnes by 2027 from 11,000 tonnes now, he said, meeting 15 per cent of the world's demand for lithium, cobalt and graphite, from less than 0.1 per cent today.

He said Attero's Poland factory will be operational by the fourth quarter of 2022, in Ohio in the third quarter of 2023 and in Indonesia by the first quarter of 2024. The investments will be mainly from internal accruals, Gupta added.

“Lithium-ion batteries are becoming ubiquitous in nature,” Gupta, who founded Attero in 2008 with his brother and made it profitable in the last two years, said in an interview.

By recycling such batteries, Gupta said they were not only solving a waste problem but also becoming “significant players in the material supply chain by selling green metals without mining the earth”.

He said half the cost of an electric vehicle is the lithium-ion batteries, at least 35 per cent of whose cost then comes from cobalt, nickel, lithium, graphite and manganese.

Attero's extraction rate is about 98 per cent and it uses chemical methods instead of the more expensive smelting process that melts certain metals beyond recovery, Gupta said. Some of the materials it extracts go to Tesla Inc via Swiss mining group Glencore Plc.

Earlier in April 2012, a presidential directive to Coal India as per clause 37 of Memorandum of Association was issued to force it to sign long term fuel agreements with 78,000-Mw power companies to be commissioned before March 2015. The government had later allowed Coal India to import coal in order to meet the directive.

However, later the company’s independent directors sent a dissent note to the coal ministry saying Coal India may face losses if it implements coal pool pricing mechanism.

### INNOVATION: IIT-Madras team develops zinc batteries for electric vehicles

Chennai: Indian Institute of Technology, Madras, researchers are developing mechanically-rechargeable zinc-air batteries as an alternative to lithium-ion batteries used in electric vehicles.

The researchers, who have filed for patent for the battery technology, are collaborating with major industries to develop zinc-air batteries. They are economical compared to existing lithium-ion batteries and have a longer shelf life. Zinc-air batteries can be used in two-wheeler and three-wheeler EVs.

Although lithium-ion batteries are widely used, there are several limitations such as availability. Further, the diverse requirements of the Indian market cannot be fully met by lithium-ion batteries alone. Dr Aravind Kumar Chandiran, assistant professor, department of chemical engineering, said his research group focussed on zinc-air batteries as zinc is a widely available resource.

He explained that the technology is based on ‘battery swapping’, in which vehicle users can swap used ‘zinc cassettes’ of the battery with fully-charged ‘zinc cassettes’ at recharge stations.

Highlighting the key focus of their research, Dr Chandiran said, “Through this research, we are also identifying shortcomings in existing technology and finding ways to address them. The research team has currently developed zinc-air cells and is working towards developing zinc-air packs for EVs.”

The researchers are mooting separate ‘zinc recharge stations’, similar to petrol stations. The EV users utilising zinc-air batteries can reach out to these bunks whenever the batteries are drained. Elaborating on this aspect, Dr Chandiran said, “This is a major advantage of the zinc-air batteries as currently the only option available with the lithium-ion batteries is that the entire used battery pack has to be removed and swapped with a complete lithium-ion battery pack. This results in more investment.”


### Gail India to invest Rs 6,000 crore on renewables in next three years

State-owned Gail India will invest Rs 6,000 crore in the next three years in renewables, a top official said on Monday. The investment can go up by an additional Rs 20,000 crore by 2030, GAIL India chairman and managing director Manoj Jain told reporters in Mumbai.

GAIL India Director (Finance) Rakesh Kumar Jain said the company, which reported a 112 per cent jump in FY22 post-tax net profit at Rs 10,364 crore, has outlined an overall capital expenditure plan of up to Rs 40,000 crore in the next five years, which will cover a wide array of areas.

This will entail borrowings of up to Rs 20,000 crore, while the rest will come from internal accruals, the director added.

Its chairman said it is looking at almost 3 GW of renewables capacity by 2030, which will include 1 GW to start within the next three years.

The company is undertaking a liquid hydrogen capacity addition right now and the progress done on the prototype will influence its overall investments, Manoj Jain said, adding that a call on the same will be taken after 18 months.

Giving details on the same, Jain said it is in the process of procuring a 10 MW facility for liquid hydrogen, which is slated to be the largest in the country and is on the lookout for the electrolyser.

In FY22, it invested Rs 7,700 crore across all activities, which included pipelines for the core transmission business and petrochemicals, he added.

Meanwhile, the chairman said GAIL is awaiting a nod from the government on its asset monetisation proposals and added that it expects to monetise up to Rs 4,000 crore of assets in FY23.

On the exploration and production side, its activities will be limited to an asset being pursued in neighbouring Myanmar where it is investing money, Jain added.

SEEM Individual Memberships

Fee & Benefits

<table>
<thead>
<tr>
<th>S. No</th>
<th>Membership Category</th>
<th>Membership Fee</th>
<th>Annual Fee</th>
<th>Total Amount (Including tax)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Annual Membership / Annual Associate Membership</td>
<td>Rs. 2500</td>
<td>Rs. 500</td>
<td>Rs. 3540</td>
</tr>
<tr>
<td>2.</td>
<td>Annual Fellowship</td>
<td>Rs. 3000</td>
<td>Rs. 1000</td>
<td>Rs. 4720</td>
</tr>
<tr>
<td>3.</td>
<td>Life Membership</td>
<td>Rs. 6750</td>
<td>Not Applicable</td>
<td>Rs. 7995</td>
</tr>
<tr>
<td>4.</td>
<td>Life Fellowship</td>
<td>Rs. 12,000</td>
<td>Not Applicable</td>
<td>Rs. 14160</td>
</tr>
<tr>
<td>5.</td>
<td>Student Membership</td>
<td>Rs. 500</td>
<td>Rs. 500</td>
<td>Rs. 1180</td>
</tr>
</tbody>
</table>

Who can join SEEM?
- BEE Certified Energy Auditor
- BEE Certified Energy Manager
- Engineers working in energy related field holding a position of high responsibility with minimum 20 years experience
- Any Degree/ Diploma holders working in the field of Energy Efficiency/ Energy Conservation/
- Renewable Energy for the last two years
- Engineering students and students who would like to do research or undertake projects in the energy sector

Benefits to Members
- Opportunities to get your case studies published in SEEM print magazine “Energy Manager”
- Opportunities to publicize your efficiency initiatives in the monthly e-newsletter SEEM News
- Speaking / Presentation opportunities at various forums
- Opportunities to constructively participate in various discussions in the energy sector
- Opportunities to become a SEEM Trainer / Expert Faculty
- Opportunities to become a SEEM Mentor for Student Chapters
- Leadership and participation opportunities in various SEEM programmes
- Networking opportunities with many energy professionals from across the country
- Knowledge enhancement platform in the energy sector
- Right to cast vote at the SEEM Annual General body Meeting
- All communications, which includes: notices about meetings, invitation to events, announcements about the SEEM activities.
- Priority to participate in funded projects carried out by SEEM in the energy sector, on the terms and conditions appropriate to such projects
- Support for addressing relevant grievances

Discounts available to SEEM Members:
- Upto 50% discount on registration fee for seminars / workshops and other training events conducted by SEEM
- Opportunity to attend workshops and trainings by third parties at special rates offered to SEEM members
- A discount of 50% on priced publications brought out by SEEM
- Upto 50% discount on applications to SEEM/ National Energy Management Awards every year
- Discounts on any other programs/products or services offered by SEEM

Your membership kit includes:
- SEEM membership ID card
- SEEM Membership Certificate
- Subscription to SEEM print magazine Energy Manager
- Subscription to monthly e-newsletter SEEM News

Membership Categories & Eligibility

<table>
<thead>
<tr>
<th>Category</th>
<th>Eligibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member</td>
<td>Energy Manager / Energy Auditor certified by Bureau of Energy Efficiency</td>
</tr>
<tr>
<td>Associate Member</td>
<td>Any diploma / degree holder who is working in the field of energy efficiency/conservation/ renewables for the last two years.</td>
</tr>
<tr>
<td>Fellow</td>
<td>Engineers working in energy related field holding a ‘position of high responsibility’ with minimum 20 years experience and who have been certified as Energy Managers or Energy Auditors by the Bureau of Energy Efficiency, Ministry of Power.</td>
</tr>
<tr>
<td>Honorary Fellow</td>
<td>Persons who are qualified to be Fellows invited to join SEEM as Honorary Fellows, subject to the approval of the Executive Council.</td>
</tr>
<tr>
<td>Student Member</td>
<td>Engineering students or students who would like to do research or undertake projects/studies in energy related fields.</td>
</tr>
</tbody>
</table>
Forthcoming issue:

"Industry 4.0 to Net Zero"

<table>
<thead>
<tr>
<th>Term</th>
<th>Issues</th>
<th>Individuals</th>
<th>Institutions</th>
<th>Special Offer Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>4</td>
<td>1000</td>
<td>45</td>
<td>1500</td>
</tr>
<tr>
<td>3 years</td>
<td>12</td>
<td>2500</td>
<td>115</td>
<td>4000</td>
</tr>
</tbody>
</table>

Subscription Price
energy™ manager.  
Your medium to succeed.

energy™ manager is the only magazine in India that exclusively focuses on energy efficiency:
- The right blend of high quality articles that appeal to the industry and academia, presented in a layout of exceptional standards.
- Cover feature in each issue focuses on one most appropriate contemporary topic on energy efficiency.
- Guest editorial by renowned domain experts.
- Articles contributed by leading personalities in the energy sector.
- Published since January 2008 and circulated in print to more than 5000 readers.
- Brought out by Energy Press, the publishing wing of the Society of Energy Engineers and Managers (SEEM), India.

Readership Profile:
- Accredited ESCOs & Energy Consultants
- Certified Energy Professionals
- Consultants, Planners and Architects
- Distributors and Marketing Agencies
- EE & RE Equipment Manufacturers
- Energy Intensive Industries (OCs)
- Engineering & Technical Institutions
- International Organizations
- Political & Executive decision makers
- Policy Bodies, NGOs

Editorial Profile:
- Energy management
- Energy audit
- Energy financing
- Research and Innovation
- Best practices
- Case Studies
- Renewable energy
- Sustainable Living
- Global focus
- Focus India
- Events, and others

DATA:
- Title: energy™ manager
- Language: English
- Pages: 64, 213 GSM
- Frequency: Quarterly
- Print: Four Colour, 8” X 11”
- Circulation: 5000
- Market: International