GREEN JOBS NEWSLETTER

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Release of Skill Gap Assessment Report on Green Hydrogen

by Hon'ble Dharmendra Pradhan, Minister for Education and Skill Development and Entrepreneurship on 14th March 2024 at Kaushal Bhawan, New Delhi

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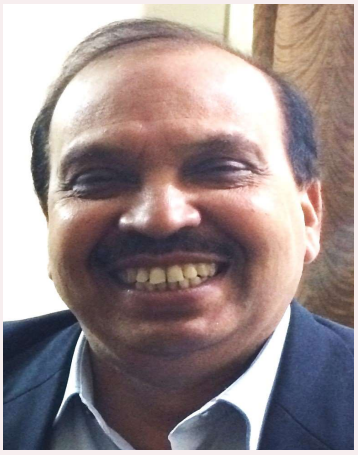
MESSAGE

From the CEO's Desk



Skill Council for Green Jobs has entered in to a new era of leadership. Building on the strengths provided to SCGJ by Mr. K. Krishan, the founder Chairman and Mr Sameer Gupta , CMD Jakson Group, Mr. Sunil Jain as Chairman SCGJ, is now poised to lead the skill Council with his vision and commitment towards sustainable development and strengthening of Green Skills in the country. Mr Jain is known as a passionate advocate for sustainability, Climate change and has been actively promoting stable and meaningful policies to enhance the cause of green energy.

If I have to recapture 9 years of SCGJ journey, which started in June 2015 with my interaction with the then Secretary, MSDE, who invited me to his office to give responsibility of SCGJ as CEO in less than a week after my superannuation from the position of Adviser, Ministry of New and Renewable Energy and Director General, National Institute of Solar Energy. He did realise the role of scientific tamper in skilling, more so for the futuristic area of Green Energy and aligning with the thoughts of Hon'ble Prime Minister to systematically take up the agenda of sustainable development. My scientific background, the administrative experience with wide exposer to international diplomacy in MNRE gave me opportunity to shape another new organisation.

SCGJ has now emerged as a complete organisation ready to take up challenges of providing trained and skilled workforce in the entire Green Energy space, not only for India but also for the outside world. Apart from skill trainings to over 5.74 lakh candidates through its training partners, SCGJ has been focusing on the quality of training and improving training material, by taking help from its Industry partners and also from the bilateral and multilateral organizations. Upgrading knowledge and skills of its certified trainers by international experts has been a unique activity of SCGJ in past few years. It has joined hands with GIZ, UNDP, USAID, FCDO, the World Bank, WHO to strengthen its quality of training and different skilling assignments. SCGJ has expanded its outreach by participating in international activities. SCGJ got an opportunity to conduct online trainings on various topics of Solar Energy, for 82 ISA member countries in English, French and Spanish. SCGJ had delivered a 4 days virtual training on Green Hydrogen to 33 participants from 6 South Asian countries including India, Bangladesh, Bhutan, Sri Lanka, Maldives.

SCGJ is proud to be the "Awarding Body" of the National Council for Vocational Education and Training (NCVET) in the Green Energy and environment sector. SCGJ has an online training aggregation platform so that its training partners can do market mode trainings in an online mode. SCGJ has now its own job portal. The SCGJ Job Portal is a technology initiative by Skill Council for Green Jobs to seamlessly connect employers with skilled candidates in the Green Energy Sector. SCGJ has now has its inhouse 'Green India Portal" to monitor its all activities including training and certification apart from using digilocker for storing data of certified candidates

MESSAGE

From the CEO's Desk

During the year 2023-24, SCGJ focused its efforts on content development, skilling and training in the Green Hydrogen sector. As part of this effort, 10 new qualifications have been developed and approved by NCVET. As part of "Azadi Ka Amrit Mahotsav" SCGJ organized a series of 100 webinars covering various topics in Renewable Energy, Sustainable Development, Green Hydrogen, waste management, waste to fuel etc. SCGJ is actively participating in the World Bank WePower program to support women candidate trainings in the RE sector.

SCGJ undertook 3 skill Gap studies on Landscape of Green Jobs in India , Green House Gas Accounting Guidelines and Skill Gap Assessment across Green Hydrogen Sector in India. The Skill Gap study on Green Hydrogen was released by Hon'ble Shri Dharmendra Pradha, Minister for Education and Skill Development and Entrepreneurship on 14th March, 2024 in New Delhi.

The Eighteenth Meeting of the Governing Council of SCGJ was held on 12th February, 2024, under the Chairmanship of Mr. Sameer Gupta, CMD, Jakson Group Industries. It was his vision and farsightedness that SCGJ could establish itself as a technically sound organisation with its presence in the entire country. It was his idea that SCGJ should have its own International Academy. Mr. Gupta has completed its tenure of Chairman SCGJ and he has handed over SCGJ batten to Mr. Sunil Jain. Mr. Jain is the Founder Partner of Sundev Renewables LLP. He has over three decades of experience across industries including renewable energy, automotive, infrastructure, manufacturing and cleantech. He has a passion in creating new businesses and taking the start-ups to scale. The 18th GC also witnessed induction of 8 new GC members from Industry.

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Mr. Sunil Jain takes over as Chairman of the Skill Council for Green Jobs. Mr Jain is known as a passionate advocate for sustainability, Climate change and has been actively promoting stable and meaningful policies to enhance the cause of green energy.

I on behalf of the entire SCGJ team and its partners, thank Mr. Sameer Gupta for his valuable contribution in making SCGJ , what it is today and hearty welcome Mr. Sunil Jain as Chairman of SCGJ. I also welcome the new Governing Council Members, Mr. Raguram Arjunan, President, Sustainability & Energy Practitioners Association; Mr. Japen Gor, Project Director, Heemsol Energy System Private Limited; Dr. Omkar Jani, President & CTO, Reliance New Solar Energy Limited; Mr. Bhavik Trivedi, Managing Director, TUV Rheinland India; Mr. Ramesh Shivanna, Managing Director, Pride Group , Founding President, KRESMA; Mr. Rajan Varshney, DGM(New-Initiatives), NTPC , New Delhi; Mr. Sanjay Gupta, Chief Business Officer, Jakson Group of Industries; Mr. Jitendra Routray, Head CSR Renew Power.

I assure that SCGJ will continue to be more innovative and leave no stones unturned to scale new heights with developing skills and trained manpower for green businesses and entrepreneurship. These endeavours would be continued under the support and guidance of GC members and the New Chair.

Dr. Praveen Saxena
Chief Executive Officer
Skill Council for Green Jobs

About the New Chairman of SCGJ

Mr. Sunil Jain is the Founder Partner of Sundev Renewables LLP. He has over three decades of experience across industries including renewable energy, automotive, infrastructure, manufacturing and cleantech. He specializes in creating new businesses and taking the start-ups to scale.

Prior to Sundev, Mr Jain was Operating Partner (Energy Transition) at Essar capital and before that as CEO & ED at Hero Future Energies, which is one of India's leading Renewable energy companies with a portfolio of almost 3 GW across wind and solar assets both operational and under development. Under his leadership, the company grew into one of the largest IPPs in India. Prior to Hero, he played an instrumental role in establishing Green Infra Limited and making it achieve a prominent position in the industry amongst renewable IPPs in India.

Mr Sunil Jain is a passionate advocate for sustainability, Climate change and has been actively promoting stable and meaningful policies to enhance the cause of green energy. He has been associated with the Renewable Energy Industry for the last 14+ years and has been an advocate for the sector at various levels and with different government instrumentalities.

Apart from the **Chairman of the Board of Skill Council for Green Jobs**, he is the Chairman, Energy Council, NRC at Indo-American Chamber of Commerce(IACC), Chairman, MSME centre for excellence and Skilling at IACC and Chairman at Indian Renewable Energy Alliance, a pan India association representing all the leading IPPs in the country. Previously, he has also served as founder President, Wind Independent Power Producers Association (WIPPA).

For his achievements and contributions towards renewable energy and sustainability, he was awarded the Excellence Award in the year 2012 by "Energy and Environment Foundation". He was mentioned as top 50 Solar personalities in Asia in 2015-16. His academic research paper on "Sustainability and Renewable Consumption Obligation" has been presented at forums of international repute. He has authored numerous articles about the sector and has been featured in leading publications and speaker at many forums in both domestic and international circuits.

Mr. Sunil Jain is an alumnus from the prestigious Birla Institute of Technology, Mesra, Ranchi, where he attained his engineering degree and holds MBA from Faculty of Management Studies, Delhi University.

MESSAGE

From the Chairman

I extend my best complements to all the readers of the SCGJ Newsletter.

It is an honour to assume charge of the Chairman of Skill Council for Green Jobs since last month, this year. The position comes with a huge responsibility, considering that two stalwarts of Industry over the period have guided this organization. Mr. Krishnan, whom we all know has done humongous work in shaping the contours of council and then followed by Mr. Sameer Gupta, who has given his valuable time, suggestions and provided impetus to skilling over last three years. It is difficult to fill this gap, but I would definitely try and at least match up to the expectations of the council. I wholeheartedly thank Mr. Sameer Gupta for his guidance and his support to the council. I hope Mr. Krishnan and Mr. Sameer Gupta will continue to guide us in years to come.

India seems to be well positioned to become the third largest economy by 2030 after US and China. The Prime ministers vision of a Atmanirbhar Bharat and a Viksit Bharat are two most ambitious goals which need a focussed approach across industry and sectors. I think make in India and make for the world strategy seems to be reaping rich dividends for our country. In every segment, without exception, be it energy or infra or auto or pharma or defence, we are making significant progress. I believe India can achieve the same level of progress in new energy sectors going forward like solar energy, Green hydrogen, EV, etc. The announcements by the government in the past few months has left no doubt that their single point agenda is sustainable growth of the economy of the country.

The Government of India has set an ambitious target to become net zero by 2070. Over last couple of years, sector has accelerated investment in green energy and that is going to help us achieve the objectives. Technology and availability of skilled manpower are going to be critical success factors for achieving this goal. There is strong policy support from the government and this provides optimism that round the clock emission free energy can become reality much sooner than what we all expected. At the same time ,solar module manufacturing capacity in the country can reach 80 GW to 100 GW over next few years. There is going to a huge gap in availability of skilled manpower to service this demand in the coming years. Skill council for Green Jobs has a task cut out to fulfil this huge gap.

We have resolved as a country to make India a developed nation by 2047. We are making progress with every passing day to provide access to education, access to better health and skills so as to cover all sections of population including women and economically and socially disadvantaged segment. India has a clear demographic advantage and this is an opportunity to position India as a skilled capital of the world. I think capacity building is going to be the key. In the recent budget Hon'ble Prime Minister announced the Pradhan Mantri's Surya Ode Yojana with target of installing solar rooftop on one crore houses. This is again an ambitious target and to achieve this we need the right skill sets. This opportunity can create a million jobs and many entrepreneurs.

The transition to green and economy won't be possible if there is not enough focus and investment on skilling. Even though SCGJ have empowered around 5.75 lakh candidates in the past eight years and developed critical qualifications in emerging areas, we still have a long way to go. India produces over 1.5 million engineering graduates on a yearly basis and not more than 5% get high quality jobs. I have often heard from industry colleagues regarding challenges pertaining to skill sets and it's evident that there is a huge opportunity to work in this area. We face significant challenge of non-availability of skilled manpower not just for manufacturing sector but also in areas of project execution and O&M. Addressing this gap becomes a critical aspect of our strategy so that we can meet the demand of skilled manpower. For Green energy sector, I think both industry and government, will need to invest in skilling to achieve long term objectives of sustainability. I see, the role of Skill Council for Green Jobs to be very critical in the movement towards sustainability.

Let us together "Skill for Right fit"

Sunil Jain
Chairman
Skill Council for Green Jobs

Eighteenth Meeting of
The Governing Council

The 18th Governing Council meeting of SCGJ was held under the chairmanship of Mr. Sameer Gupta Chairman and Managing Director, Jakson Group

The **Eighteenth Meeting of the Governing Council** of Skill Council for Green Jobs was held at 11.30 am on 12th February, 2024, under the Chairmanship of Mr. Sameer Gupta, Chairman and Managing Director, Jakson Group, through video conferencing.

Hon'ble Chairman opened the meeting with his remarks and stated that India's progress in last ten years has been quite remarkable. Our country have been consistently growing at the highest rate globally and this will be the fourth year in succession. India seems to be well positioned to become the third largest economy by 2030 after US and China. The make in India and make for the world strategy seems to be reaping rich dividends for our country. In every segment, without exception, be it energy or infra or auto or pharma or defence, we are making significant progress. India can achieve the same level of progress in new energy sectors going forward like hydrogen, electrolysers, etc. The announcements by the government in the past few months has left no doubt that their single point agenda is sustainable growth of the economy of the country.

The Government of India has set an ambitious target to become net zero by 2070. Over last couple of years, sector has accelerated investment in green energy and that is going to help us achieve the objectives. Technology and availability of skilled manpower are going to be critical success factors for achieving this goal. There is strong policy support from the government and this provides optimism that round the clock emission free energy can become reality much sooner than what we all expected. It appears that solar module manufacturing capacity in the country can likely reach 80 GW to 100 GW over next few years. Imagine the manpower requirement which is going to be there to service this demand in the coming years.

The Chairman emphasised that transition to green and economy won't be possible if there is not enough focus and investment on skilling. Even though we have empowered around 5.75 lakh candidates in the past eight years and developed critical qualifications in emerging areas, we still have a long way to go. India produces over 1.5 million engineering graduates on a yearly basis and not more than 5% get high quality jobs. I have often heard from industry colleagues regarding challenges pertaining to skill sets and it's evident that there is a huge opportunity to work in this area. We face significant challenge of non-availability of skilled manpower not just for manufacturing sector but also in areas of project execution and O&M. Addressing this gap becomes a critical aspect of our strategy so that we can meet the demand of skilled manpower. For Green energy sector, I think both industry and government, will need to invest in skilling to achieve long term objectives of sustainability. Skill Council of Green Jobs has been playing its role for the past eight years.

Dr. Saxena CEO, SCGJ gave an over view of the activities during the year 2023-24. He mentioned that apart from skill trainings to over 5.74 lakh candidates through its training partners, SCGJ has been focusing on the quality of training and improving training material, by taking help from its Industry partners and also from the bilateral and multilateral organizations. During the year 2023-24, SCGJ focused its efforts on content development, skilling and training in the Green Hydrogen sector. As part of this effort, 8 new qualifications have been developed and approved by NCVET. 4 participant handbooks and 3 facilitator guides have been developed and a book on Fundamentals of Green Hydrogen has been published. Interaction with industry has been a prime focus of this effort. SCGJ onboarded 14 Master Trainers and 27 Trainers on the subject of Green Hydrogen. 9 batches of training with 312 candidates were conducted. SCGJ organized 7 webinars on various aspects of green hydrogen value chain. Earlier, SCGJ had delivered a 4 days virtual training on Green Hydrogen to 33 participants from 6 South Asian countries including India, Bangladesh, Bhutan, Sri Lanka, Maldives.

As part of "Azadi Ka Amrit Mahotsav" SCGJ organized a series of 100 webinars covering various topics in Renewable Energy, Sustainable Development, Green Hydrogen, waste management, waste to fuel etc. SCGJ is preparing for the WorldSkills 2024 competition for Water technology and Renewable Energy trades. SCGJ had an strategic alliance with German Industry to cooperate mutually by promoting the development of Skills and Job opportunities in the field of Renewable Energy through the collaboration in each other's country.

Eighteenth Meeting of

The Governing Council

The GC was informed that in the beginning of the year, SCGJ had 53 approved qualifications (22 qualifications in Solar domain, 6 in Wind, 12 qualifications in Bio Energy, 6 in Waste Management, 4 in Sustainable Practices and 1 in Small Hydro). These qualifications were reviewed and revised qualifications have been submitted for approval of NCVET. During 2023-24, 21 new qualifications, 2 Micro-credentials and 1 stand alone NOS have been developed and approved by NCVET relating to Green Hydrogen, Solar Energy, Bio-Energy and allied.

It was informed that the GC in its 17th Meeting held on 29th August, 2023 approved setting up of i-age. The work on this activity has been initiated and necessary preparation is under way. SCGJ has identified three technical people from Skill Council's staff to support the academy. SCGJ has identified a co working space at ETHEREA, Alphathum, Tower B, 18th Floor, Sector 90, Noida to start the work of i-age. To start SCGJ will start the work of content development of its approved qualifications and also set up a lab for training the World skill competition candidates.

One of the most important activities undertaken during this period was to broaden the industry base of SCGJ and develop industry associates. Over 552 industry, mainly MSME were contacted and informed about the activities of SCGJ. Industries added this year to our Membership are 120 in number. SCGJ has so far signed MoUs / LoAs with 84 industry / organizations with a view to cooperate in its activities and also help in achieving placement of SCGJ certified candidates. During the year 12 more MOUs were signed.

CEO SCGJ informed that National Apprenticeship Promotion Scheme (NAPS) is a scheme of GoI to provide financial support to establishments undertaking the apprenticeship training. Apprenticeship training is a course of training in an industry or establishment, under a contract of apprenticeship which consists of :- basic training component and on-the-job-training (OJT)/practical training at workplace. The program offers very good opportunities for the industry members to onboard apprentices. During the year 2023-24, SCGJ has facilitated NAPS contracts of 3138 candidates from 55 industries in 9 job roles. The ratio of female candidates vs male candidates is 28% of the total number.

Mr. Sameer Gupta, Chairman mentioned that we can take some consultancy projects also with industry because industry is looking for that kind of guidance and mentoring that might help us increase the connect and revenue both.

Regarding bio-CNG he mentioned that there is a huge potential and many industries are talking about making significant investments in this area. Again, that's a niche area. If Skill Council for Green Job can help the industry get into this space, I think there is an opportunity for us to work.

Mr. Sunil Jain mentioned that It's an excellent journey so far by Skill Council for Green Job. He further mentioned that he is just wondering whether SCGJ is one of the largest skilling organizations for green jobs in the World.

Prof. Arun Kumar, HRED, IIT Roorkee mentioned that faecal management is an important area and it touches the pupil. Faecal sludge management is an area which is actually coming up in different corporations and in small scale, small sized towns with population of about 20,000 or so. This is a really complete neglect area for which our skill council has done some work. This should be further enhanced.

The Annual Accounts of SCGJ for the year 2023-24 and Budget for 2024-25 were presented to the GC and were approved.

The Governing Council, unanimously elected Mr. Sunil Jain as the Chairman of Skill Council for Green Jobs for a period of two years. The Governing Council concurred induction of following 8 new GC members :

Mr. Raguram Arjunan, President, Sustainability & Energy Practitioners Association ; Mr. Japen Gor, Project Director , Heemsol Energy System Private Limited Dr. Omkar Jani, President & CTO, Reliance New Solar Energy Limited, Mr. Bhavik Trivedi, Managing Director, TUV Rheinland India ; Mr. Ramesh Shivanna, Managing Director, Pride Group , Founding President, (KRESMA) Mr. Rajan Varshney, DGM(New-Initiatives), NTPC , New Delhi ; Mr. Sanjay Gupta, Chief Business Officer, Jakson Group of Industries ; Mr. Jitendra Routray, Head CSR Renew Power,

The GC was informed that Mr. Arpit Sharma, will complete 2 years as COO in SCGJ on 9th June, 2024. It was proposed that he will be appointed as CEO of SCGJ by the Chairman, SCGJ w.e.f forenoon of 10th June, 2024. Dr. Saxena will superannuate from the position of CEO SCGJ in the afternoon of 9th June, 2024. The Proposal was unanimously approved by the GC.

All the GC members thanked Mr. Sameer Gupta for his valuable contribution as Chairman and welcomed Mr. Sunil Jain.

Members of The Governing Council of SCGJ – 2024-25

#	Name of the GC Member	Organization's Name
1	**Mr Sunil Jain (Chairman)**	**Sundev Renewables LLP**
2	JS MSDE / Nominee	Ministry of Skill Development & Entrepreneurship
3	Dr. A.K.Tripathi , Advisor	Ministry of New & Renewable Energy
4	Economic Advisor / Nominee	Ministry of Power
5	MD NSKFDC / Nominee	Ministry of Social Justice and Empowerment
6	Mr K Krishan	CVC Biorefineries Private Limited
7	Mr. Rishikesh Patankar	National Skill Development Council (NSDC)
8	Prof Arun Kumar	AHEC, IIT Roorkee
9	Ms. Jyoti Mukul	Confederation of Indian Industry (CII)
10	Mr. O P Taneja (Treasurer)	Indian Wind Turbine Manufacturers Association (IWTMA)
11	Kanchan Zutshi/ Dr. Ranjeet Mehta	PHD Chamber of Commerce & Industry (PHDCCI)
12	Mr. Himal Tewari	Tata Power Ltd.
13	Mr Abhinav Mahajan	Integrated Batteries Pvt. Ltd.
14	Mr Vijay Saxena	Adani Solar Ltd
15	Mr Abhimanyu Sahu	Schneider Electric India Foundation
16	Mr Subrahmanyam Pulipaka	National Solar Energy Federation of India
17	Mr. Raguram Arjunan	Sustainability & Energy Practitioners Association (SEPA)
18	Mr. Japen Gor	Heemsol Energy System Private Limited
19	Mr. Bhavik Trivedi	TUV Rheinland India
20	Mr. Ramesh Shivanna,	Pride Group & Karnataka Renewable Energy System Manufacturer Association (KRESMA)
21	Mr. Rajan Varshney	National Thermal Power Corporation (NTPC
22	Mr. Sanjay Gupta	Jakson Group of Industries
23	Dr. Omkar Jani	Reliance New Solar Energy Limited
24	Mr. Jitendra Routray	Head CSR Renew Power

Expert's Vision

Community Driven Transition To Green Energy & Sustainability

Contribution from:

Mr. K. Krishan is the mentor and guide as founder Chairman of Skill Council for Green Jobs. He has deep commitment to Sustainable Development of Rural Communities as Founder Chairman of Grameena Abhivrudhi Mandali ; Grameena Vidyut Vikas (section 25 companies) and Founder President of Centre for Rural Energy and Water Access and Indian Bioenergy Association. Involved in Policy formulation related to RE Technologies. Among many other bodies, he is Member of National Councils of leading Industry Associations and Co- Chair of FICCI Climate Change Task Force and CII Bio Energy Committee.

During the World Bank event, on April 15th 2023, "Making it personal: How behavioural change can tackle Climate Change", the Hon Prime Minister of India said "**Climate change cannot be fought from conference tables alone. It has to be fought from the dinner tables in every home. When an idea moves from discussion tables to dinner tables, it becomes a mass movement. Making every family and every individual aware that their choices can help the planet can provide scale and speed. Mission LiFE is about democratising the battle against climate change**"

UNFCC, from the Rio Earth Summit to the Kyoto Protocol, the Paris Agreement and the Glasgow Climate Pact, has contributed to the development of Climate Science, elucidating on man-made GHG emissions, the build up of carbon stock, its correlation to global warming, the consequent impact on life on earth and getting all nations to make commitments for Climate Action. Yet many 2023 studies' predict that the developed economies, will have slippages from 10% to 20% in their 2030 targets for GHG mitigation. UNFCC and the COP's were based on the 3 Pillars of Policy, Technology and Finance, with Climate Action being driven by Governments, Industry and Investors/ Lenders, which is, evidently, inadequate. As flagged by the Hon Prime Minister of India, there is a need to have a 4th Pillar, "Community at large", whose behaviour affects GHG emissions and whose voluntary adoption of Climate Action is imperative for efficacy in implementation.

As witnessed with PC's, mobile/smart phones and digital technologies, it's consumer voluntary adoption, that generates volumes, resulting in, across the board, cost reductions, and ongoing technology development. Likewise, the transition to green energy and low-carbon pathways, will take place when the community adopts, on a large scale, low-carbon solutions, which are affordable and don't disrupt current economic activities. The community should adopt green practices and processes,as a matter of choice, which result in reduction of materials & energy consumption and related GHG emissions.

It cannot be policy-driven, as can be inferred by the EU, recently, shelving the National Restoration plan, part of the European Green Deal, due to farmers' protests. The presumption that short-term changes and sacrifices would be made by all the citizenry, to reap medium-term benefits from climate action, was evidently misplaced, as EU farmers, argued that the proposed environmental laws would drive them into bankruptcy. Imagine the Indian situation, with 138 million farmer households and 900 million rural households, many in subsistence.

As per the Times of India, of March 28th 2024, the share of the working age population is 63%, potential demographic dividend, with GDP growth at 8%, However, with Industry 4.0 reducing the need for semi-skilled workers, 29.2% of 'youth' are not in employment, education or training, and 62% of the women workforce, in 2022 (against 53.2% in 2019). The vulnerable are protected by various, DBT based, government welfare schemes, encompassing hunger, housing, healthcare & education, along with support for vocational training and entrepreneurship. However, beyond budgetary provisions, is a need for extensive engagement with the community, especially youth, to make them aware of the huge opportunities in green energy, sustainable farming and

Community Driven Transition To Green Energy & Sustainability

other green businesses, plus guiding them to acquire skills, required for securing jobs or pursuing entrepreneurship

As per statement of Mr. Amitabh Kant, G20 Sherpa, by 2030-31 India's GDP will be USD 7.1 trillion, with consumption rising to USD 5.2 trillion and the middle class will rise to 712 million. As per the estimates based on PRICE's ICE 360° pan India primary surveys, by 2046-47, the size of the middle class will rise to 1 billion. Such a significant rise in the "consuming class" will generate a huge incremental demand for green energy and nutritious food.

Green Energy Transition has been a focus area and India has made significant progress in the Power, Transport and Industry sectors, but much more needs to be done to scale up Distributed Energy. India's NDC under the Paris Agreement is 500 GW of non-fossil power, out of which Solar share is 300 GW. From the perspective of affordability and reliability, especially in rural areas, **Distributed Solar** should be the preferred option and there has been traction in recent years, 3.5 GW additions in 2023 (against 2.8 GW in 2022) but pales before China's distributed solar capacity addition of 96 GW in 2023 (against 48 GW in 2022). The government of India has enabling schemes, viz PM Suryodya Yojna (Solar Rooftops for homes); PM- KUSUM scheme (Solar pumps for farms), also for (micro) Solar Food Processing units. However, implementation in scale, will require significant Skilling, in multiple job roles, as well as for developing entrepreneurs, who will function as "value-added Resellers" for Solar systems, to overcome 'entry barriers' in rural markets.

Sustainable Agriculture & low carbon Food processing/supply chains are critical to controlling GHGs emissions linked to India's agriculture sector, which will witness significant growth as India progresses from middle income to developed economy status, generating demand for higher nutrition-food. As per "ourworldindata.com", India's average per capita vegetables intake (grams per day) is 246, as against 1,053 for China ***and***, as per FAO report, India' per capita meat intake (kg per year) is 3.8 as against 60.6 for China; both will register high demand growth, exponential in the case of vegetables. India is the world's largest milk producer @ 231 million tons/ year and 3rd largest egg producer @ 138 billion/ year, with continued growth anticipated. Fish and marine food consumers in India have grown to 970 million. These figures illustrate the magnitude of Indian agriculture and food sectors, as well as high growth for many decades, with a resultant spike in GHG emissions, under the BAU scenario.

Taking cognizance of the above, SCGJ and its Bangalore Centre of Excellence has developed a '**Community driven transition to Green Energy and Sustainability' program**, which is driven by demand-supply dynamics and aims to be self-sustaining, through triggering a virtuous growth cycle. While the program mission is to encompass all green businesses, the initial focus is on 'Distributed Renewable Energy' and "Sustainable, value-added, Farming', so as to have an immediate impact on current economic activity. The program has two main streams, as outlined below.

EDUCATING & ENLIGHTENING COMMUNITY on the need to adopt sustainable and green practices. Through conveying the perils that society faces from environmental degradation & climate change; the need for sustainable utilization of natural resources and motivating adoption of LiFE (Lifestyle for Environment) and Green Solutions. The program components are (1) **Education (High School)**: 'elective' subject covering topics of Environment & Climate Change; Renewable Energy & Biofuels; Sustainable Agriculture; Green Jobs & Green Businesses. Thereafter, students will have the option to enroll for SCGJ's Vocational and Technical Education courses, facilitating access to green job opportunities, supported by SCGJ's job portal. (2) **Awareness Creation** : through production of evocative, empathetic & topical videos, to embed green values & green practices as well as to portray green solutions & their benefits. Wide outreach, through social media platforms, to the community at large.

EQUIPPING & EMPOWERING COMMUNITY to pursue green jobs and green businesses, thereby contributing to Climate Action as well as SDG's achievements, while simultaneously creating 'non-farm' jobs and green business opportunities. The program components are (1) **Skilling for Green Jobs**: Foundation courses on (i) Off Grid Solar PV (ii) Grid interactive, mini, Solar Farms (iii) Bio-waste to Biofuels (iv) Poly-house & Net-house cultivation with RWH and drip irrigation (v) Renewable Energy based Cold storage cum Pack house & Food processing units. Thereafter, candidates can pursue SCGJ's Certification Courses for NSQC approved Job Roles ***or*** Green Entrepreneurship courses (2) **Skilling for Entrepreneurship**: to impart business management skills (i) Technical: covering system design, sales/ installation activities, O&M services (ii) Commercial: communication & negotiating, billing & receivables, taxation & accounting. (3) **Mentoring RE Developers and Progressive Farmers**: encompassing DPR/ Permits, Project Financing, Plants procurement & construction, Plants O&M, Marketing & Sales. To create 'success stories', which stimulate large scale replication (4) **Mentoring Value Added Resellers**: who will undertake in-person concept selling, proposals and sales, installation and O&M services, which is essential to overcome 'entry barriers' in nascent rural markets.

In conclusion, I give these words of Margret J.Wheatley, "**There is no power for change greater than a community discovering what it cares for**". ///

Release of

Skill Gap Assessment Report on Green Hydrogen

On 4th Jan 2023, the Union Cabinet had approved the National Green Hydrogen Mission that aims to make India the Global Hub for the production, usage, and export of Green Hydrogen and its derivatives. The Green Hydrogen Mission is expected to generate about 6 lakh jobs by 2030.

The USAID and Skill Council for Green Jobs had instituted a Skill Gap Study on the entire value chain of Green Hydrogen. The study conducted by ICF New Delhi.

The report dives into the realm of skilling for green hydrogen, navigating the complexities of fostering a proficient workforce in this rapidly evolving sector in the country. The report is a comprehensive guide in cultivating a pipeline for skilled workforce in India's green hydrogen industry. From identifying skill gaps to proposing tailored training programs, it offers practical recommendations to meet the evolving demands of this sector.

As our country embark on the journey towards a developed India that embraces a sustainable future, the role of skilling in green hydrogen and collaborate to empower individuals with the expertise to drive innovation and usher in a cleaner, greener tomorrow.

Hon'ble Minister *for Education and Skill Development and Entrepreneurship* Mr Dharmendra Pradhan, released the Skill Gap Assessment Report on Green Hydrogen on 14th March, 2024 in the Kaushal Bhawan, New Delhi.

Key Findings of

Skill Gap Assessment Report on Green Hydrogen

Industry Consultation on the Skill Gap Assessment in Green Hydrogen value chain

SCGJ with support from USAID through SAREP has organized an industry roundtable on 20th February, 2024 to discuss the evolving skills and jobs landscape across the Green hydrogen ecosystem in India. Key.

insights from a comprehensive skills gaps assessment study being carried out by ICF were also presented during the event. This roundtable discussion was chaired By Shri Sunil Jain, Founding Partner Sundev Renewables LLP and Chairman, SCGJ Representatives from leading companies including PSUs in Oil & Gas and power sector along with key private sector companies across the hydrogen value chain shared their inputs regarding skill and competencies requirement in this fast evolving sector. SCGJ has undertaken multiple skill interventions in Green Hydrogen and will continue to impart trainings across multiple job roles in alignment with industry requirements.///

IDENTIFYING SKILL GAPS

Developing skills for a hydrogen-based economy is a critical consideration that involves tapping into the current skill pool while creating additional job opportunities. Presently, hydrogen production mainly involves grey hydrogen generated by refineries, fertilizer, chlor-alkali, or gas manufacturers. These industries provide a chance to utilize existing industrial knowledge, occupations, and skills present in the labor market. Moreover, individuals with experience in hydrogen usage from these sectors could be enlisted and trained to operate and maintain equipment in hydrogen facilities, including compressors, storage, pipelines, and also adhere to safety protocols.

On the flip side, the demand for skilled engineers and technicians is crucial for the development and operation of green hydrogen systems. These skills can be sourced from sectors such as oil & gas, chemical, petrochemical, power, renewable energy, and manufacturing. However, there is currently a limited pool of skills available for green hydrogen production. Some skills related to green hydrogen can be identified through manufacturers and suppliers of green hydrogen electrolysers and gas. For instance, installation and commissioning experts from gas manufacturing sectors like Linde, INOX, Air Liquide, etc., can be leveraged.

Key takeaways –

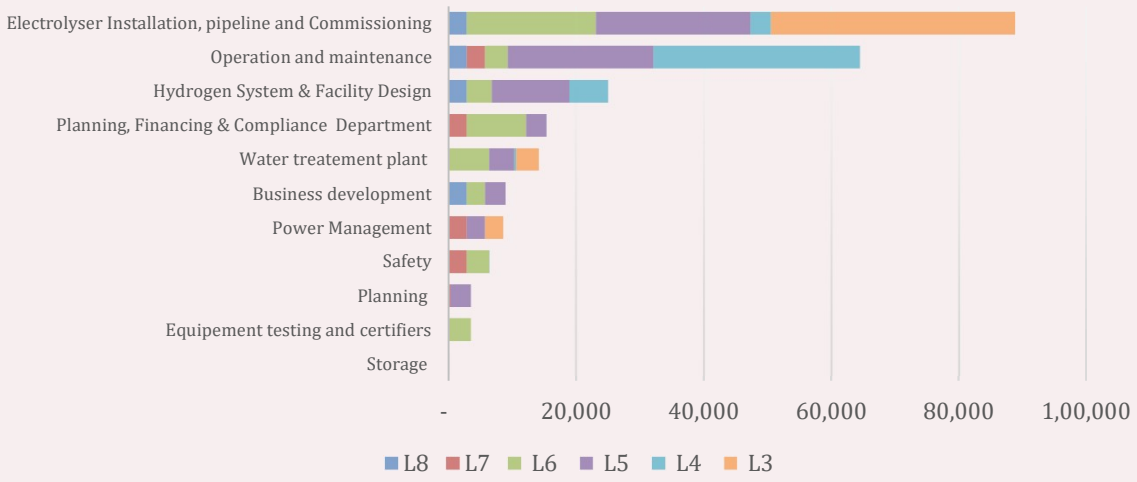
- In the hydrogen value chain, most jobs are estimated to be for hydrogen production plants.
- The overall number of jobs created across the verticals is estimated to be 2,95,133.
- Among these, the highest number of employment opportunities are anticipated for individuals at levels L6, L5, and L4.
- It is evident that plants with lower capacity require a higher number of jobs per megawatt (MW) in comparison to those with higher capacity.
- According to the analysis conducted, **a plant with capacity 10 MW, 100 MW, and 1000 MW plant would entail 8.8 jobs, 1.79 jobs, and 0.30 jobs per MW respectively.**
- Considering the scenario outlined, which anticipates a mix of 10 MW, 100 MW, and 1000 MW plants in the proportion the average estimated employment stands at **4.45 jobs per MW** (jobs for green hydrogen production only).

Key Findings of

Skill Gap Assessment Report on Green Hydrogen

ESTIMATED JOB ROLE-WISE WORKFORCE REQUIREMENT BY 2030

JOBS FOR HYDROGEN PRODUCTION BY 2030

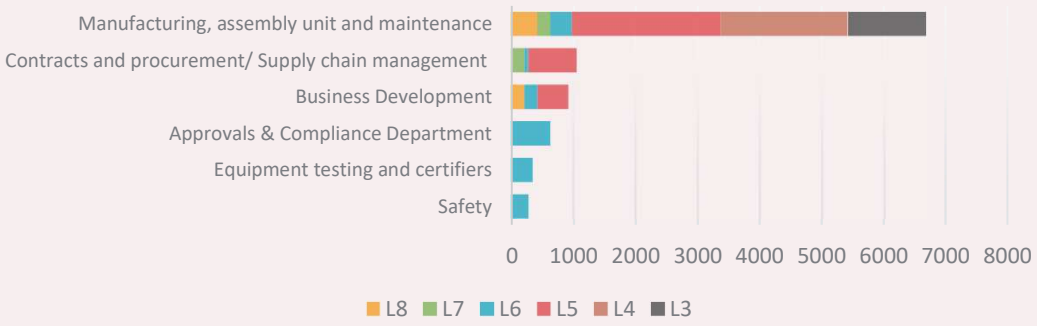


A total of **2,83,817** are estimated across all skill groups, of which the largest number are in electrolyser installation and commissioning and pipeline commissioning (88,749 jobs) followed by operations and maintenance (64,474 jobs).

Electrolyser Manufacturing

The major skill groups have been categorized for electrolyser manufacturing and the number of jobs have been estimated till 2030 for each skill group.

JOBS IN ELECTROLYSER MANUFACTURING BY 2030



A total of **11,316 jobs** are estimated across all skill groups. The majority of jobs, 6,675, are in the manufacturing assembly unit and its maintenance followed contracts and business development skill group.

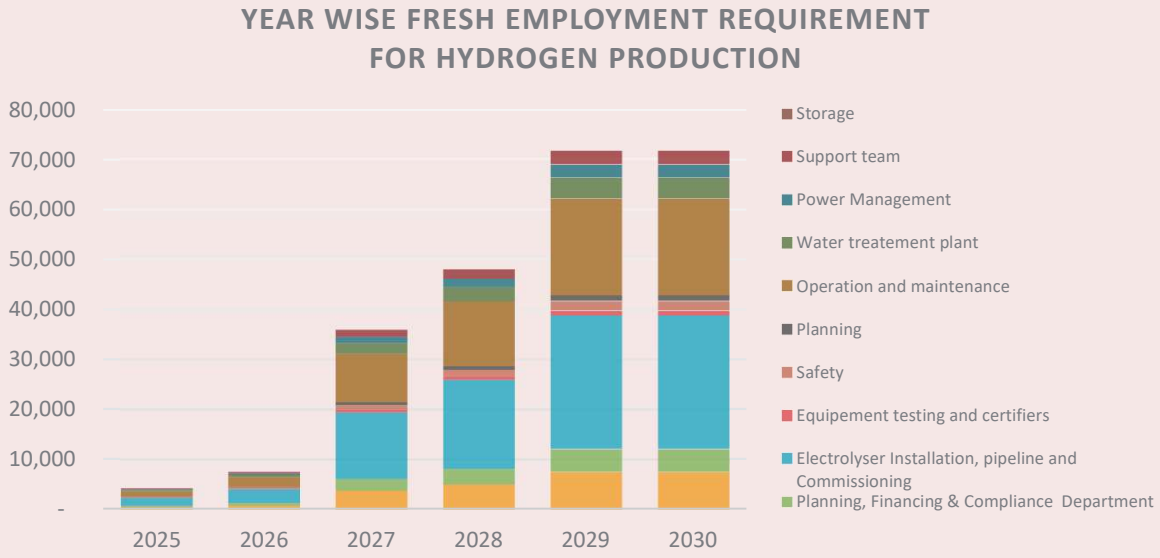
Key Findings of

Skill Gap Assessment Report on Green Hydrogen

ANNUAL FRESH EMPLOYMENT REQUIREMENT FOR JOBS TILL 2030

Hydrogen Production

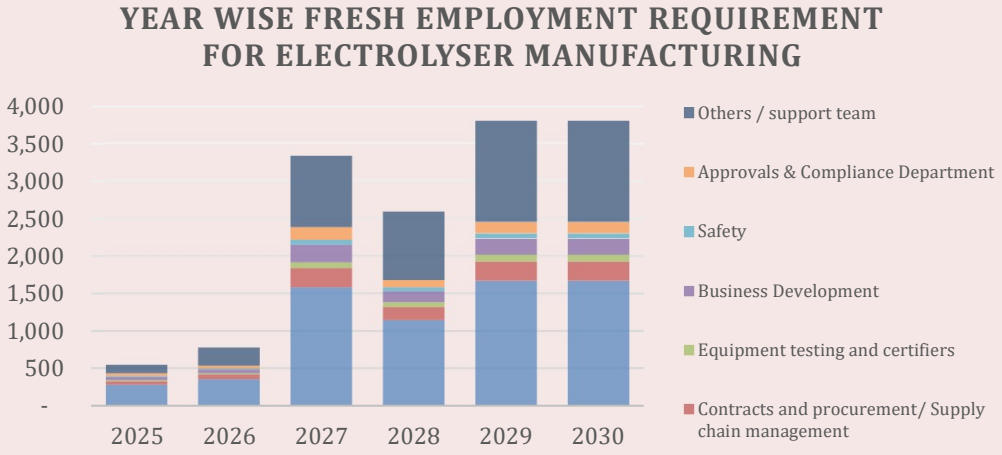
The following figure illustrates the expected annual growth in demand for skilled employees. This demand will be addressed through a combination of retraining the current workforce, recruiting new employees from different industries, and hiring recent graduates. It is challenging to scientifically determine the fraction of jobs undertaken by candidates from each of these three sources. Therefore, the figures below show the total number of fresh jobs created in the sector.



This projects the highest yearly growth in fresh job opportunities at around 8.3% overall CAGR with electrolyser & pipeline installation, and commissioning and operations and management being the main contributors.

Electrolyser manufacturing

In electrolyser manufacturing, new jobs created each year are estimated to grow at the rate of 3.66% CAGR from around 456 fresh jobs in 2025 to around 2,650 fresh jobs in 2030.



The highest growth is estimated to be in manufacturing, assembly unit and maintenance at around 3.25% CAGR.

SCGJ Participation

in various National Events

1st India Solar Manufacturing Summit

1st India Solar Manufacturing Summit was organized by National Solar Energy Federation of India (NSEFI). Launch of Report on PV Supply Chain Resilience & Sustainability – India-EU Cooperation Study Date: 15th December 2023.

Mr. Arpit Sharma, COO, SCGJ moderated the session on Future of Workforce in Solar Manufacturing – Collaboration between Industry, Academia & Training Institutes attended by organizations such as ReNew, IB Solar, Everrenew, Tata Power, CEEW and GREW

UNEP, SEWA and SCGJ project on solar training to salt pan workers from Kutch Gujarat

'Project Surya,' is a unique energy inclusion initiative, underway in rural Gujarat to help women from the informal sectors to leapfrog into the modern clean energy industry. This program is being implemented by the United Nations Environment Program (UNEP), & SEWA. The pilot project is funded by ReNew, India's leading clean energy company, under its CSR umbrella.

It is aimed at training young women belonging to the families of salt pan workers from the Rann of Kutch in solar power technologies to help them transition from traditional energy sources to renewable energy and new livelihood opportunities. The pilot will see around 1000 salt pan workers being trained as solar panel and solar pump technicians across SEWA training centers facilities in the state with technical training being provided under the aegis of Skill Council for Green Jobs.

Energy Conclave on Sustainable Energy Transition Trends

CMIA's 7th Edition of Energy Conclave – 2024 "Sustainable Energy Transition Trends" was held on Friday 1st March 2024. Mr. Arpit Sarma, COO SCGJ participated in the GIZ Sponsored CMIAs Energy Conclave 2024 as a speaker and spoke on "Green skilling requirements for sustainable future" and "promoting women participation in green skilling space".

Just Transition Dialogues: Empowering Brick Kiln

SCGJ participated in "Just Transition Dialogues: Empowering Brick Kiln Sector Energy Transition in Uttar Pradesh through Grassroots Engagement."

Held on Date: 15th March 2024

Student's Corner

Environment & Climate Change from the Eyes of Gen Z

"I see a beautiful place but it's bittersweet because it's being destroyed and isn't going to be there by the time I grow up." Jamie Margolin, 22 year old climate activist

It is a widely held opinion that Gen Z, the age group born between 1997-2012, also called Zoomers, is the generation most concerned with climate change. Widely-known Gen Z environmental activists, such as Greta Thunburg, were children when they first started making headlines. As the first generation to grow up on modern technology, we have had information on our planet's deterioration at the tips of our fingers and the imminent threat of the same looming over our heads our entire lives. Even though Gen Z is more likely to prefer sustainable shopping alternatives, to opt for diets and lifestyles that have a smaller carbon footprint, and to spread awareness about climatic issues, the environmental crisis seems to be getting worse and worse

Of course, the entire generation is not a monolith. While more Gen Z people choose to thrift and shop second hand compared to previous generations, the number of fast fashion consumers belonging to the Gen Z age bracket also exceeds those of previous generations. These divergent choices are on account of the affordability difference between cheap, low quality fast fashion clothing and expensive sustainable alternatives. Many might also defend such their choices saying that these individual actions barely make an impact. And when an entire generation has been brought up in a reality where the destruction of the planet seems inevitable, there is a tendency to turn to nihilism.

As compared to the height of Zellenial climate activism in 2019, Gen Z in recent years also tends to be more cognisant to the fact that individual attempts at change barely offsets the unchecked damage wrecked by large corporations. According to a 'The Carbon Majors' report from 2017, just 100 companies have been producing over 70% of greenhouse gas emissions since 1988. When one is aware of such statistics, it may be hard to take popular Gen Z movements from the late 2010s and very early 2020s, such as 'Save the Turtles', or switching to paper straws, seriously. However, when this nihilism leads to making the choice to support corporations such as SHEIN, which produced 6.3 million tons of carbon emissions in 2021 alone, it stops being a one-off individual mistake. This is the issue on which many Gen Z seem to be divided – several Zellenials rationalising their consumer choices, with the other side condemning such actions.

However, there is a middle ground that a vast number of people of this generation take, which is to neither believe that choosing a paper straw will change the world, nor that supporting climate destroying companies is harmless. Many Gen Z individuals are aware that it is systems and corporations that are causing the majority of carbon emissions, and that contributing to their profits where it is easily avoidable is not the best decision. In certain cases, avoiding purchase of goods and services from destructive companies is not absolutely avoidable, for example, technology is a need in today's day and age and consumers find themselves constrained to make certain buying decisions despite being aware of adverse environmental effects of the technology manufacture, use and disposal. However, there is no justifiable reason to buy cheaply made, non-ethical clothing in bulk, especially

Contribution from:

Ms Sahana Singh is a Grade 11 student at Shiv Nadar School Gurgaon. She loves to read books, go down rabbit holes on the internet, and enjoys music. She writes on a multitude of topics and edits for her school newsletter. She also plays the piano and fences.

if one can afford alternatives. Hearteningly, according to a 2022 study by 'World Economic Forum', as many as 83% of American Gen Z are willing to shop second hand in order to maintain a more sustainable lifestyle.

In a world where human-caused planet destruction feels inevitable, it is no surprise that many Gen Zs are very prominent in climate activism spaces while simultaneously very many are apathetic to the cause. The word "future" evoked hopes and dreams for previous generations, but for Zoomers, and their successors, it is just a reminder that the lifespan of Earth is gradually reducing. Some react to this information by spreading awareness and trying to make changes, others grow nihilistic and believe there is nothing that can be done at this point. However, while a full reversal of human impact on our climate may not be possible, it is not useless to try to improve the current state our world is in.

The youth have for centuries been a group to fight for change. The current crop of youth, Gen Z, hopes to make some impact, so that the generations that follow us will have a future.

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[The Carbon Majors https://cdn.cdp.net/cdp-production/cms/reports/documents/000/002/327/original/Carbon-Majors-Report-2017.pdf?1501833772 Accessed 19/03/2024]

[Times Magazine https://time.com/6247732/shein-climate-change-labor-fashion/ Accessed 19/03/2024]

[World Economic Forum https://www.weforum.org/agenda/2022/03/generation-z-sustainability-lifestyle-buying-decisions/ Accessed 19/03/2024]

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electronic self-learning modules on

Bio-Medical Waste Management

The e – learning course is available at:

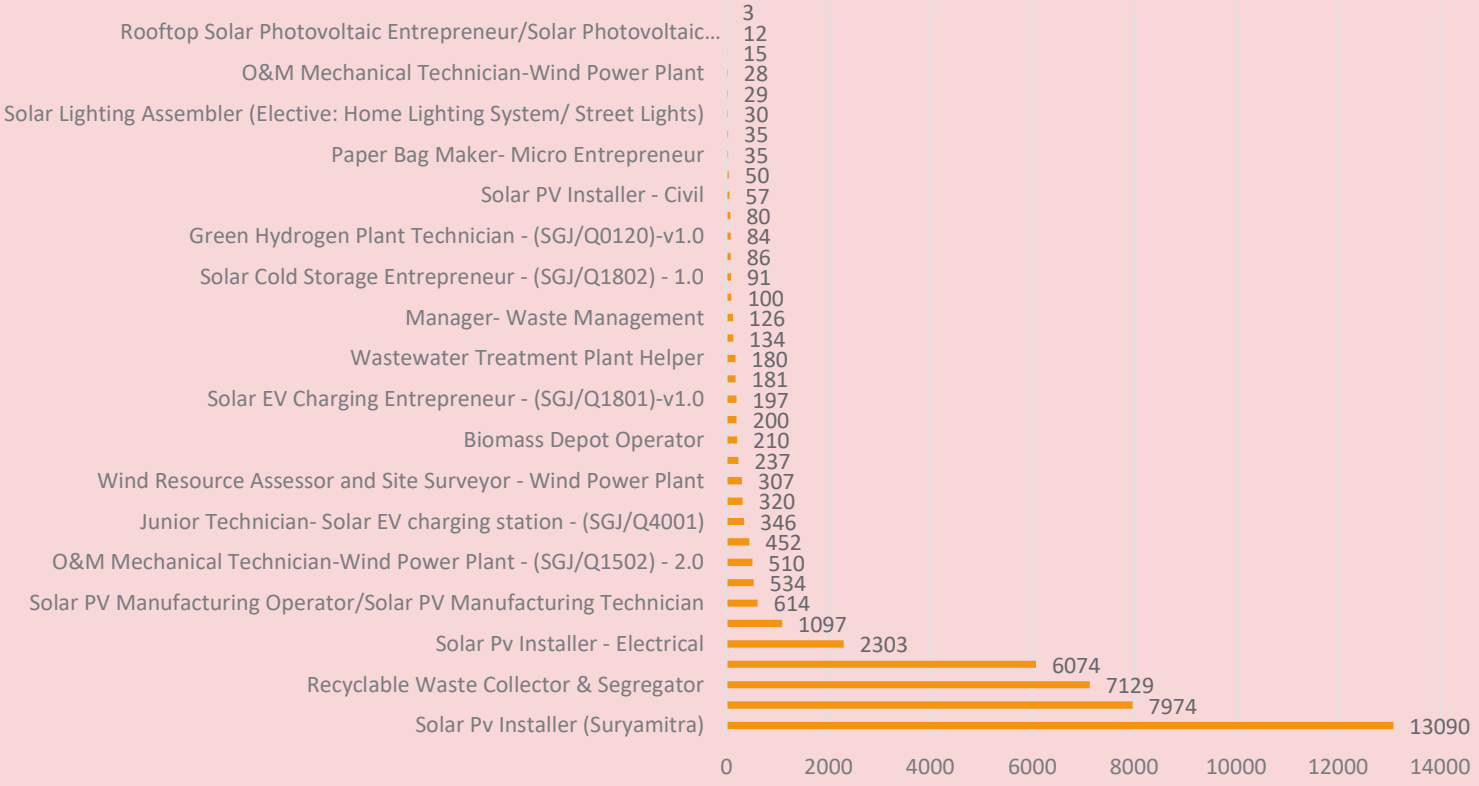
https://www.skillindiadigital.gov.in/

SCGJ Statistics through FY23-24

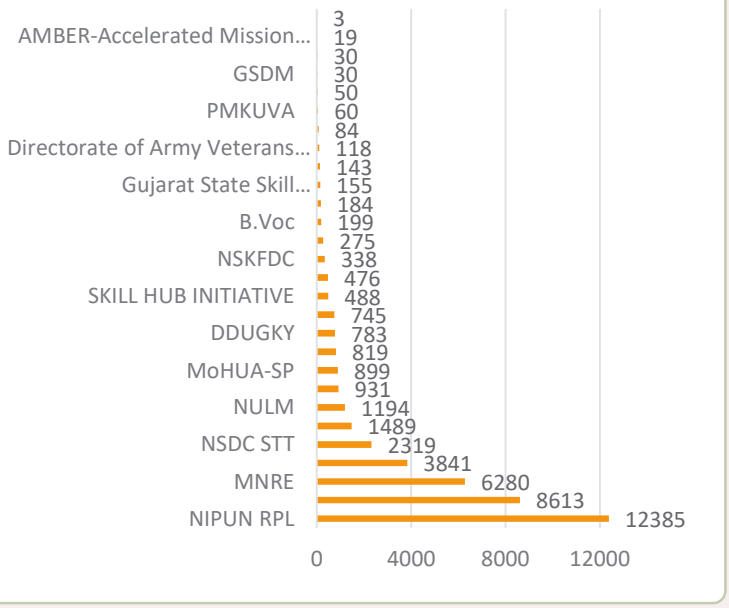
Trainings

Total Training | 42950
Cumulative Training | 579385

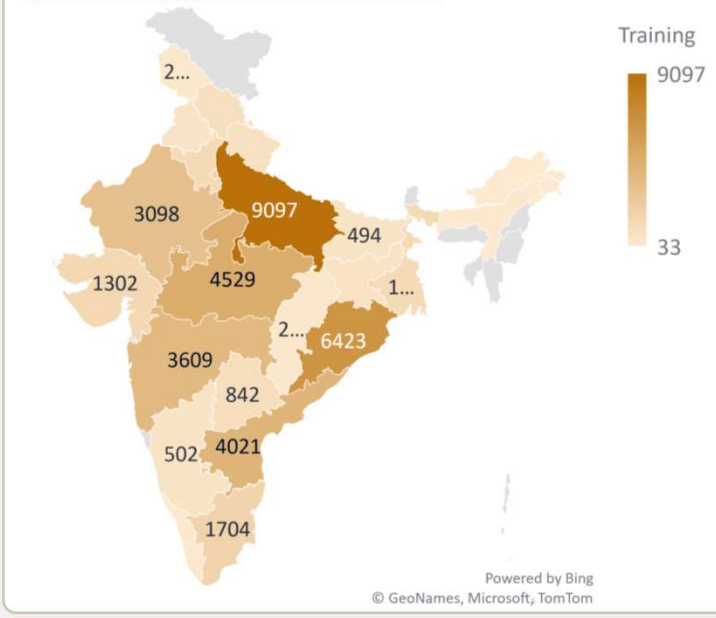
Job Role Wise



Scheme Wise Trainings



State Wise

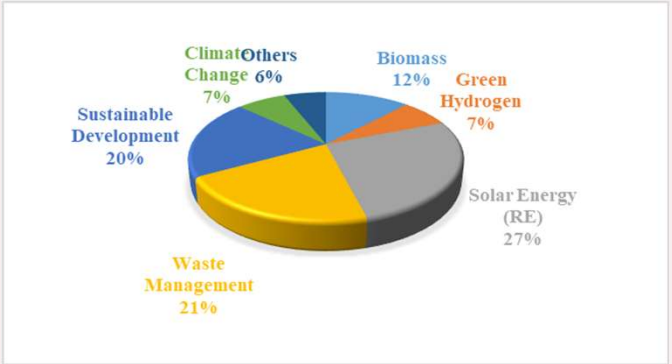


Azadi Ka Amrit Mahotsav is an initiative of the Government of India to celebrate and commemorate 75 years of independence and the glorious history of it's people, culture and achievements. This Mahotsav is dedicated to the people of India who have not only been instrumental in bringing India thus far in its evolutionary journey but also hold within them the power and potential to enable Hon'ble Prime Minister Narendra Modi's vision of activating India 2.0. Much of this journey has been possible due to the rich heritage of skills and craftsmanship that has strengthened the country. It is indeed a step towards aligning all its efforts with the larger vision of building a New India.

As a part of the 'Azadi ka Amrit Mahotsav', Skill Council for Green Jobs (SCGJ) has organized a series of Webinar on Sustainable Development, Renewable Energy and Waste Management by inviting eminent Speakers to deepen the understanding of recent developments in these sectors. The first in the series was launched on 24th September 2021 and inaugurated by Mr. Sameer Gupta, CMD Jakson Group of Industries and Chairman, SCGJ. SCGJ brought eminent Speakers in diverse sectors so to enhance knowledge and learning and bring forth various development and innovation in Renewable Energy (RE) and waste management as a part of the 'Azadi ka Amrit Mahotsav'.

During the journey of 100 webinars, 110 Speakers delivered the talks on deferent domain area. There were over 6000 Participants with an average of over 60 participants per webinar. SCGJ organized two Panel Discussion with distinguish and eminent speakers on the Subject of Green Hydrogen and Green Jobs for Persons with Disability (PwD).

Webinars under Azadi Ka Amrit Mahotsav		
S. No.	Topic (Category)	No. of Webinars
1	Solar Energy (RE)	27
2	Green Hydrogen	7
3	Waste Management	21
4	Sustainable Development	20
5	Biomass	12
6	Climate Change	7
7	Others	6
	Total	100



Scan to Watch the Session on SCGJ YouTube Channel or Click Here

Speaker Profile

Mr. Sameer has more than 30 years' experience in carrying out research, consulting and training in the area of clean energy, energy-efficient buildings and low-carbon building materials production. One of the key areas of his work has been focused on making brick production more efficient and less polluting. His efforts have contributed to the dissemination of energy-efficient/less polluting brick firing technologies in several thousand brick kilns in South Asia (India, Nepal, Bangladesh). His current work focuses on improving technology and building capacities of brick kiln owners and workers in both India and Bangladesh.

Sameer holds a PhD in Energy Systems Engineering from the Indian Institute of Technology (IIT), Bombay. For his work on reducing emissions from brick manufacturing enterprises in South Asia, he was awarded Climate and Clean Air Coalition (CCAC) award for individual contribution, at COP 23 at Bonn in 2017.

Webinar Summary

Fired clay brick is one of the most popular building materials for the construction of buildings, particularly housing. More than 100,000 small enterprises in India produce around 250 billion clay bricks every year. Most of these enterprises belong to the unorganized or informal sector and are situated in rural areas. The brick industry cumulatively consumes around 35 million tons of coal per year, resulting in emission of around 80-90 million tons of carbon dioxide per year. Decarbonization of the building materials industry, such as construction steel, cement, brick, etc. is critical for India to meet its net zero carbon targets.

At present no formal skilling setup exists for the brick industry. Pilot initiatives in India and Bangladesh have shown that skill training of the workers responsible for operating a brick kiln (firemen and brick setters) in proper operation of brick kiln results in up to 25% reduction in energy consumption (and thus reduction in carbon dioxide emissions). Thus, skilling existing brick kiln workers under the framework of "Recognition of Prior Learning" is proposed as the first step in the decarbonization of the brick industry. Replacement of coal with processed biomass or natural gas as well as production of hollow bricks (instead of solid bricks) are other steps which can help in the decarbonization of the brick sector.

For launching a successful skilling initiative in the brick sector a collaboration between the Skill Council for Green Jobs (SCGJ), Ministry of Environment, Forests & Climate Change (MoEFCC), Bureau of Energy Efficiency (BEE) and All India Bricks & Tiles Manufacturer's Federation (AIBTMF) is needed at the national level, with implementation anchored in the skill development departments/agencies and the state level brick industry associations. It is suggested that such an initiative can first focus on 70,000 brick kilns located in large brick producing states of the Indo-Gangetic plains region of the country i.e. Uttar Pradesh, Bihar, West Bengal, Haryana, Punjab & Assam.

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Speaker Profile

Dr Palit holds a Master's degree in Physics, Post Graduate Diploma in Non-conventional Energy Technology and Ph.D. in Energy Policy. Dr. Debajit Palit has more than 25 years of experience working in the domain of renewable energy, clean energy access, rural electrification, distributed generation, micro-grids and energy transition. He is featured in the Top 2% World's Scientists ranking by Stanford University for the last 3 years in a row. Presently, Dr Palit is a Professor of Energy at the NTPC School of Business, Noida. He was earlier associated with The Energy and Resources Institute (TERI), a global research and policy think tank, as a Director & Senior Fellow, and led the Rural Energy & Livelihoods Division in TERI for almost a decade. Dr Palit is also a visiting faculty at the Anant Fellowship for Climate Action Programme, Vice President (Honorary) of the Indian Association for Energy Economics, Editorial Board Member of the Environmental Research Communications and a Member of the LVDC Distribution Systems Sectional Committee of the Bureau of Indian Standards. Dr Palit has written widely on renewable energy, energy access, rural electrification and gender-energy issues and has published 3 books and around 150 research papers in reputed scholarly journals, conference proceedings, books, and magazines. He is a sought-out speaker on rural energy issues, renewable energy, mini-grids, energy transition, and energy-gender-poverty nexus and has participated in more than 100 national and international conferences and workshops across Asia, Africa, Europe, and the Americas.

Webinar Summary

Enhancing & sustaining electricity access is a key agenda in achieving the Sustainable Development Goal 7. An IEA study indicates that for universal electrification, decentralised solutions, including mini grids, are better choices for covering almost 50% of the total unelectrified population globally. Furthermore, in the light of climate change issues and limitations of centralised grid mode for delivery of reliable electricity, especially in the rural setups, renewable energy based distributed generation and microgrid models are gaining acceptance in India and abroad. With falling prices of solar photovoltaic & small wind systems and storage technologies, coupled with the advent of smart digital technologies, distributed generation and microgrid models are thus expected to play a major role in meeting the consumers' demand. They would also be critical to democratise the grid, empower urban and rural prosumers through evolving models, facilitate peer-to-peer energy trading, and lead to the creation of electricity markets in future. The presentation discusses the mini grid architecture, design and delivery models as well their transformation from traditional systems to smart models in the evolving context of decarbonisation, decentralisation, digitalisation and democratisation of electric systems.

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Speaker Profile

Having more than 18 years of work experience in the field of research, education, and consulting. He is currently working as a waste management advisor at GIZ India, primarily responsible for conceptualizing projects and monitoring their implementation to fulfil its objectives in a resource efficient and time-bound manner. He is an expert in solid waste management domain and well renowned for his contribution in the akin domain amongst the media. He did many first of its kind of projects ranging from development of digital portal for monitoring operations of material recovery facility (for MoHUA), emission modelling from solid waste sector for the country (for MoEFCC), case study documentation for dumpsite remediation projects in India, waste management audits and performance audits of mechanized road sweeping operations, on site waste characterization studies, formulation of work plans to reduce short-lived climate pollutants from waste management activities, and many more. He has also been an adjunct faculty at *Indian Institute of Forest Management*, *Bhopal* and *TERI school of advance studies*, and taught students of master's program.

He was also awarded 'Gold Medal' by The Honorable President of India for his overall academic performance in post-graduation from top ranked university of the country *Jamia Millia Islamia,* which he pursued while continuing his job at TERI. Till date he has published 39 research papers in various journals, seminars and conferences and has had written numerous newspapers and magazines articles. Four books and chapters in seven different books have also been authored by him.

Webinar Summary

India generates 1,54,090 TPD of municipal solid waste of which 76 percent gets processed. Increasing urbanization, population growth, changing lifestyles with economic growth evidently imply that waste generation and associated challenges will keep on growing further. The problems in waste management are mostly linked with appropriate data and management strategy. There lies a strong role for digitalization in the waste sector to bring appropriate monitoring, review, and verification (MRVs) mechanism in place, helping with enhanced efficiencies and transformation towards circular economy.

To understand the flow of dry waste from cities and monitoring mechanism adopted by Urban local bodies in the country a baseline study was undertaken in 2021-2022. The need was felt to come up with a framework which enables transparency, ease of replicability and ability to connect with markets. A digital waste exchange platform "Sansaadhan" was conceptualized by Ministry of Housing and Urban affairs (MoHUA) with support under Indo-German partnership for green and sustainable development, facilitating visualization of flow patterns and stocks from within city MRFs to the city administration as well as state level administration.

Data in clustered and decluttered manner can be analysed via bar graphs, pie charts and line graphs- demonstrating performance of specific materials and sub materials over each month. The portal enables transactions between recycling markets and MRFs by providing access and communication mechanisms. The trends and reports we get from Sansaadhan Portal will open various fronts for discussion and peer learning among cities.

Digital transformation can transform the way we see the waste management industry. Of course, this will demand more security for data and capacities in cities at all levels to manage digitalization at workspaces.

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Speaker Profile

Dr. Raman has done his doctorate from Pondicherry University, on syngas production through biomass gasification and its applications for power generation, industrial thermal applications and transport sector. Dr. Raman is the director of "Energy Efficiency and Environment P. Ltd." New Delhi, India (https://cleanenergyee.com). Having more than 40 years of experience, acquired a strong subject expertise on renewable energy technologies.

Dr. Raman has extensively worked on several renewable energy products in the areas of biomass gasification, biogas plants, solar ponds, solar concentrators and Solar cooker. Worked on rural electrification projects using biomass gasifier based power plants in India and abroad. Extensively studied solar PV based micro grid, Island gid of biomass power plants. Dr. Raman contributed to more than a dozen patents on the invention of renewable energy products like biomass gasifiers and clean combustion cookstoves. Authored more than 100 publications, which include publications in reputed international journals. Dr. Raman designed and developed forced draft biomass cookstoves integrated with TEG for small power generation. Recently developed an advanced three stage biomass gasifier system for power generation and got it patented. Worked in many international projects in the continents of East Asia, Africa, Europe and Australia.

Webinar Summary

Need for clean cooking: More than 2.6 billion people do not have access to clean fuel and rely entirely on biomass to meet their daily energy needs for cooking and heating. Incomplete combustion of biomass fuels results in emission of harmful gases and particulate matters. Exposure to fine particulate matter such as that less than 2.5µm in size (PM2.5) and toxic gases like carbon monoxide leads to increased incidence of chronic obstructive pulmonary disease, lung cancer, hypertension and stroke. About 2.3 to 3.8 million death result from illness attributable to household air pollution (HAP) caused by the inefficient use of biomass fuels and kerosene during cooking. There is a need for development of a suitable clean cooking stove.

Biomass cookstoves (Conventional/ Improved cookstoves): In India, about 32% of the total primary energy use in the country is still derived from biomass When a conventional Chulha consumes 1.5 kg. per person (p), per day (d). The improved Chulha consumes 0.55 kg/p. d. The cookstove performance are rated in five tiers (0 to4). The improved biomass cookstove performance meet the rating scale of tier-3 and performance of LPG/PNG stoves are at tier 4.

LPG cookstoves: LPG accounts for 13% of the petroleum product consumption. 90% of the LPG is consumed by house-holds. In the past 10 years the LPG consumption was increased by 84%. This will be a concerning factor to achieve the net zero target. Though the emissions (CO and $PM_{2.5}$) from LPG cookstoves meets the tier 4 standards, there are concerns about other emissions like Xylene, Toluene, ethylbenzene. Most of the western countries/USA are switching to use electric cookers instead of LPG cookstoves.

Electric cookstoves: Electricity based cooking (eCooking) is an emerging phenomenon in India. E-cooking means electricity-based cooking, particularly using induction cookstoves. In February 2021, the Government of India launched the Go Electric campaign to create mass awareness about the benefits of eCooking devices, counter the country's growing import dependency for LPG and support the low-carbon transition (PIB 2021).

Some Commercial News

- Indian Oil Corporation (IOC) has released a tender for the engineering, procurement, and construction (EPC) of a 1 MW grid-connected open access captive solar power project situated at its Northern Region Pipelines in Kurukshetra, Haryana. The contract not only involves the commissioning of the project but also encompasses one year of comprehensive operation and maintenance (O&M) services post-construction, along with an additional nine years of extended operation and maintenance support.

- Schwing Stetter India, a premier manufacturer of construction and concreting equipment, recently launched a 1 MW solar power facility at its global manufacturing hub located in Cheyyar. This strategic move is part of Schwing Stetter's ambitious plan to achieve carbon neutrality by producing 14 lakh kWh of electricity annually, thereby covering 20% of its total yearly energy requirements through renewable sources.

- NTPC has invited expressions of interest from bidders to set up a 50 MW interstate transmission system-connected concentrated solar power project with a thermal energy storage system operational for eight hours.

- NTPC Green Energy (NGEL) has invited bids from qualified coordinating agencies to provide all forecasting and scheduling-related services for the 130 MW Bhadla Solar power project.

- Luminous Power Technologies inaugurated a 250 MW solar module manufacturing facility in Rudrapur, Uttarakhand. The fully automated 10-acre plant built with an initial investment of ₹1.2 billion (~$14.4 million)

- ONGC, a global leader in solar technology, launched Hi-MO X6 Bifacial Dual-Glass solar modules during the 19th China (Jinan) International Solar Energy Utilization Conference. This cutting-edge product line includes Hi-MO X6 Explorer and Hi-MO X6 Guardian (Anti Humidity & Heat), representing a significant leap forward in the photovoltaic (PV) industry, especially designed for high temperature and high humidity environments.

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