



H. E. Mr Upendra Tripathy, Director General, International Solar Alliance addressing the gathering and opening the 18th ISA SUN Meet with Ambassadors and Country representatives of ISA countries at Sigma summit.

## Sustainable Energy, Circular Economy & Resource Efficiency

Marshalling my thoughts on Climate Action & Sustainable Development, brought to mind words of Erich Fromm, which I jotted down over 50 years ago, ***“We consume, as we produce, without any concrete relatedness to the objects with which we deal; We live in a world of things, and our only connection with them is that we know how to manipulate or to consume them”***. This renowned social psychologist & humanistic philosopher articulated, to little heed, the adverse impact of unbridled exploitation of resources & degradation of the environment as well as ecological balance, which is now begun manifest itself in our everyday lives. So much so that, today, Climate Change, Renewable Energy, Circular Economy, Resource Efficiency, SDG's have entered into the lexicon of, not only Governments, Businesses and Civil Society, but also citizenry. On one hand encouraging, but, in an era where social media dominates discourse, there is risk that

concern gets limited to “Lip service” by Policy Makers and Citizen angst being dissipated with “WhatsApp forwards”.

As observed in IT and Telecommunication Industries, I venture to state that “Centralized Administration Systems” are not conducive for managing “Low Carbon, Sustainable, Inclusive Growth”. Science will enable Policy Makers introduce regulatory controls on GHG emissions, Air & Water quality, Solid Waste disposal, etc. Technology innovation will lead to solutions as required for Climate Action & SDG' achievement. However, widespread adoption of these solutions is highly unlikely, only based on mandates, within developing economies, where affordability & consumer convenience are paramount needs of population facing multiple deprivation. Hence, Business innovation is equally important, to custom engineer solutions appropriate to local dynamics as well as rapid scale up to attain affordable costs.

# GREEN JOBS NEWS

April , 2019

## Eighth GC

### Eighth Meeting of the Governing Council of Skill Council for Green Jobs

The Eighth Meeting of the Governing Council of Skill Council for Green Jobs was held at 11.30 am 25th February, 2019 under the Chairmanship of Mr. K. Krishan, Chairman, CVC Bio-refineries Private Limited and Chairman, SCGJ at Board Room, Central Board of Irrigation and Power Building, Malcha Marg, Chanakyapuri, New Delhi 110 021.



Also, adoption of holistic, technology agnostic, approach, which optimally meets community needs. Sounds logical and actionable but, as Robert Burns wrote, "The best-laid plans of mice and men often go awry". So, notwithstanding NDC's and SDG's, tangible progress is seen in limited areas, eg Solar & Wind, EV's & Storage, which are large Industry driven. Sectors like Waste, Water, Green Buildings, Sustainable Plastics, which impact households directly, do not get the same 'mindshare' of Policy makers and have limited access to commercial capital.

As illustration, I touch upon Farm Waste in India. India has 141 million hectares net cropped land, which generates significant agriculture/ horticulture/ animal husbandry output and commensurate Farm Waste. It's forecasted that, by 2030, Agriculture residues, not having alternative productive use, will grow to 280 million (dry) tons, Cattle manure to 370 million (dry) tons & Poultry manure to 30 million (dry) tons. India is leading manufacturer of Biomass fired Boilers. Advanced Bio-Technologies enable processing Farm waste to a wide range Bio-fuels, which have potential to cost effectively, replace Fossil fuel alternatives. IEA had forecasted that 'modern' biomass could contribute 10% of the world's primary energy demand by 2035. India's National Policy on Biofuels was released in June 2018 and Ministry of Petroleum & Natural Gas forecasted potential of 15 million tons Bio-CNG. Hybrids of Solar & Bio Energy lead to achievement of many SDG's, as they impact jobs, health & many socio-economic parameters.

Hence, Farm waste management and processing to Bio-Energy for enhancing Clean Energy access, in conjunction with Solar Energy, is logical. Yet, there is more time spent in dialogue, than in program implementation! The primary issue is the perceived risks related to "bio-resources supply chain". What is inadequately appreciated is that with advancements in combustion, bio-chemical & thermo-chemical technologies, options for bio-wastes feedstocks has greatly increased. These Bio-wastes have a direct correlation to human consumption, which is logically expected to increase as more and more people come out of poverty and enter the middle class.

Bio-Waste, untreated, is as much an environmental hazard as particulate emissions from IC Engines, hence its management needs to be equally prioritized. Processing bio-waste to Bio-Fuels and Compost/ Bio-Char will enhance clean energy energy access as well as improve soil fertility. Hence, there is need for policies & fiscal instruments, which mitigate risks related to "Bio-Waste Supply Chain". This will require Bio-waste collection & aggregation to be managed as a Green Business, facilitated by mandates and enabling fiscal incentives, akin to the support being extended to EV's. The secondary issue is lack of "bankable" offtake agreements, such as standard 20 years PPA that is available to Solar Power Developers; this will, presumably, be addressed, once the Lenders are on board.

The Farm waste illustration is equally valid for Water conservation & Treatment, Green Buildings, Sustainable Plastics management, etc. Hence, I go back to the wisdom of Erich Fromm, who also wrote "***I believe that freedom is not a constant attribute that 'we have' or 'we don't have'; ... there is only one reality: the act of liberating ourselves in the process of using choices***". From long term perspective, Sustainable Energy, Circular Economy & Resource Efficiency will become the norm only when Producers & Consumers adopt them as matter of choice. Similar to how Automobile replaced Horse-cart, PC replaced Mainframe computer & Mobile phone replaced Land line. For this transformation, it's essential to have an ongoing process of sensitizing all Stakeholders & widespread Capacity building. In parallel, change will have to be catalyzed through mandates & appropriate regulatory framework, always in conjunction with policies and fiscal instruments that foster adoption of "Green Practices" by the community and incentivize growth of "Green Businesses.



**KOLLURU KRISHAN**  
Chairman SCGJ

# The Eighth Meeting of the Governing Council of SCGJ

## A Report

The Eighth Meeting of the Governing Council of Skill Council for Green Jobs was held on 25th February, 2019 under the Chairmanship of Mr. K. Krishan, Chairman, CVC Bio-refineries Private Limited and Chairman, SCGJ at Board Room, Central Board of Irrigation and Power Building, Malcha Marg, Chanakyapuri, New Delhi 110 021.

Mr. K Krishan, Chairman, welcomed members of the Governing Council and Guests and briefly captured the activities of SCGJ during the year 2018-19. He suggested that SCGJ should strengthen its interaction with Ministry of Drinking Water and Sanitation (MDWS) in skilling support to the GOBARdhan scheme for galvanizing organic bio-resources especially animal waste for its gainful utilization so as to generate employment and additional income for farmers. He mentioned that that SCGJ has identified 17 entrepreneurs and would hand hold them for one year. He emphasized on the need to create Entrepreneurship groups.

Dr. P. Saxena, CEO, SCGJ informed the GC members about Annual Business Plan

2018-19 and its progress during Q1 – Q 3. He mentioned that SCGJ has fulfilled all infrastructural requirements and Governance methodology. The members were informed about the overall status against the Annual Business Plan 2018-19 targets.

The GC was informed that having initiated its core activities, SCGJ has expanded its activities to taking up consultancy projects in the area of Skilling for Green Jobs Sectors. A one month long Induction Program for Officers of Indian Renewable Energy Development Agency was organized by SCGJ. As part of extension of Smart gram initiative, SCGJ prepared sustainable development plan for 45 villages selected on peripheral fringes of the five villages in five clusters in a range of 5 KM

NSKFDC has sanctioned RPL trainings of 5000 safaikaramcharies and 3000 waste pickers. The implementation of this project started with the help of TPs of SCGJ from 2nd October, 2019. Further SCGJ is also conducting 200 workshops on “Prevention of Hazardous Cleaning of Sewers and Septic Tanks “as a special assignment from NSKFDC

SCGJ is the capacity building and skill development partner under The World Bank Grid connected Rooftop Solar PV Technical Assistance Program.

It was mentioned that Government is emphasis on Apprenticeship program and RPL 4. SCGJ should develop a systematic program to link its trainings with apprenticeship and enlarge its RPL activities.

It was suggested that the GC meetings may also be held outside Delhi, in the offices of GC members so that other members are informed about activities and skill requirements of that Industry.

Industry Associations regional and state offices may be utilized to improve industry connect of SCGJ. It was suggested that SCGJ should ensure delivery of quality training. The TOT programme should be more regress. CEO SCGJ mentioned that quality improvement programme of certified trainers of SCGJ are organised with the help of GIZ, DIFD. This helps in improving quality of our programmes.

The GC was informed that SCGJ has initiated Occupational Mapping, Skill Gap Analysis and Development of National Occupational Standards in Electric vehicles domain joining hands with DFID, UKAID and PwC. SCGJ has been actively involved in providing technical inputs for Skill Gap studies carried out by Natural Resources Defense Council (NRDC) and Council on Energy, Environment and Water (CEEW). SCGJ was closely working with NSDC and Urban Management Centre (UMC) for Occupational Mapping, Skill Gap Analysis and Development of National Occupational Standards in Faecal Sludge and Sewage Management (FSSM) sector and the study has been complete and based on the study there have been development of Qualification Packs.

The GC was informed that SCGJ has so far Trained and Certified 57,429 Candidates since inception. This include 9,176 Candidates under PMKVY 2.0, 12,079 Candidates under other Govt Schemes e.g., MNRE, NSKFDC, NULM, NBCFDC etc, 3609 Candidates under Paid Programs and 911 Candidates under State Govt Funded Programs

Annual Plan 2019-20 and proposed budget of SCGJ was presented.

**Dr. P. Saxena, CEO, SCGJ  
and Secretary, GC**

## India's Approach towards Sustainability

### -Renewable Energy, Skilling and Green jobs

India has adopted several ambitious measures for Sustainability, renewable energy, energy efficiency in various sectors of industries, achieving lower emission intensity in the automobile and transport sector, non-fossil based electricity generation and building sector based on energy conservation. Thrust on Renewable Energy, Promotion of Clean Energy, Enhancing Energy Efficiency, Developing Climate resilient Urban Centres and Sustainable Green transportation Network are some of the measures for achieving this goal.

It is recognised in the NDC that Renewable energy sources are a strategic national resource. Harnessing these sources will put India on the path to a cleaner environment, energy independence and, a stronger economy and towards sustainability. India's share of non-fossil fuel in the total installed capacity is projected to change from 30% in 2015 to about 40 % by 2030. The renewable power target of 175 GW by 2022 will result in abatement of 326.22 million tons of CO<sub>2</sub> eq. /year. The ambitious solar expansion programme seeks to enhance the capacity to 100 GW by 2022, which is expected to be scaled up further thereafter.

India is one of the few countries where forest and tree cover has increased in recent years and the total forest and tree cover amounts to 24% per cent of the geographical area of the country. Over the past two decades progressive national forestry legislations and policies of India have transformed India's forests into a net sink of CO<sub>2</sub>. With its focus on sustainable forest management, afforestation and regulating diversion of forest land for non-forest purpose, India plans to increase its carbon stock.

The Indian NDC brings a huge responsibility on the country and equally big opportunity for green business and poses skilled man power requirement. The year 2017 ended with a total Installed Capacity of 335.5 GW which includes 220 GW from Thermal, 0.446 GW from Hydro, 0.06 GW from Nuclear and 64 GW from various Renewable Energy Sources. The 64 GW Installed Capacity from renewable energy includes 33 GW from wind energy, 17 GW from solar energy and 12 GW from biomass, small hydro and waste to energy.

The success of any technology or technological shift is greatly dependent on its proper execution on ground through trained man power. It may not be possible to achieve the desired results of any strategic shift unless our human resource and skill development policies are aligned to address the needs. Skills development is seen as the shared responsibility of the key stakeholders viz. Government, the entire spectrum of corporate sector, community based organizations, those outstanding, highly

qualified and dedicated individuals who have been working in the skilling and entrepreneurship space for many years, industry and trade organizations and other stakeholders.

To address the skilled manpower issue associated with sustainable development, the Ministry of Skill development and Entrepreneurship has set up a separate skill council, "Skill Council for Green Jobs", a Sector Skill Council set up for the purpose of developing competencies /skills in the domain of renewable energy, sustainable development, waste management and environmental issues.

A Green job is defined as the one that helps bring about and maintain a transition to environmentally sustainable forms of production and consumption. It cut across all the sectors, be it energy, materials, water conservation, waste management, pollution control etc

Skill council for Green Jobs is working towards introducing environmental friendly and sustainability in existing job roles as well. This translates into a huge opportunity for additional job creation and impetus for Skilling & Entrepreneurs Development. Currently, Green Business sector generates about 20 lakh Jobs, excluding "Waste Management" which is largely unorganized, with large deployment of human resource. It is estimated that about 2 crore additional jobs, apart from "Waste Management" will be created by 2030 due to strategic shift of India towards sustainable development and climate justice.

SCGJ is building on its industry connect with a government-industry interface and partnership with stakeholders from industry, labour as well as the academia. Its activities are linked to Skill India Mission, National Solar Mission, Swachh Bharat Mission and Make in India initiative of Government of India. SCGJ is closely interacting with Ministry of New and Renewable Energy, Ministry of Environment, Forest & Climate Change, Ministry of Urban Development, Ministry of Water Resources and Niti Aayog to cater to the skilled manpower requirements for the changing scenario.

Skill council for Green Jobs is working towards introducing environmental friendly and sustainability in existing job roles as well. This translates into a huge opportunity for additional job creation and impetus for Skilling & Entrepreneurs Development. Currently, Green Business sector generates about 20 lakh Jobs, excluding "Waste Management" which is largely unorganized, with large deployment of human resource. It is estimated that about 2 crore additional jobs, apart from "Waste Management" will be created by 2030 due to strategic shift of India towards sustainable development and climate justice.



**Dr. P.Saxena, CEO, SCGJ**



## CONFERENCE ON "CURBING STUBBLE BURNING: MAKING SOLUTIONS WORK" February 26, 2019 FICCI, Federation House, New Delhi

Stubble burning is a common practice followed by farmers to prepare the field for sowing, even though they are aware that the burning of straw is creating alarming atmospheric pollution levels in Northern India. The farmers are ill-equipped to deal with this problem due to various factors like affordability of the new technology solutions and the associated cost factor.

A conference was organised by FICCI to discuss issues associated with Management of Crop Residue to Curb Stubble Burning: Challenges and Solutions. The challenges faced by farmers and solutions towards effective management of crop residue to curb stubble burning (e.g. by market creation for straw pellets, alternative cropping pattern etc.) were discussed.

A dedicated session also discussed solution highlighting the following:

- ☑ Alternative Cropping pattern wherever possible
- ☑ Best technologies and SOPs for collection, storage, densification and aggregation of agricultural residues like stubble

FICCI is constituting a Working Group on Curbing Stubble Burning as a follow-up of the Conference. Chairman, SCGJ, Mr K.Krishan is leading the working group.



# Management of Biomass Supply Chain

## -Creating jobs with agricultural waste

The New Biofuel policy announced by Government of India on 10th August 2018 focusses on many initiatives for enhanced use of biomass for improving availability of ethanol through multiple feedstocks, developing 2G ethanol technologies, increasing production of biodiesel for blending, focussing on Drop in fuels and advanced biofuel including Bio-CNG, Bio-methanol, etc. Another innovative initiative titled Sustainable Alternative Towards Affordable Transportation (SATAT) launched in New Delhi on 1st October, 2018 is also directed as setting up Compressed Bio-Gas (CBG) production plants using agricultural residue, cattle dung and municipal solid waste for use as automotive fuels. Recently NTPC has announced plans to move towards replacing 5% of coal with agro-residues pellets/terrified pellets through biomass co-firing recognized by UNFCC to mitigate carbon emission in coal fired power plants at 21 locations.

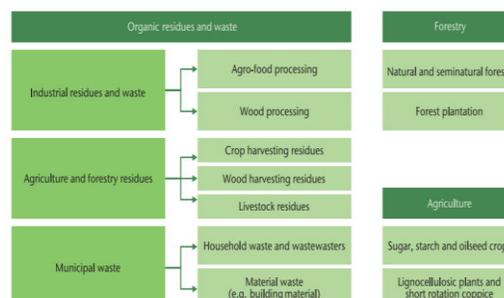
In order to achieve the above objectives, there is a need to ensure biomass resource availability and its demand through a proper supply chain management. The resource being bulky, voluminous and only seasonally available creates serious hurdles in the reliable supply of the feedstock, regardless of its application. Availability of skilled human resources is critical to achieve the goals.

The current capacity and skills are not adequate and there is a gap in terms of knowledge and application which are critical to conceptualize, implement, regulate and monitor.

Bioenergy production requires the flow of biomass material from its origin to its end use and passes through a series of processes called the biomass supply chain. A biomass supply chain needs to be managed properly for constant and reliable feedstock for the energy conversion process so as to reduce risks to the investments. Poor environmental planning can hurt the environment, damage the image of biomass energy, and limit available resources. Hence proper planning for the supply chain should begin before or at the same time that the energy conversion technology is being planned. Though almost all parts of the supply chain are interrelated, the processes of developing the chain need to be spread into several distinct steps as identifying locally occurring biomass resources, the roles of individuals and organizations in the supply chain and examination of the quality control and pre-processing needs for the feedstock. Storage concerns are another large part of a supply chain and should be well thought through. The final analysis of the supply chain should be an overall evaluation of the economics associated with collecting and delivering biomass feedstocks. All these steps are discussed in detail below:

### a) Identification of types of biomass resource

Selecting a suitable biomass feedstock resource is the first part of the supply chain as it is necessary to first review the type of biomass required as feedstock and its properties which would make it suitable for conversion to energy or refining to bio-based products. Biomass could be sourced from various materials as below:



### b) Quality assurance

After identification of the biomass, it is very necessary to assess the quality as most of the energy conversion technologies are designed to operate best with a consistent feedstock that remains within specified quality control parameters. Maintaining biomass quality begins when biomass is standing in the field or forest and continues until the biomass is used in the energy conversion process. Hence all staff involved in the biomass supply chain should understand quality control issues and take steps to reduce or report problems. The parameters which are very significant for quality control are primarily moisture, presence of dirt & sand and contamination of the feedstock.

### c) Biomass Logistics

The logistics of variable biomass material for delivery to the bioenergy processing plant is a key part of the supply chain that is often overlooked by project developers. The biomass supply chain involves collection, storage and transportation of residue from field to site for end-use, collectively these activities are called as aggregation. Aggregation involves processing which involve several key steps such as baling, hauling, residue transportation and plant operation among others. India has skilled labor and substantial financial resources, which can be channelled into ramping up the collection of feedstock from crop residues; establishing collection infrastructure, and transporting and handling of large amounts of biomass. The bulky nature or low energy density of agricultural residues possesses problems in handling, storage, transportation and conversion processes. Since biomass transportation cost is a function of the quantity of available biomass in a region and the transportation distance, it is desirable to ensure availability of adequate biomass in the vicinity of facilities, industries etc. Biomass needs to be stored to ensure long term biomass availability for ...

...implementation of economically viable bio-based energy projects. Biomass can be stored in Biomass storage depot which need to be built and maintained for comprehensive inventories of biomass preferably in States which have high biomass availability per unit area which in turn is linked to the number of jobs in the region.

Keeping in view the most recent focus of the Government of India on the need to address the issue of stubble burning, it is necessary to create a cadre of skilled manpower and local entrepreneurs who not only manage the surplus agriculture residue of farm but also develop avenue for livelihood generation in villages. Skilling in this sector will not only organize agriculture residue but also improve the service quality, its efficiency, livelihood of the farmers/labors and to create job opportunities in the existing and as well as upcoming Bio-energy plants in the country. Skill Council for Green Jobs(SCGJ) has developed following Qualifications Packs to skill local youth in collection, aggregation and storage of farm waste and also be trained for developing business in supply chain management of agri residues. These job roles have been prepared as per the National Skill Qualification Framework (NSQF) for imparting skill training for these job roles:

- Agri-residue Aggregator
- Biomass Depot Operator
- Manager- Waste Management (Elective: Biomass Depot/Compost Yard/Dry Waste Center)

It is expected that local youth and semi-skilled technicians will be benefited from skilling and potential green jobs such as collection of waste, transportation to treatment plants, management of plant and operation of biomass depot. This will lead to additional source of income generation for farmers or local youth in collection and aggregation of farm waste, operation of biomass depot.

The villages will become self-reliant in clean energy by harnessing bio-waste to generate bio-energy and thereby reduce burning of wood and dependence on forests. Sanitation will be improved by reducing waste from the villages and overall cleanliness and leading to decrease in incidences of malaria and other sanitation related diseases through reducing waste stagnation in villages, saving on earnings and time.



#### d) Biomass Storage

Agricultural biomass is generally harvested once in a year at the end of the growing season. However, energy conversion facilities operate round the year, thereby making it necessary to store biomass for a consistent quality supply throughout the year. A proper storage plan needs to be developed to take care of regular feedstock supply, harvest timing, random supply shortages, delivery limitations, economic factors and safety. Another benefit of biomass storage is the availability of the biomass at a stable price for a future period when biomass cost can be more expensive. Large amounts of biomass if stored at a single central location may not be feasible for economic and logistical reasons. Multiple medium sized storage sites spread throughout the collection area can relieve space concerns and also good for limiting traffic, noise, and debris concerns for a single large facility. Finding suitable smaller sites can also be financially or logistically easier than a large central storage site near the facility.

Proper planning for biomass storage requires storage site selection and designing for daily operations. A good storage facility should be sited to facilitate good transportation infrastructure for receiving or using biomass. More space is also needed for trucks to load/unload,

space for separating batches of biomass and inspection of the facility and safety reasons. A conservative estimate would be that at least 50% of the site would be non-storage space.

Daily operation issues may be addressed by storing densified biomass or bales which increases energy density and subsequently produce high energy conversion efficiency.

These bales can be stored in biomass depots. Densification can improve the physical property of the biomass to facilitate collection, transportation and storage. Second, densification technology can increase energy density and subsequently produce high energy conversion efficiency. The series of steps starting from agri-surplus collection from fields up to storage as densified biomass is depicted in the figure below:

1	2	3	4	5	6
Collection from fields	Densification	Primary Storage	Transport	De-baling and densification	Storage in Depot

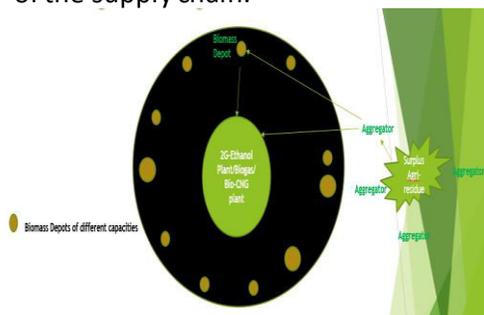
Safety in the daily operations of the storage site is very important. Poor storage practices can lead to premature release of concentrated energy and cause fire. The danger of fire comes from three general areas: unintended ignition from sparks or hot surfaces, spontaneous combustion, and intentional vandalism. Preventative measures like use of spark arrestors on onsite equipment, regular inspection, cleaning & lubrication of equipment and proper insulation etc. need to be practiced. These basic preventative steps greatly reduce risk and are relatively inexpensive.



### e) Operation of Biomass Supply Chain

The success of Biomass supply chain depends on the efficient performance of multiple roles and activities needed to support the operation of the supply chain. The major consideration is how various stakeholders will be involved to fulfill their obligations.

There can be participations by all the members of the community or there can be facilitators who act as Aggregators and organize all activities for the supply of biomass. Facility size and its resulting feedstock demands will also dictate who may be involved in biomass logistics. Two models can therefore be considered for operation of the supply chain.



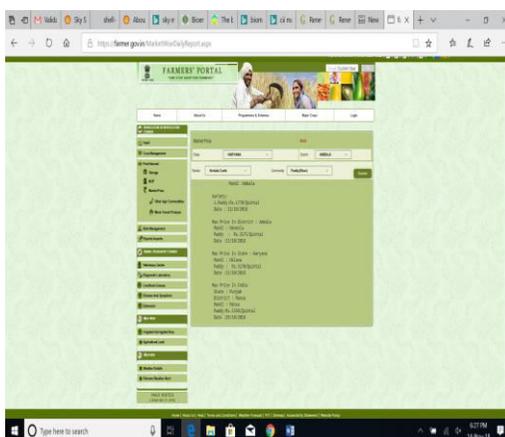
### i. Farmer's Co-operatives:

Farmer's co-operatives is one of the most effective means of reducing the risk in agriculture and strengthening the livelihoods of small and marginal farmers. The process involves mobilising farmers into groups of between 15-20 members at the village level (called Farmer Interest Groups or FIGs) and building up their associations to an appropriate federating point i.e. Farmer Producer Organisations (FPOs). In the biomass supply chain, the Farmer's Co-operatives would act as Aggregators and ensure delivery to the Biomass conversion facility of quality biomass. They may create biomass depots at village level to manage biomass round the year for a regular supply and also share the capital costs for the conversion and processing equipment. Farmer's co-operatives may also avail the Custom Hiring Centres (CHCs) to facilitate use of equipment for agri-residue management.

### ii. Entrepreneurs

In this model, the entrepreneur will act as an aggregator and would liaise with the producer/landowner for the biomass and handle all steps from harvesting until its use at the conversion facility. The landowner/producer does not participate in the biomass harvest and consequently has no capital or labor costs for biomass harvesting. The entire investment is to be made by the Entrepreneur for collection, aggregation, transportation and storage. In this model, the conversion facility can focus more on the core activities of the plant, but has to make provision of quality check of the feedstock supply.

In order to ensure proper operation and management of supply chain, it is important to educate all the stakeholders, so that knowledge, skill, and goodwill of all the parties involved in the supply chain can resolve issues quickly. The Krishi Vigyan Kendra (KVKs) set up by the Government, can be utilized to provide support activities like providing technology dissemination to farmers, training, awareness etc. to local youth and farmers for Agro-residue collection and storage. KVKs may act as biomass exchange at district level that plays crucial role in developing aggregation mechanism. The Farmer



<https://farmer.gov.in/FarmerHome.aspx>

portal developed by Government of India for improved post harvesting, agri residue pricing can be utilized for biomass availability in real time, field conditions, price, improved knowledge of feedstock and storage values and availability of transport etc. to facilitate improved planning and preparation.

### Conclusion:

Biomass supply chain though a simple concept needs to be developed based on the conditions of the biomass conversions with focus on location, capacity and type of storages, pre-processing and bio-refineries, Sourcing biomass, allocation of biomass between facilities and transportation modes. The objective should be to develop successful supply chains that can handle large volumes of bulky biomass and transport it to the conversion facility at an economical cost. Proper project planning and operations are needed to make sure these elements are part of any new supply chain and will help contribute to a successful biomass to energy project



**Dr. (Mrs.) Praveen Dhamija**  
Advisor, SCGJ  
(Biomass & Sustainable Livelihood)

## SOME OTHER ACTIVITIES OF SCGJ



Dr. Praveen Saxena ( CEO, SCGJ), Speaking in the session on "Empowering with Energy Efficiency and Sustainable Skills" at WSDS 2019.

Dr. Parveen Dhamija , Advisor - SCGJ, Participated as a speaker in a Biotechnology Seminar on 14th feb 2019 organized by Bennett University.



Mr. Tanmay Bisnoi participated in Conference on 'Renewable Energy-Challenges and Way Forward' organised by PHD Chamber of Commerce, and spoke on "Rooftop Solar Landscape Study: Market potential, Skills, Entrepreneurship and Applications".

DFID in coordination with SCGJ and PWC organized a Training of Trainers ( ToT) program on Solar PV Project Management. A total of 26 participants learned international best practices from our training partner from UK



# SIGMA SUMMIT AT A GLANCE

SCGJ organized the Sigma Summit at JLN stadium on 28<sup>th</sup> and 29<sup>th</sup> Jan 2019



## KNOWLEDGE PARTNERS



10 Sessions

90 Speakers

## SUMMIT PARTNER



CONFERENCE

EXHIBITION



SIGMA SUMMIT

46

Exhibitors



Sangam AIC

Energy | Innovation | Capital

100 Participants

20 Selected for Hand holding



SKILLS CHALLENGES



4 Challenges

220 Challengers

1. Solar Rooftop Installation Challenge

2. Solar Pump Maintenance Challenge

3. Solar Design Challenge

4. Solar Lights Maintenance Challenge

# GLIMSES OF SIGMA SUMMIT



## CONFERENCE HIGHLIGHTS



Skill Council for Green Jobs vision is “ to capture the skilling needs for both service users and manufacturers/ service providers within the sector and implement a roadmap for a nation-wide, industry led collaborative skills development initiatives that will enable meet India's potential for “Green Businesses”. SCGJ has skilled over 60,000 people and linked them to employment in India, the manpower is skilled under the National Skills Qualification Framework, the framework enables industry to recognize the skills sets easily.

Dr. Praveen Saxena, CEO SCGJ invited the International Solar Alliance (ISA) partner countries to share their learnings which would enable SCGJ to serve the country in a better manner. Using the same platform Dr. Chetan Singh Solanki and his team launched the Gandhi Global Solar Yatra at the inauguration session of Sigma Summit.

According to Mahatma Gandhi, the **“Not mass production but production by masses is required”**. In the context of energy, lack of energy access and climate change, the need of the hour is the production of energy by masses.

It is clear that only science and technology development will not be sufficient for sustainable existence on Earth. It is high time that we pay gratitude and adopt Gandhian ideologies while celebrating 150th Birth Anniversary Year of Mahatma Gandhi. The **Gandhi Global Solar Yatra (GGSY)** is planned to promote self-sufficiency in energy for sustainability, mainly for those who lack access, as it is possible today to provide complete, cost-effective, reliable and sustainable solar energy access while protecting the environment, creating livelihood and empowering locals. With the vision to promote localized energy self-sufficiency by creating awareness and sensitizing towards the viability of 24x7 decentralized solar solutions, GGSY aims to sensitize the key governmental and non-governmental officials towards solar energy.



Challenge Supported By :



**Winner:**

Rahul, Shaym Babu,  
Shayam Lal (NPTI , Badarpur)

**Runner Up:**

Jasot, Vikki, Prakash  
(DISET, Delhi)

Challenge Supported By :



**Winner:**

Sunil, Abhishek & Titiksha (Team  
Energio)

**Runner Up:**

Mohan, uvaish &  
Baby Priya (Team  
Energio)

Challenge 1 :  
Solar RoofTop  
Installation  
Challenge

Challenge 2 :  
Solar Pump  
Maintenance  
Challenge

Challenge 4:  
Solar Lights  
Maintenance  
Challenge

Challenge 3:  
Solar Design  
Challenge

**Winner:**

Ankit Premi

**Runner Up:**

Subendhu Sarkar, JKCTT

**Winner:**

Himanshu Agarwal

**Runner Up:**

Ratnesh Shingrupe



Challenge  
Supported By :



# SOLAR ENTREPRENEURSHIP WORKSHOP CUM CHALLENGE

84 people registered for the Solar Entrepreneurship workshop cum Challenge. After Screening 35 enthusiastic, budding entrepreneurs were assessed for the final round of Pitching. 20 Participants having different business ideas, technology Driven pitched their business before the VC's (Venture Capitalists).

The Judges analyzed the business pitch based upon the following five parameters:

Relevance

innovation

potential

sustainability

pitch presentation

The Participants came from all the parts of the country and have different business ideas on Developing New Technology or providing services.

**Winner:**

Vinit Pratap Pardeshi & Ganesh Chaudhary

**Runner UP:**

Richa Singh

Following are the top 20 Entrepreneurs selected for hand holding:

Amit Sharma, Shubham Rawat, Jayanth, Girisankar T J, Satish Kumar Ghosle, Aman Kumar Gupta, Manojkumar Patil, Ramkumar Patel, Ganesh Chaudhary, Amol Ram, krishna Ghule, Bharatesh Medar, Vipin Bansal, P Tirupati, Nandan Korgaonkar, Dilip Kumar Divakar , Richa Singh, Asim Khan, Md Rajib, Nikhil Kumar ,SHEWALI BORTHAKUR,



Post the competition SCGJ is regularly interacting with the entrepreneurs to develop their ideas, SCGJ conducted a Meeting on 19<sup>th</sup> March in its office at Chanakyapuri.



Organized by



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# News From the Eastern Region



10<sup>th</sup> January, Ranchi: SCGJ took part at Global Skill Summit 2019, Momentum Jharkhand. The skill development programs in association with IIT Bombay were the special attention. More than 5000 Solar Lighting Technicians have been trained and certified in Jharkhand and Bihar. Hon'ble Chief Minister of Jharkhand inaugurated the Summit.



8<sup>th</sup> March, Patna: Training of trainers on waste management was conducted in Patna at AILLSG, from 6<sup>th</sup> March 2019. The training program was attended by 14 participants from West Bengal, Odisha, Jharkhand, Bihar, Madya Pradesh and Uttar Pradesh.

The training was for the job role of SGJ/Q6102: Safai Karamchari developed by SCGJ, they also learned about the process of carrying out the 5 days RPL program of NSKFDC and Workshop on Hazardous cleaning of Sewer and Septic Tanks.



16<sup>th</sup> February, Kolkata: Trainers and Assessors are the integral part of the skill ecosystem, Skill Council for Green Jobs gives special importance in development of quality trainers across the India. In this front SCGJ in collaboration with GIZ, RENAC and Steinbeis Organized a 5 day Training of Surya Mitra Master Trainer Seminar under the TROPHI (Trainings on rooftop photovoltaic systems in India) project. The training program emphasized on teaching with Innovative methods so that participants can learn more. Under this project one training program is conducted in Bhubaneshwar Odisha and another in Kolkata, West Bengal from 12<sup>th</sup> – 16<sup>th</sup> February 2019.

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## The Editor of this edition

**Sarvesh Pratap Mall** joined SCGJ about 2 years back and is looking after clean cooking and bio mass related activity.

Sarvesh is M.Tech in Green Energy Technology from Pondicherry Central University with over 4 years of experience in project feasibility report preparation, liasoning and operation management in RE certification. Most part of his work is around policy advocacy in the Bio-energy and waste management sector. Currently he is working as Technical Associate in SCGJ and involved in R&D in Skill Development activities for six sectors viz Water Management, Solid Waste Management, E-Waste Management, Carbon Sinks, Green Construction and Clean Cooking along with the implementation of sustainability project of President adopted villages in Haryana.



## Green Jobs News

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