

Regional Workshop on Rural Technology
by
Rural Technology Action Group (RuTAG), IIT Delhi
In Collaboration with
CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani

RuTAG Indian Institute of Technology Delhi conducted a regional workshop on February 23, 2018 in collaboration with CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani at CSIR-CEERI's Incubation-cum-Innovation Hub, CFC-1, Malviya Industrial Area, Jaipur, Rajasthan. The program was attended by about 58 participants which included **Dr. Ketaki Bapat**, Scientist F, Office of the Principal Scientific Adviser, **Prof. Santanu Chaudhury**, Director, CSIR-CEERI, Pilani, **Dr. Manu Sikarwar**, Project Director, DST, Government of Rajasthan, **Mr. Nadeem Rahim**, State Innovation Council (SIC), DST, Government of Rajasthan. **Mr. Amin Aziz**, National Backward Class Finance Development Corporation (NBCFDC), **Prof. R. R. Gaur**, Hon. Visiting Professor, NRCVVE, IIT Delhi and Chairman, Core Group, RuTAG IIT Delhi, **Prof. S. K. Saha**, Head, Department of Mechanical Engineering, IIT Delhi and Coordinator, RuTAG IIT Delhi, **Prof. M. R. Ravi**, Professor Dept. of Mechanical Engineering, IIT Delhi and Co-coordinator RuTAG IIT Delhi, **Prof. B. P. Patel**, Professor, Dept. of Applied Mechanics IIT Delhi, **Dr. Ram Prakash**, Scientist In-charge, CSIR-CEERI's, Incubation-cum-Innovation Hub, Jaipur, **Dr. Rama Krishna**, Assistant Professor, Dept. of Mechanical Engineering, IIT Delhi, **Mr. Davinder Pal Singh**, Project Associate, RuTAG IIT Delhi, **Mr. Raj Kumar Gupta** Senior Project Assistant, RuTAG IIT Delhi, etc.

The program was started with welcome address by **Prof. S. K. Saha**, Head, Department of Mechanical Engineering, IIT Delhi. He welcomed the participants and briefly explained the agenda of the workshop. Prof. Saha introduced the mechanism and role of RuTAG IIT Delhi in technology up-gradation for rural India. He offered his sincere thanks to Prof. Santanu Chaudhury, Director, CSIR-CEERI for agreeing to host the workshop in CSIR-CEERI's Jaipur Centre and also appreciated the efforts of Dr. Ram Prakash in efficiently organizing the workshop. He further expressed thanks to Dr. Ketaki Bapat for her presence in this Regional Workshop.



Welcome address by Prof. S. K. Saha

Dr. Ram Prakash also welcomed all the delegates and NGOs with warmth and gratitude. He applauded RuTAG's contribution to the rural society and expressed his willingness in CEERI-RuTAG collaborations. He mentioned that Department of Science & Technology Govt. of Rajasthan has supported for Rural Technology Business Incubation Unit at CSIR-CEERI's Jaipur Centre and there is a huge opportunity for the technology developers/startups/NGOs to work together with the scientists to uplift the life of the common man in the rural areas of our society.



Welcome address by Dr. Ram Prakash

In her address Dr. Ketaki Bapat expressed her satisfaction specially for NGO's participation for the cause of social welfare. She mentioned about the Govt. of India initiatives and the role of RuTAG in livelihood development and rural betterment. She urged the scientists and academicians to work more on problems related to rural India. She appreciated CSIR-CEERI Pilani and RuTAG IIT Delhi for their efforts in organizing first one-day workshop at Jaipur and she told that this is a beginning and it should continue in the state of Rajasthan.



Address by Dr. Ketaki Bapat

In his presidential address **Prof. Santanu Chaudhury, Director, CSIR-CEERI, Pilani** emphasized that experts from premier institutes should come forward in finding solutions for various problems faced by rural India. He mentioned about CSIR-CEERI and its role in developing various technologies which are helpful to the rural people in many ways. He said that the goal of any rural intervention is to increase the livelihood. He hoped that the actual users/artisans will get benefited from this workshop and thus obtained feedback would be fruitful for inspiring the scientific community to bring out the actual solutions for the key problems faced by rural India.



Address by Prof. Santanu Chaudhury, Director, CSIR-CEERI

Prof. R. R. Gaur, Hon. Visiting Professor, NRCVEE, IIT Delhi and Chairman, Core Group, RuTAG IIT Delhi also addressed the august gathering. He mentioned that impacts of fast and sustainable developments have to be ascertained by understanding and choosing correct technological inputs necessary for the growth. He told that it is essential for a scientific institute to provide proper technical solutions which should be environmental and user friendly. He discussed the role of RuTAG and challenges in rural technology development and dissemination. He ascertained that CEERI Pilani and RuTAG IIT Delhi can provide technological solutions for majority of rural problems. Moreover, coordination between these two institutions in certain joint interventions can help in solving some of the challenging problems and their identification for the betterment of rural livelihood.



Address by Prof. R. R. Gaur

Vote of thanks for the inaugural session was proposed by **Prof. M. R. Ravi**. He reminded about the days when he joined IIT Delhi as young faculty and mentioned that he was also having same kind of energy to transform the rural India after looking at the young scientists and various NGOs. He also mentioned about his success story in this endeavour. He gave all the credits of his achievement towards rural betterment to Prof. R. R. Gaur who has been his one of the mentors. He thanked all the delegates and experts present in the workshop. He extended his gratitude to Director, CSIR-CEERI for arranging workshop at CSIR-CEERI's Jaipur Centre. He also expressed his sincere thanks to Dr. Bapat for her presence. He also expressed special thanks to Dr. Ram Prakash and his team for all their efforts and hard work in arranging this workshop at a very short notice. He also acknowledged RuTAG team for their help in arranging this workshop.



Prof. M R Ravi speaking to the audience

In the first technical session there were presentation on Rural Technologies developed under RuTAG IIT Delhi by Prof. S. K. Saha, Prof. M. R. Ravi and Prof. B. P. Patel. Prof. Saha outlined several completed and ongoing projects of RuTAG IIT Delhi. He gave a brief explanation on Animal Driven Gear Box, Bullock Driven Tractor (old and new), Treadle Pump, Tulsi Mala making Device, Sheep Hair Shearing Device, Ground water measuring device and Carpet related machines developed at IIT Delhi. He also mentioned the objectives and mandate of the RuTAG programme. He highlighted various technologies (viz. Improved Sanitary Napkins, Coir rope making machine, Jute rope making machine, Pirm winding machine, Foot operated Amber charkha, Muri making machine, Sabai grass rope making machine, Bageshwari charkha, Multi nutrient compressed feed block making machine for yak, Fish cage culture in reservoirs, Improved metallurgy of Horse shoe, etc.) developed at the RuTAG Centres located in seven IITs.

Prof. M. R. Ravi explained about the current improvisations in Bangles making Furnace, including associated tools, seating arrangement, etc. He also mentioned about the project funded by NBCFDC for the construction of potters kiln at Khurrampur village near Gurugram.

Prof. B. P. Patel explained about the project funded by Ajay Industrial Corporation Ltd. for the optimization of treadle pump.



Presentation by Prof. S. K. Saha

In the second technical session the first presentation was given by Prof. Santanu Chaudhury, Director, CSIR-CEERI on Technology Incubation and Rural Technologies from CSIR. He began with a brief description of CSIR network across India, known for its cutting edge R&D knowledge base in diverse S&T areas. He highlighted that CSIR has a dynamic network of 38 national laboratories, 39 outreach centers, 3 Innovation Complexes and 5 units and covers a wide spectrum of science and technology from radio and space physics, oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology. He added that it provides significant technological intervention in many areas with regard to societal efforts which include environment, health, drinking water, food, housing, energy, farm and non-farm sectors and its role in S&T human resource development is noteworthy.



Presentation by Prof. S. Chaudhury, Director, CSIR-CEERI

He mentioned that Govt. of Rajasthan has selected 100 aspirational districts to identify technological and skills gaps, for building the alliances with industries, MSMEs, start-ups, and entrepreneurs. In Rajasthan 5 districts have been short listed for S&T based interventions for rural upliftment and CSIR-CEERI has been chosen as the Nodal Agency for Rajasthan. He also proposed to have a future collaborative work between CSIR-CEERI Pilani and RuTAG IIT Delhi in solving rural problems. He raised his concern and mentioned that despite large number of technological interventions by the Govt., and other agencies, very few of them have benefited the society. He mentioned that the only remedy for the said situation could be

the establishment of technology readiness level (TRL) above 7 of a product and he briefed about the importance of TRL and its impact. He also explained how a technology should move from TRL-1 to TRL-9 (i.e., the prototype which has managed to survive the valley of death) for its success. He stated that only a new startup has the capacity and courage to face the challenge to survive the valley of death for the sustainable growth.

In the second technical session the second presentation was given by Mr Nadeem Rahim on Plan of nurturing rural technology start-ups by the Govt. of Rajasthan. He mentioned that state Innovation Council earlier working as GIAN-North was set up by Dept. of Science & Technology, Govt. of Rajasthan and National Innovation Foundation (NIF) in 2003, to provide incubation support to grass-root technologies. A Corpus Support of Rs. 1 Crore and administrative support to GIAN-North were provided by Govt. of Rajasthan and NIF respectively. Department of Planning mooted the proposal of amalgamation of GIAN-north into State Innovation Council (SIC) which was accepted by Chairman, GIAN-North. The mandates of both SIC and GIAN-North was to promote, support, and popularize innovations. As the objectives of both the organizations were more or less similar, it was proposed that the two organizations work as one entity to support innovations emerging out of State of Rajasthan. The objective behind the amalgamation was to utilize the experience of GIAN-North in incubating innovations by SIC and to make available financial resources to GIAN-North. The mandate of SIC is to augment knowledge and creativity at the formal and non-formal sectors through identification, support and incubation of technologies and traditional practices. In achieving this, SIC forged alliances with formal bodies of science, technology and management. It worked jointly with other development organizations –Government and non-government and individuals to recognize and scale up the endeavours. He presented various technologies developed under SIC.

In technical session three representatives of NGOs, startups, were invited to express their views. **Startup Oasis RIICO** Jaipur was represented by Mr. Chintan Bakhsi, CEO. He presented the need of technical inputs for the following technologies:

1. Low cost pellets making device.
2. Low cost solar dryer.
3. Low cost cold storage.
4. Pulp processing of Sitafal.
5. User friendly khadi design/ hybrid design etc. (increasing the colour retaining capacity of khadi (textile standard is 8 washes)
6. High fibre cattle feed.
7. Technology for packaging camel milk.
8. Technology for IoT devices.

RuTAG asked to provide the exact requirements in 1-2 priority areas so that 1-2 projects can be started in those limited areas.

Aajeevika Bureau Udaipur was represented by Ms. Priyanka Jain. She mentioned that there are 230 units for stone carving which are based in Pindwara Block and have been engaged about 5000 Artisans over there. Due to continuous exposure to the dust in stone carving causes silicosis. Large number of people are getting affected with this deadly disease. Quantum of death rate in a few villages has labelled them as the village of widows. She told

that effective solution for dust control for red stone artefacts artisans and miners is required. RuTAG IIT Delhi & CSIR-CEERI Pilani both decided to work for this serious concern in finding out solutions for this problem as it is a relevant problem which must be taken up.

National Backward Class Finance Development Corporation (NBCFDC) was represented by Mr. Azim Aziz. He told that National Backward Classes Finance & Development Corporation (NBCFDC) is a Govt. of India undertaking under the aegis of Ministry of Social Justice and Empowerment. NBCFDC was incorporated as a company not for profit, with an objective to promote economic and developmental activities for the benefit of Backward Classes and to assist the poorer section of these classes in skill development and self-employment ventures. NBCFDC provides financial assistance through State Channelizing Agencies (SCAs) nominated by the State Governments/UTs. NBCFDC also provides Micro Financing through SCAs/ Self Help Groups (SHGs). The Corporation can assist a wide range of income generating activities to assist the poorer section of these classes in skill development and self-employment ventures under following broad sectors:

1. Agriculture and Allied Activities
2. Small Business
3. Artisan and Traditional Occupation
4. Technical and Professional Trades/Courses
5. Transport and Service Sector, etc.

Daang Vikas Sansthan Karauli, Rajasthan represented by Mr. Rajesh Kumar and posed the problem to prevent workers/artisans working in stone mines in Karauli, Rajasthan as stone dust is the root cause of silicosis there also.

Mr. Bhupindra Paliwal represented Ramkrishna Jaidayal Dalmia Seva Sansthan, Chirawa, Jhunjhunu, Rajasthan. He appreciated the intervention done in developing ground-water level measuring device by RuTAG IIT Delhi which has helped his organisation in recording ground water data. He further requested organizers to intervene in the following areas:

1. Low cost contactless ground water level measuring device.
2. Device to remove salinity in water.
3. Technology to stop sprinkler coagulation.
4. Low cost soil moisture meter.

Seemant Kisaan Sayog Sansthan (SKSS) Jaisalmer was represented by Mr. Nakhatdan Detha. He mentioned that they wanted RuTAG technologies Treadle Pump and Bullock Driven Tractor (BDT) for demonstration and implementation.

Lupin Human Welfare and Research Foundation Bharatpur was represented by Mr. Hemant Sharma and he raised the following problems and asked for solutions.

1. Interventions in Gazak making process
2. Helping tawa cluster by improving the efficiency of the kiln.

Rajasthan Carpet and Woollen Products Development Society (RCWPDS) Chamber was represented by Mrs. Indra Bhatia and she raised the requirement of an intervention in carpet washing, weaving, drying, clipping.



Workshop Participants



Workshop Exhibition

At this occasion an exhibition related to rural technologies was also organized where products of CSIR-CEERI and RuTAG IIT Delhi were presented by the concerned scientists and faculties.

In the concluding session, **Prof. Santanu Chaudhury**, Director, CSIR-CEERI and **Prof. S. K. Saha**, Head, Department of Mechanical Engineering, IIT Delhi expressed their satisfaction for fruitful discussion and successful organization of the workshop. At the end of the workshop, Dr. Ram Prakash, Scientist-in-charge, CSIR-CEERI's Incubation-cum-Innovation Hub proposed the vote of thanks.