

*Report on the*  
**Regional Workshop on Rural Technology**  
by  
**Rural Technology Action Group (RuTAG), IIT Delhi**  
In Collaboration with  
**CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani**  
at  
**CSIR-CEERI Incubation-cum-Innovation Hub, CFC-1**  
**Near RIICO office, Malviya Industrial Area, Jaipur, Rajasthan**  
on  
**February 23, 2018**



By  
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## Preamble

RuTAG IIT Delhi conducted a regional workshop on February 23, 2018 in collaboration with CSIR-Central Electronics Engineering Research Institute (CEERI), Pilani at CSIR-CEERI Incubation-cum-Innovation Hub, CFC-1, near RIICO office, 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. Ram Prakash**, Scientist In-charge, CSIR-CEERI, Incubation-cum-Innovation Hub, Jaipur, **Dr. Manu**, Project Director, DST, Government of Rajasthan, Head, **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, NRCVEE, 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. 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, **Mr. Suraj Bhat**, Research Scholar, RuTAG IIT Delhi, 15 scientists from CSIR-CEERI Pilani, 2 scientists from DST Rajasthan, and about 17 NGOs representatives.

### 1. Inauguration Session (Day 1, February 23, 2017)

The program was started with welcome address by the workshop coordinator Mr. Davinder Pal Singh.

#### 1.1 Welcome address by Prof. S. K. Saha (Fig. 1)

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 for agreeing to host the workshop in CSIR-CEERI Jaipur and also appreciated the efforts of Dr. Ram Prakash in efficiently coordinating the workshop. Dr. Ketaki Bapat was also thanked for her presence in the Regional Workshop.



Fig. 1 Welcome address by Prof. S. K. Saha

## 1.2 Address by Dr. Ram Prakash (Fig. 2)

He 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.



Fig. 2 Welcome address by Dr. Ram Prakash

## 1.3 Address by Dr. Ketaki Bapat (Fig. 3)

Dr. Bapat welcomed the participants and the RuTAG IIT Delhi team. She appreciated CSIR-CEERI Pilani and RuTAG IIT Delhi for the effort in organizing one-day workshop at Jaipur. She emphasized the role of RuTAG in livelihood development and rural betterment.



Fig. 3 Address by Dr. Ketaki Bapat

#### 1.4 Address by Prof. S. Chaudhury (Fig. 4)

Prof. Chaudhury welcomed everyone. He emphasized that experts from premier institutes should come forward in finding solutions for various problems faced by rural India. He mentioned that the role of CEERI Pilani 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 may get benefitted from this workshop and thus obtained feedback would be fruitful for inspiring the scientific community.



Fig. 4 Address by Prof. Santanu Choudhury

#### 1.5 Address by Prof. R. R. Gaur (Fig. 5)

Prof. Gaur welcomed everyone and mentioned that impacts of fast and sustainable developments have to be ascertained by understanding and choosing correct technological inputs necessary for the growth. He mentioned that it is essential for a scientific institute to provide proper technical solutions which would be environmental and user friendly. He discussed the role of RuTAG and challenges in rural technology development and dissemination. He asserted that CEERI Pilani and RuTAG IIT Delhi have responsibilities in providing technological solutions for majority of rural problems and coordination between these two institutions in joint interventions to rectify the challenges in problem identification and providing solutions would give thrust towards the betterment of rural livelihood.



Fig. 5 Address by Prof. R. R. Gaur

### 1.6 Vote of Thanks by Prof. M. R. Ravi (Fig. 6)

Prof. Ravi 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 people inform various NGOs in the workshop. Further, he gave all the credits of his achievement towards rural betterment to Prof. R. R. Gaur in giving him proper directions. He thanked all the delegates from various NGOs, CEERI and DST scientists and people from NBCFDC. He extended his gratitude to Prof. Chaudhury for arranging workshop in CEERI-Pilani at Jaipur. He also expressed his sincere thanks to Dr. Bapat for her presence. He thanked Dr. Ram Prakash for all his effort and hard work in arranging this workshop. He also acknowledged RuTAG team for arranging all for the workshop.



Fig. 6 Vote of Thanks by Prof. M R Ravi

## 2. Technical Session-1

### 2.1 Presentation on Rural Technologies developed under RuTAG IIT Delhi by Prof. S. K. Saha, Prof. M. R. Ravi and Prof. B. P. Patel (Fig. 7)

Prof. S. K. Saha outlined several completed and on-going 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, Pirn 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.



Fig. 7 Presentation by Prof. S. K. Saha

## **2.2 Presentation on Technology Incubation and Rural Technologies from CSIR by Prof. S. Chaudhury (Fig. 8)**

Prof. Chaudhury began with the brief description of the 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.

He mentioned that Gov. of Rajasthan has selected 100 districts to identify technological and skills gaps, for building the alliances with industries, MSMEs, start-ups, and entrepreneurs. So far, CEERI Incubation-cum-innovation Hub at Jaipur, shortlisted 5 districts for S&T based interventions for rural poor. He also proposed to have a future collaborative work between CEERI Pilani and RuTAG IIT Delhi in solving rural problems. 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) 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 start-up has the capacity and courage to face the challenge to survive the valley of death for the sustainable growth.



Fig. 8 Presentation by Prof. S. Chaudhury

### **2.3 Presentation on Plan of nurturing rural technology start-ups by the Govt. of Rajasthan by Mr Nadeem Rahim**

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.

### **3. Technical Session-2**

**3.1 Startup Oasis RIICO** Software complex, EPIP, Sitapura Industrial Area, Jaipur-302022 Rajasthan India (Presentation by Mr. Chintan Bakshi, CEO, M: 8003098402; Email: connect@startupoasis.in)

Mr. Chintan 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 of devices.

#### **RuTAG IIT Delhi Remarks**

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

**3.2 Aajeevika Bureau**, 39, Krishna colony, near Khan complex, Bedla road, Udaipur, Rajasthan – 313004 (Presentation by Ms. Priyanka Jain; Email: priyanka.jain@aajeevika.org)

Ms. Priyanka 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. Following problems were raised:

1. Effective solution for dust control for red stone artefacts artisans and miners.

#### **RuTAG IIT Delhi Remarks**

Mr. Suraj Bhat will contact Ms. Priyanka to understand the requirements. In the meantime, RuTAG would identify a suitable faculty to get involved in finding out solution for this problem as it is a relevant problem which must be taken up as RuTAG Project.

**3.3 National Backward Class Finance Development Corporation (NBCFDC)** (Presentation by Mr. Azim Aziz).

Mr. Azim 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.

**3.4 Daang Vikas Sansthan**, Subzimandi, padan talab, Karauli, Rajasthan Presentation by Mr. Rajesh Kumar (M: 9414340578; Email: dvs.karauli@gmail.com)

They proposed the following problems:

1. To prevent workers/artisans working in stone mines in Karauli, Rajasthan as stone dust is the root cause of silicosis.

#### **RuTAG IIT Delhi Remarks**

See item 3.2.

**3.5. Mr. Bhupindra Paliwal**, Ramkrishna Jaidayal Dalmia Seva Sansthan, Chirawa, Jhunjhunu, Rajasthan **Presentation by Bhupendra Paliwal**. (M: 9829596055; Email: b.paliwal@dalmiatrusts.in)

Mr. Paliwal 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 RuTAG IIT Delhi 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.

#### **RuTAG IIT Delhi Remarks**

For the low cost contactless device, Prof. A. K. Gosain in Civil Engg. Dept. will be contacted and the present status must be provided by the NGO.

**3.6 Seemant Kisaan Sayog Sansthan (SKSS)**, 1207, Kandhari Pada, Madarsa Road, Dist. Jaisalmer, Rajasthan-345001, Presentaion by Mr. Nakhatdan Detha, (M: 9829446228, 9166070453; Email: skss.jsmr17@gmail.com)

They wanted RuTAG technologies Treadle Pump and Bullock Driven Tractor (BDT) for demonstration and implementation–

#### **RuTAG IIT Delhi Remarks**

First, prices should be told to the NGO for possible purchase.

**3.7 Lupin Human Welfare and Research Foundation**, 160, Krishna Nagar, Bharatpur, Rajasthan-321001, Presentation by Mr. Hemant Sharma, (M: 9521276353; Email: lupinfoundation@gmail.com, sitaramgupta10@gmail.com). Problems raised by them are as follows:

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

**RuTAG IIT Delhi Remarks**

Dr. Vinay Gupta of IEC GV. Noida, must be contacted as improvement of gazak making process. Currently he is improving batasha making process and it has significantly modified.

**3.8 Rajasthan Carpet and Woollen Products Development Society (RCWPDS),** Basement, Chamber Bhawan, MI Road, Jaipur, Rajasthan, Problem raised by Mrs. Indra Bhatia, Ph. No.: 0141-2575197; 0141-2577004; (Email: rcwpds@yahoo.co.in). She mentioned following problems:

1. Need intervention in carpet washing, weaving, drying, clipping.

**RuTAG IIT Delhi Remarks**

One or two Carpet looms developed at IIT Delhi earlier would be immediately provided. Mr. Raj Kumar Gupta will find locations after talking to Mrs. Indra Bhatia. The process and other devices developed at IIT Delhi during 2000-2003 can also be provided as per the requirements by Mrs. Bhatia.

**4. Vote of thanks delivered by Dr. Ram Prakash, CEERI Jaipur**

This report was compiled by Mr. Davinder Pal Singh.

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