

# SCIENCE AND CULTURE

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EDITORIAL

## MILES TO GO



Abbracing climate, pollution free air, water and soil, copious rainfall, rich natural resources—both organic and inorganic, a potential workforce and above all a ready market. You name it and you have it. But even then Assam and its neighbouring states of the North-Eastern Region portrays a dismal picture in

the industrial sector. This, not so happy picture is indeed a paradox. The observation just made may be concretized by the fact that Assam shares only less than 2% of the country's medium and large-scale industries, whereas India's leading state Maharashtra contributes 13% of national industrial output. Investment in North-East is made by outside players only in the cement sector which unfortunately is an air polluting industry, not encouraged by many states outside NE region. The trend of establishing cement industry may be due to huge transport subsidies and other attractive incentives like tax holiday doled out by the government. Fat subsidies, formation of the North-Eastern Council to facilitate infrastructural development and establishment of a DoNER ministry (Ministry of Development of North-Eastern Region) under an experienced minister of cabinet rank reflects the

anxiety as well as eagerness of the governments, both Central and State. But still we have 'miles to go'. Miles to go for a brighter tomorrow. Level of industrialization is an index of overall economic development of a region. Poor state of development in the North Eastern region stares at your face squarely when one looks at the percentage of total Gross Domestic Product (2010) of the states of the region.

### States of the region

Arunachal Pradesh:	0.12%
Assam:	1.48%
Manipur:	0.14%
Meghalaya:	0.20%
Mizoram:	0.09%
Nagaland:	0.12%
Sikkim:	0.06%
Tripura:	0.23%

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It is worthwhile to note that Maharashtra tops the list with 14.46% and the NE states (put together) rest at the bottom with 0.31% (average) which is again very much lower than that of the national average of 8.2%.

Of late a realization has dawned upon that until and unless the knowledge-base and the benefits of science and technology are brought to the fore and down to the grass-root level and allowed to be

permeated vertically and horizontally through the society at large the region cannot be developed industrially and economically. To bring in qualitative improvement in the lives of people around, R&D inputs is 'a must'.

In consideration of the above several institutes have been set up in the region which includes Regional Research Laboratory, presently known as CSIR-North East Institute of science and technology, Jorhat under the aegis of the Council of Scientific & Industrial Research, New Delhi. CSIR-NEIST, being a premiere R&D institute in the region has taken upon itself the visibly difficult task of providing science and technology inputs in the region subject to its scope and availability of its expertise in the mandated areas of its activities. CSIR-

NEIST so far developed more than 100 technologies, mainly based on the raw materials available in the region and/or having relevance to the region for developmental activities. Having realized that S&T developmental activities must percolate down to the 'not so wealthy' segments of the society like the rural and urban povers and the remotest corners of the region

and bring in direct benefits to the entrepreneurs as well as consumers of the unreached sections of the society, CSIR-NEIST developed and promoted such technologies which are simple, easy to absorb and operate with low skill and minimum investment. No doubt these are low capital intensive and more labour intensive to generate employment and provide livelihood. Examples: Mushroom farming, lemon grass cultivation, citronella cultivation, aromatic oil extraction, mosquito-repellant Agarbattis, biofertilizer, fibres from agricultural wastes and so on. The CSIR-NEIST knowledge-base not only contributed towards productivity, but also ensured better use of local resources, wasteland utilization, employment generation, upgradation of artisan skills and improvement in the quality of life. The users of CSIR-NEIST technologies are industrial concerns, first generation entrepreneurs, farmers, landless labours, artisans, co-operatives, voluntary organizations, rural communities and government agencies.

In the rural sector 5000 ha of fallow and waste lands in the NE region have been brought under lucrative cultivation of medicinal, economic and aromatic plants such as citronella, lemongrass, patchouli and geranium. Including mushroom this endeavour involves 25,000 families of rural farmers, women, unemployed youths, NGOs and self-help groups.

Being the premier R&D institute it is providing necessary inputs and working in tandem with other important institutes/organizations in the region like ONGC, Assam and Assam Arakan basin, Numaligarh Refinery Ltd, Regional Medical Research Centre, Dibrugarh, Central Muga Eri Research and Training Institute (Central Silk Board), Tocklai Experimental Station, Universities in the region and others.

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The role of CSIR-NEIST as a player in the developmental process to trigger industrialization does not confine to the R&D activities alone but it also took upon itself man power development within its ambit which no doubt is an onerous task to unlock human potential lying dormant in its largely unutilized vibrant population of the North East. We are of the firm opinion that a population

with entrepreneurial skill, enthusiasm, rich natural resources combined with appropriate R&D inputs and socio political will can work wonders and elevate NER to a new developmental height. In this sphere CSIR-NEIST besides transferring appropriate simple technologies to 25,000 families of rural farmers in the North East also organized Science Motivational programme to more than 24,000 school children of the region for instilling into them the spirit for pursuing science as a career.

In order to enhance their employability CSIR-NEIST undertook regular training programme to science students from different streams, engineers, technicians as well as semi and unskilled entrepreneurs. During the last few years CSIR-NEIST produced (by providing laboratory facilities, guidance and expertise) 275 PhDs, trained 324 engineering graduates, 524 technicians and several thousand marginal farmers who are now gainfully employed in and around NER.

While serving the society through S&T activities within its ambit, CSIR-NEIST, does not keep its door closed to knowledge-generating basic or fundamental research. It keeps itself abreast with latent developments by involving in frontiers of science and publishing research findings of international standard. So far CSIR-NEIST published 2798 scientific papers out of which 1691 in India and 1107 in peer reviewed international journals. It can be mentioned that several papers received gold medals and some were acclaimed as world's one of the topmost downloaded scientific papers.

Through this editorial column, I would like to confirm and emphasise the need of this special issue on "Impact of CSIR-NEIST in the NE-Region" as we, the CSIR family of scientists and planners as well as the learned Editorial group of the esteemed journal *Science and Culture* together advocate the relevance of science and technology in general and the role of CSIR Institute like NEIST in the firmament of North –Eastern Region for its overall development and prosperity. □

**PG Rao**  
Guest Editor



**Dr Paruchuri Gangadhar Rao** is the Director of CSIR-North East Institute of Science & Technology (CSIR-NEIST) at Jorhat, Assam, formerly known as RRL, Jorhat. He obtained his Ph D from IIT, Madras in 1995 in the area of Polymer Engineering. Dr Rao occupied various positions at CSIR-NEIST and CSIR-CLRI, before attaining the position of Director. Dr Rao has specialization in chemical process design and development. He was involved in providing basic engineering packages to eight processes, five of which were commercialized. At Central Leather Research Institute, Madras, Dr Rao's significant scientific contributions were in the area of process development for leather chemicals, design of leather chemical plants, etc. Dr Rao has more than 100 papers published in peer reviewed international and Indian journals, 4 patents (sealed), 3 copy rights, 1 book and 7 chapters in books to his credit. At NEIST, Jorhat, Dr Rao as Director has encouraged science popularization especially among school children, and in making the output of science and technology to reach to the society. Dr Rao is Fellow of National Academy of Sciences, Fellow of Andhra Pradesh *Akademi* of Sciences, Fellow of Indian Institute of Chemical Engineers and also its past President. He is a life member of several learned societies/associations. Dr Rao has visited large number of countries as a member of the delegation for business development, as an invitee to deliver lecture and as a member of the project team.

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