



REPORT OF BRAIN  
STORMING SESSION ON

**RENEWABLE  
RESOURCES  
OF ENERGY**

ROAD MAP FOR  
UTTARAKHAND

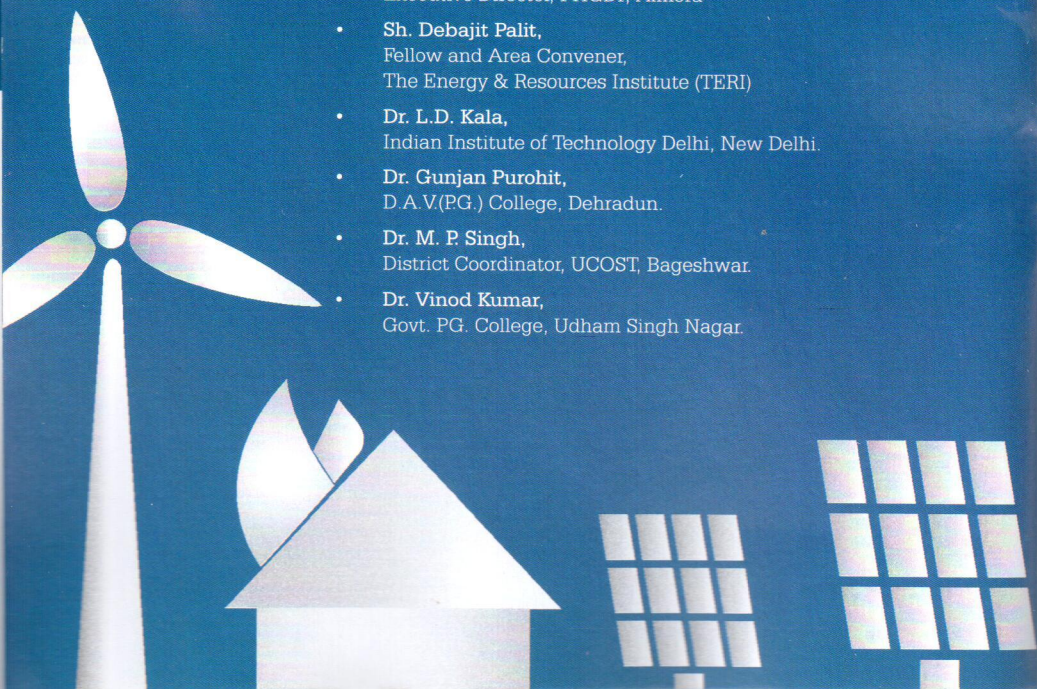
AT  
UTTARAKHAND STATE COUNCIL FOR  
SCIENCE & TECHNOLOGY (UCOST)

10.11.2010



## Experts of the session

- **Shri A.K. Tyagi (Session Convener),**  
Chief Project Officer,  
UREDA, Dehradun
- **Sh. Bhuvanesh Kumar Bhatt, (Session Chairman)**  
Director,  
Ministry of New and Renewable Energy, New Delhi.
- **Dr. A. K. Shukla,**  
Professor, Indian Institute of Science (IISc), Bangalore
- **Dr. Raghu Bhattacharya,**  
Former Scientist NPL, New Delhi
- **Dr R.P. Saini,**  
Prof. Indian Institute of Technology, Roorkee
- **Dr. Kamal Bansal,**  
Professor, University of Petroleum and Energy, Dehradun
- **Er. K.P. Tripathi,**  
Principal Scientist, CSWCRT, Dehradun
- **Sh. Pankaj Gupta,**  
Chairman, Industry Association, Dehradun.
- **Dr. Brij Mohan Sharma,**  
Secretary, SPECS, Dehradun.
- **Sh. Rajnish Jain,**  
Director, AVANI, Pithoragarh, Uttarakhand.
- **Dr. V.K. Painuly,**  
DGM, ONGC
- **Sh. Kalyan Paul,**  
Executive Director, PHGDF, Almora
- **Sh. Debajit Palit,**  
Fellow and Area Convener,  
The Energy & Resources Institute (TERI)
- **Dr. L.D. Kala,**  
Indian Institute of Technology Delhi, New Delhi.
- **Dr. Gunjan Purohit,**  
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- **Dr. M. P. Singh,**  
District Coordinator, UCOST, Bageshwar.
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Govt. PG. College, Udham Singh Nagar

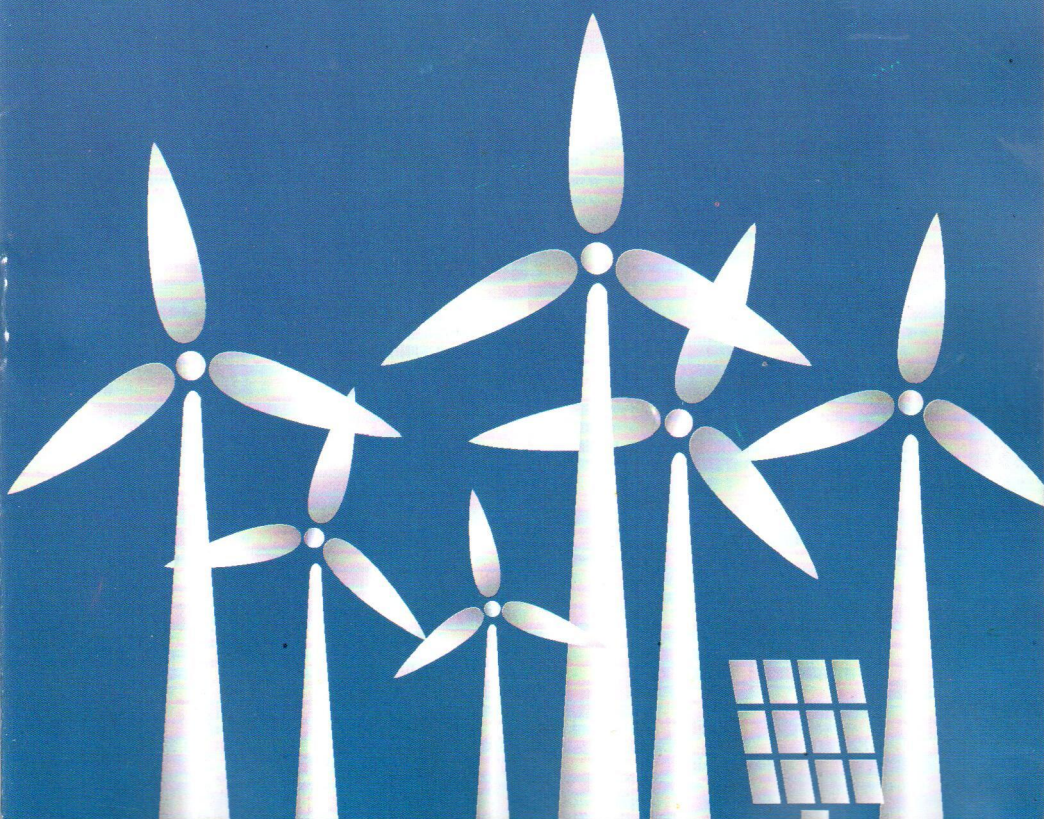




# Introduction

India is one of the world's emerging economic giants and is second most populated country of the world which is expected to surpass China to become world's most populous country by 2060. And it would need abundant energy sources to continue its feat.

With its economy & population growing at exponential rate, the efficient use of energy and water has become the main focal point. These two issues would play crucial role in the well being and growth of the society and country at large. And India faces formidable challenges in meeting its energy needs.

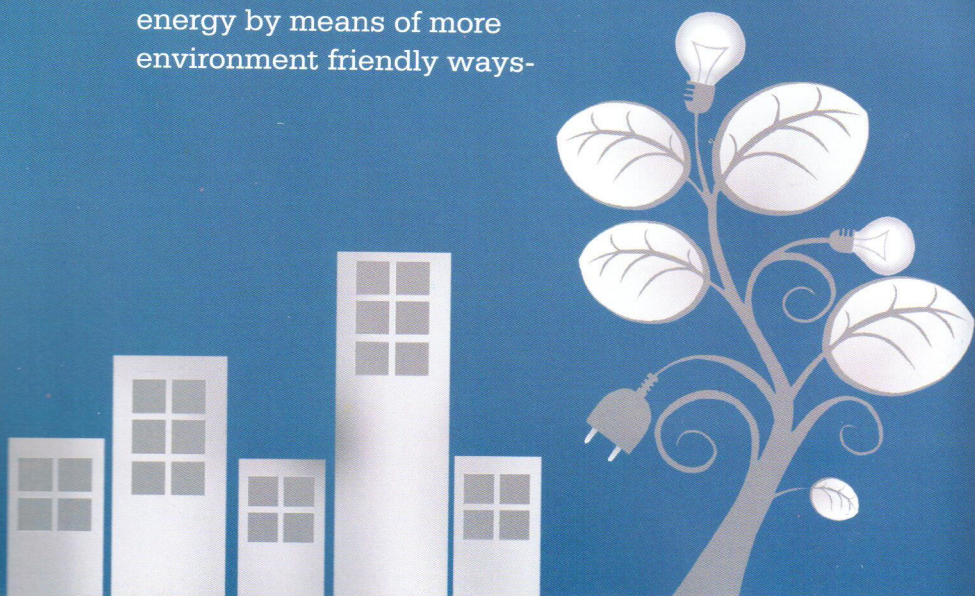




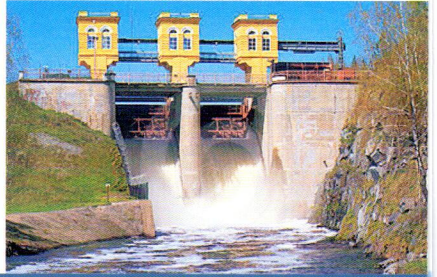
## The Initiative

In order to initiate the efforts for renewable energy, Uttarakhand State has set up Uttarakhand Renewable Energy Development Agency (UREDA) under the administrative control of the Department of Additional Sources of Energy, Govt. of Uttarakhand in July, 2001 under Society Registration Act 1860.

It is a State nodal agency for implementation of Renewable Energy Programmes, Energy Conservation and Decentralized Distribution Generation (DDG) under RGGVY Scheme of REC. there are several programmes being implemented by the UREDA for adding up the gap of energy by means of more environment friendly ways-







### **Mini/Micro Hydro Power**

Mini/Micro Hydel Projects, for village electrification & Grid Feeding

- Up-gradation of existing Water Mills (Gharat)
- For Electrical/Electromechanical/Mechanical Output

### **Solar Energy**

- Solar Photovoltaic Solar Domestic Street Lights & Solar Lanterns
- Solar Power Plants & Solar Power Fencing
- Solar Thermal like Solar Water Heaters, Community Solar Cookers, Solar Dryer

### **Bio Energy Programme**

- Biomass gasification & Biogas generation
- Production of Briquettes from biomass & biomass stove

### **Power generation from Industrial/Agricultural Waste.**

### **Wind Energy Programme.**

- Wind Solar Hybrid Systems
- Wind Mapping

### **Improved Rural Technology Programme**

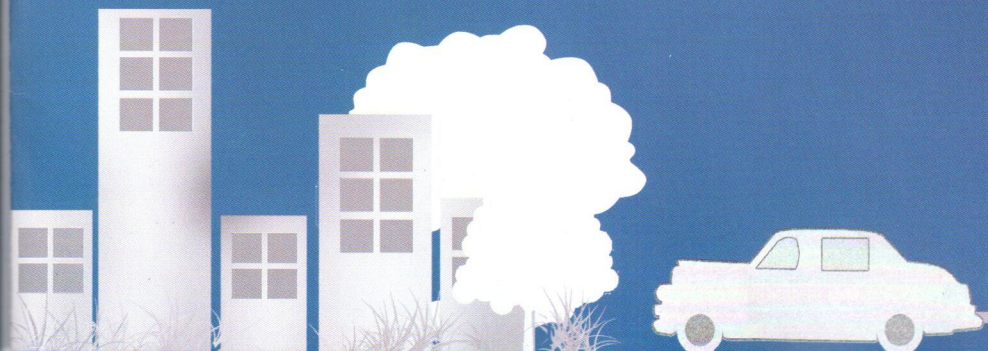
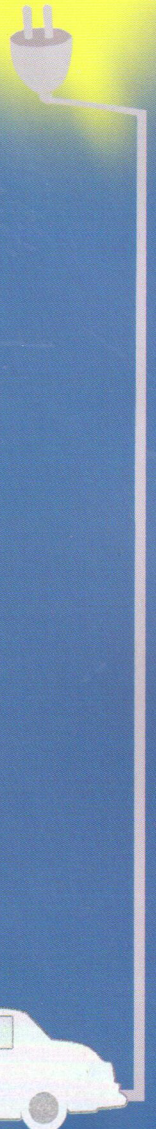
- Solar Charkha (spinning mill)
- Vinoying Fan

### **Energy Conservation Programme.**

### **Investment Grade Energy Auditing of Govt. Building**

### **Energy efficient LED Lighting**

Also for economic up-liftment, electrification of remote villages is an important issue and here the renewable resources of energy can play important role.





# The Brain Storming Session

During the deliberations it was discussed that the State can utilize the various programmes initiated by central Government like Solar City Programme. Ministry of New & Renewable Energy (MNRE) has initiated the programme on "Development of Solar Cities" for promoting Solar Water Heaters (SWHs), deployment of Solar Photo Voltaic (SPV) systems/devices in urban areas for demonstration and awareness creation; establishment of 'Akshya Urja Shops'; design of Solar Buildings, energy recovery from urban and industrial waste/ biomass to energy projects.

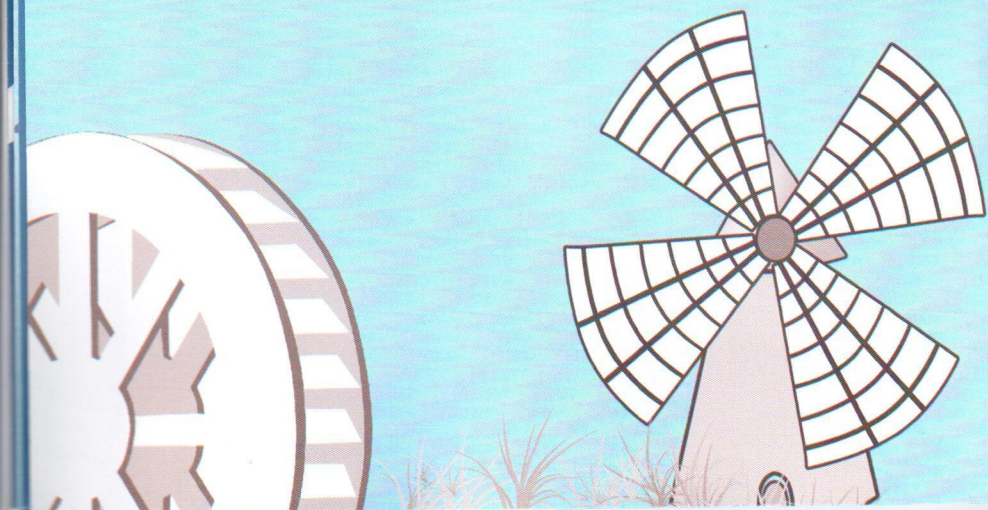
MNRE has selected Dehradun, Haridwar & Rishikesh for Solar City programme and has provided a grant of Rs. 50.00 Lakhs for development of Solar City Master Plan. Draft Master Plan for Dehradun City has been prepared and for Haridwar & Rishikesh, EOI is being invited for selection of consultant.

This Brain Storming Session on "Renewable energy resources Road Map for Uttarakhand", emphasized on feasible ways of utilization of renewable energy in Uttarakhand State. During the session ideas were discussed, judged and analyzed by means of open discussions. Further the brain storming session provided platform for discussions related to some low cost technologies for getting hassle free energy from renewable sources.

The experts for the session included academicians, researchers, industrialists and the officials of the executive body of the government of Uttarakhand state.

It was decided to share the research findings amongst scientists, research groups and communities related to simple, cost-effective and easy to operate gadgets for renewable energy generation. The session provided a platform for discussion & an opportunity on the technological front for better utilization of renewable energy.

It was also indeed suggested that researchers within Uttarakhand should get opportunity to contribute in the research and development in the field of renewable energy sector and connect with recognized experts, policy makers and academic leaders.





## Recommendations

As 60% of the area of Uttarakhand State is covered by forest and rivers, this makes a healthy ecosystem and environment of the State. Therefore, renewable sources of energy should be based on such a eco-friendly sustainable system which could be possible through available resources.

Road map of renewable energy for the State should consider the two areas - (i) area under rural habitat and (ii) urban area and accordingly separate planning should be made for generation of energy and depending on their demand for utilization of energy.

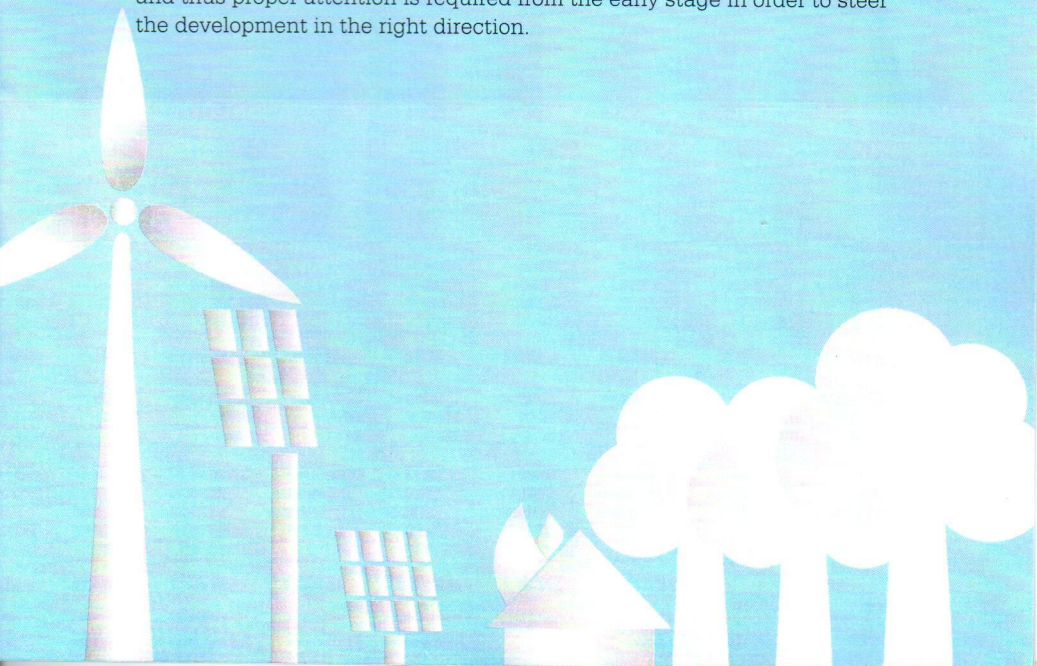
As the maximum population of the State resides in the far-flung areas, small energy generation units based on locally available material should be established around the habitat. Among the non-conventional sources of energy - solar, biogas, bio-fuel based plants can be established.

As at high altitude, pine trees are found profoundly. Therefore, their foliage wastage can be utilized as a major source of energy.

As 30% population resides in urban areas of the State, their energy demand is maximum. Also maximum part of energy is utilized under industries in this area. Therefore to fulfill their demand hydroelectric based energy generation can be utilized apart from other conventional and non-conventional sources.

Under non-conventional sources of energy e-wastage as well as urban wastage can also be utilize as a source of energy. In this connection new devices should be evolved for utilization of aforesaid wastages and research in this direction also needs to be encouraged, this will have multiple benefit.

The renewable energy resources are the resources of energy for the future and thus proper attention is required from the early stage in order to steer the development in the right direction.









# Fifth Science and Technology Congress at Doon University

**Dehradun, Nov 9 (HTS)**  
The Fifth Uttarakhand State Science and Technology Congress, organised jointly by the Uttarakhand Council for Science and Technology (UCST) and Doon University, will open tomorrow at the Doon University to mark the tenth anniversary celebration of the hill state.

The three-day mega science and technology event, the fifth of its kind being organised in the state by UCST, will provide a platform for young scientists and researchers to present their papers.

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entist (inventor). The Congress will be inaugurated by Uttarakhand chief minister Dr. Ranesh Pokhriyal Nishank, Dr. KS Tolia, former chief secretary and ex-chief Information Commissioner of the state, will deliver the NASI (National Academy of Science) Plenary Lecture on November 10 in the inaugural session.

On the inaugural day, in the afternoon, four parallel brainstorming sessions will be held on impact of 'Climate change on Himalayan eco-systems'.

'Conservation of biodiversity in the hill state', 'Providing safe drinking water to rural population of the state' and 'Renewable resources of energy'.

Each session will be of three hours and the recommendations of the sessions will be sent to the state government. Renowned environmentalists Chandi Prasad Bhatt and Dr. Anil Joshi will participate in the deliberations.

Papers will be presented in disciplines including agricultural sciences, Biotechnology, Biochemistry and Microbiology, Botany, Chemistry, Physics, Mathematics, Statistics, Environmental Science and Forestry, Animal Husbandry, Material Science and Nanotechnology, and computer science during technical and scientific sessions at the conference.

On November 11, a meeting of Vice-Chancellor of various universities of the state, convened by Doon University's Vice-Chancellor Prof. Gurjish Pant, The VC will be the priorities of research work in their respective universities.

The valedictory session of the conference will be held on November 12 and will be attended by Uttarakhand's Assembly Speaker Harbans Kapoor, Dr. Vinod Bhatnagar and Dr. Lajji Singh, former director, CCMB, Hyderabad. The presiding conference was addressed jointly by UCST Director Ranesh Pokhriyal and Doon University's VC, Prof. Gurjish Pant.

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## Technology must reach masses: CM

Fifth Uttarakhand science and technology congress opens in Doon valley



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Dehradun, Nov 8, 2010

## Science Congress to address Biodiversity, Conservation issues

BY OUR STAFF REPORTER

**DEHRADUN, 7 Nov:** The special three-day science congress, the opening day of the 10th Uttarakhand State Science and Technology Congress at Doon University, here, will comprise deliberations on the impact of climate change on Himalayan eco-systems, conservation of biodiversity in the hill state and providing safe drinking water to rural population of the state.

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The photo of 4th Science and Technology Congress

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congresses it will have for 1.5 million people who live within government forest areas.

The discussions in the session on Effect of Climate Change on Himalayan Eco-systems, would include effects of climate change on forest ecology and human activities, in the form of various effects of climate change on forest ecology, agricultural practices and tourism, animal husbandry, collection of medicinal and aromatic plants needs to be evaluated as factors are reporting diseases, low yield and foresting areas. In the session, the effect of climate change on forest ecology and other sources of income from forests like silk production from silkworms will be discussed.

The session on sustainable energy will discuss the need of the state for sustainable energy and energy use with solar panels. This will help, make use of renewable sources of energy in the state and state govt efforts in the field of energy.

The urgent need to address the problem of water scarcity, drinking water in Uttarakhand will be discussed at the session on providing safe drinking water to rural population of the hill state.

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the pioneer

DEHRADUN / FRIDAY / NOVEMBER 12, 2010

PHOTOGRAPH BY RAJESH KUMAR

USE TARGETS HAVE BEEN TAKEN TO THE

## Tech sessions held at fifth science congress

JASKARAN CHOPRA

DEHRADUN

Scientific sessions on a variety of subjects were held at parallel venues at the Doon University on Thursday as part of the three-day deliberations of the fifth State science and technology congress being organised at the university jointly by the Uttarakhand Council for Science and Technology (UCST).

The congress was inaugurated by Chief Minister Ranesh Pokhriyal Nishank.

The sessions were held on subjects including Agricultural Sciences, Botany, Earth Sciences like geology, geomorphology and glaciology, material sciences and nanotechnology, Mathematics, Statistics, phar-

macological sciences and environmental sciences and forestry. In the session on Earth Sciences, Dr BK Arora, former director of Wadia Institute of Himalayan Sciences, made a presentation on the precursory research on earthquakes. Senior scientists from various institutions from all over the country attended the technical sessions which began at 9 am on the second day of the science congress.

In the brainstorming sessions held till late evening on Thursday, deliberations were held regarding various development issues of the hill State. The session on renewable resources of energy highlighted the role of renewable resources of energy in the economic upliftment and electrification of remote villages. Experts in the



Chandi Prasad Bhatt at the science congress in Dehradun

session included academicians, researchers, individuals and the in-line departments of Uttarakhand.

Various researchers of the state showcased their contribution and joined with recog-

nize the best innovator's award this year.

The innovative presentations included those on energy efficient lights by Hemendra Gupta. Electricity produced from smelter by Rakesh Bhatt and toys made from waste used as raw for scientific and technological communication (Dr BM Sharma), BK Tyagi, senior scientist of the department of science and technology was among the judges for the innovative presentations.

The congress will culminate on Friday Uttarakhand assembly speaker Harbans Kapoor will be the chief guest at the closing ceremony.

Recommendations proposed at the brainstorming sessions will be read out during the valedictory session.

Although every possible care and caution has been taken to avoid errors or omissions, this publication is being sold on the condition and understanding that information given in this publication is merely for reference



**Chief Editor**

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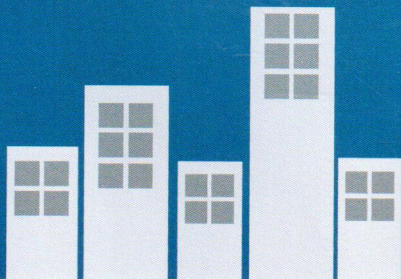
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