

Summary Record of Discussion of the Twelfth Meeting of Scientific Advisory Committee to the Cabinet (SAC-C) held on 5th March 2007, at CSIR Science Centre

The twelfth meeting of the Scientific Advisory Committee to the Cabinet (SAC-C) was held on 5th March, 2007 under the Chairmanship of Dr. R. Chidambaram, Principal Scientific Adviser to the Government of India (PSA to GOI) and Chairman, SAC-C. In the meeting issues relating to the 'Global Climate Change' and the 'Manufacturing Competitiveness' were discussed. The agenda of the meeting is at **Annexure I.**

The list of participants is at **Annexure-II.**

M12A1 Remarks by the Chairman, SAC-C

At the outset, the Chairman welcomed the participants and gave brief description of issues to be discussed in the meeting. In this context he mentioned that Global climate change threat involves a number of inter sectoral R & D issues and the efforts done in our country, so far, are fragmented. This meeting, therefore, proposes to spell out response of India with regard to climate change and identify country specific R & D issues for mitigation of its causes. He further observed that as a part of 11th Plan exercise of Planning Commission, Working Group on R & D for energy sector has identified certain R & D issues in energy sector as part of Indian response to climate change. In brief, these areas include materials development in energy sector, R & D in bio-fuels and renewables, setting up of Combustion Research Institute, developments of advanced coal technologies and carbon capture and storage to reduce greenhouse gases emissions (GHG)

The Chairman informed that a meeting of the Scientific working group of the Intergovernmental panel on the climate change (IPCC) has assessed the latest information on climate change and firmed up its view that climate warming "is very

likely due to the observed increase in anthropogenic green house gas concentrations,” i.e. more than 90% likely. He further pointed out that the per capita GHG emission in our country is much lower than those of developed countries. Despite this Government of India is very much concerned about this problem. Finance Minister in his Budget Speech 2007-08 himself flagged the issue :

“Government proposes to appoint an expert committee to study the impact of climate change on India and identify the measures that we may have to take in the future”.

The chairman while introducing “manufacturing competitiveness” stated that our country has increasing capabilities in this sector but there is a need to evolve a mechanism to bring a system change to enhance academia – industry interaction and to attract young professionals to this sector so as to bring it on par with global players.

M12A2P1 Presentation by Dr. R.K. Pachauri, Director General, The Energy and Resource Institute (TERI), New Delhi

Dr. R.K. Pachauri, Director General, TERI & Chairman IPCC presented highlights of the Fourth Assessment Report (AR4) of Working Group-I. The salient features of the AR4 includes (i) the global temperature over the current century is likely to be increased by about 3⁰C (ii) There would be significant change in the weather conditions across the world and the extreme weather events are likely to increase substantially, (iii) most of the snow cover areas such as the Arctic, Antarctic, Euro-Asia including Glaciers in the Himalayan region are projected to shrink significantly. Some projections suggest that the Arctic summer sea ice may disappear almost entirely by the latter part of the 21st century. (iv) The warming has been penetrated upto a depth of 3000-meters in the oceans resulting in a significant rise in the mean sea level. Dr. Pachuri mentioned that the reports of Working Group 2 and Working Group 3 of AR4 are expected to be out by April and September respectively and the Synthesis Report would be made available by November, 2007.

M12A2P2 Presentation by Dr. Prodipto Ghosh, Secretary, Ministry of Environment and Forests, New Delhi

Dr. Pradipto Ghosh, Secretary, Ministry of Environment & Forests briefed the Committee about the policy and legal framework related to the issues of Global Warming particularly, with respect to status of China, US & European countries. He outlined the efforts needed in India to face the challenges in a responsible manner. He mentioned that India has been an active partner in the studies related to Global Climate Change and organised its own efforts particularly in the modelling of the impact of the global warming on water resources. He indicated that there are uncertainties in the global climate change predictions and that there is a need for strengthening the high-resolution climate modeling studies, particularly focusing on the Indian monsoon related issues. He also requested the MoES to establish super computing facilities to cater to the needs of the modeling community. A systematic study needs to be undertaken to address the issues related to atmosphere brown cloud and its impact on the regional climate change. He also emphasized the need for taking up research projects like coupling of the climate change with bio-energy, as it is likely to play a major role in the future including the issues relating to soil carbon.

M12A2P3 Presentation by Dr. K. Krishna Kumar, Indian Institute of Tropical Meteorology, Pune

Dr. K. Krishna Kumar, IITM, Pune presented the observed climate change over the Indian region using more than a century long meteorological data and future climate projections based on modeling studies. Dr. K. Krishna Kumar brought out that the Indian temperature rise is in conformity with that observed on global scale. However, the behaviour clearly indicates that the rise in the Indian land and ocean temperatures is because of the global human interventions and is not indicative of any impact of the human activity with respect to the hydrocarbon emissions in the Indian land mass. It was also brought out that there is no significant change in the last 120 years in the mean rainfall inspite of the fact that the temperature had risen by about 0.2⁰ C per decade in

the recent times. Though the gross features such as the annual cycle in rainfall and temperature are reasonably simulated, most of the coupled ocean-atmosphere models that took part in the IPCC AR4 still suffer from serious systematic errors and biases in simulating the Indian Monsoon rainfall. However, the ensemble mean of the models appeared to be a good indicator of the past. It is also mentioned that even in case of the worst scenario, the rainfall change in India may be noticeable only after 2050's. Dr. K. Krishna Kumar also outlined the proposal of IITM for a coordinated network study on climate change with respect to the overall science plan, which includes systematic observations and modelling. A programme on atmospheric brown cloud studies on both measurements and modelling, including the explicit incorporation of the effects of aerosols into the climate model, is also felt necessary in the context of the regional Climate Change. It was clarified that a plan will be formulated by organising a Brainstorming Session with participating agencies like Ministry of Environment & Forests, National Physical Laboratory, Indian Space Research Organisation, Physical Research Laboratory and other academic institutions.

During the discussions many useful suggestions were made by the Members and the Committee. Some of them are as follows –

- Department of Atomic Energy may be involved in the aerosol and cloud micro physics studies.
- The modelling effort should be a mutli-dimensional one including the impacts on India's economy, agriculture, health and nutrition vis-à-vis climate Change, biodiversity and a specific programme on carbon sequestering by DST and other mitigatory methods be developed.

**M12A3 Manufacturing Competitiveness Address by Dr. V. Krishnamurthy,
Chairman, National Manufacturing Competitiveness Council,
(NMCC)**

Dr. V. Krishnamurthy during his address observed that when there was a growth of 6% of GDP, there has been a problem of unemployment. Now growth rate of GPD

has increased to 9.2% and the supply side still appears to be deficient. Despite existing impressive growth rate of GDP, there is still inflation and there is a general shortage of essential goods. He, therefore, emphasized that there has to be balanced growth between agricultural, manufacturing and services sectors. He further pointed out that desirable share of manufacturing in terms of GDP must be 30-35% against existing share of 17% of GDP in this sector. He expected that this can be achieved in 15 years time framework through better S & T inputs and sound policy support system. There are already large number of engineers and scientists in our country but few of them opt for manufacturing side. The policy framework needs to be evolved to attract intelligent engineers and scientists in this sector to make it globally competitive. There is great need for introducing IT capabilities in machine tools in order to make them world class.

Shri Govindarajan, Member Secretary, NMCC, Government of India, stated that growth in manufacturing cannot come unless manufacturing itself becomes competitive particularly in context of globalisation. He identified following issues to be addressed to make manufacturing economical,

- Evolving mechanism to access the external technology.
- How to actively promote new areas relating to manufacturing.
- Enhancing technological level in terms of export
- To improve R & D in manufacturing Sector of India

He informed SAC-C that the commission is attempting to form a group at apex level to identify research areas for the development of manufacturing competitiveness at the firm level and also for the processes and technologies for growth of economy in a most cost effective manner. The apex body specifically is required to identify and spell out the efforts to bring the manufacturing competitiveness at par with equitable level with active participation of industry and academia.

Based on the deliberations made in the SAC-C meeting, it was opined that though the companies are setting up their own facilities for training and teaching in the reputed institutions but they are insufficient in nature. A clear cut policy of the

government is required to make sure that a large number of skills are nurtured and attracted to the area of manufacturing.

At the end of the discussions, SAC-C decided to constitute a committee under the chairmanship of Dr. V. Krishnamurthy, Chairman MNCC with members from following organizations i.e. Indian Institute of Technology; Indian Institute of Science (IISc), Bangalore; Technology Information, Forecasting & Assessment council (TIFAC); Secretary, Department of Science and Technology (DST); Indian National Academy of engineering (INAE). The committee would specifically identify the S & T needs of the Indian manufacturing sector.

The meeting ended with a vote of thanks to the chair.

Twelfth meeting of Scientific Advisory Committee to Cabinet (SAC-C)

Date : 5th March, 2007, 10.30 A.M.
& Time

Venue : CSIR Science Centre, (Lecture Hall, 1st
Floor),
**Lodi Garden, Gate No. 2, Opp. World
Bank, New Delhi – 110 003**

AGENDA

M12A1 **Remarks by the Chairman, SAC-C**

M12A2 **Global Climate change**

M12A2P1 Introduction by Dr. R.K. Pachauri, Director
General, The Energy and Resource Institute
(TERI), New Delhi

M12A2P2 Presentation by Dr. Prodipto Ghosh, Secretary,
Ministry of Environment and Forests, New Delhi

M12A2P3 Presentation by Dr. K. Krishna Kumar, Indian
Institute of Tropical Meteorology, Pune

M12A3 **Manufacturing Competitiveness**

Address by Dr. V. Krishnamurthy, Chairman, National
Manufacturing Competitiveness Council, New Delhi

M12A4 **Any other item with the permission of the Chair**

M12A5 **Concluding remarks by the Chair**

Annexure-II

List of participants of the twelfth Meeting of Scientific Advisory Committee to Cabinet (SAC-C) held on 5th March, 2007, at CSIR Science Centre

Sr. No.	Name, Designation and Organization	Status
1.	Dr. R. Chidambaram, Principal Scientific Adviser to the Government of India, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi - 110011	Chairman
2.	Prof. N. Balakrishnan, Chairman - SERC, Indian Institute of Science, Bangalore - 560 012	Member
3.	Dr. Padmanabhan Balaram, Director, Indian Institute of Science, Bangalore - 560 012	Member
4.	Dr. S.K. Basu, Director, National Institute of Immunology, JNU Complex, Aruna Asaf Ali Marg, New Delhi - 110 067	Member
5.	Dr. Prem Shanker Goel, Secretary, Department of Ocean Development, Block No.12, CGO Complex, Lodhi Road, New Delhi - 110 003	Member
6.	Dr. Ashok Khosla, President, Development Alternatives, 111/9-Z, Kishangarh, Vasant Kunj, New Delhi - 110070	Member
7.	Dr. Goverdhan Mehta, Bhatnagar Fellow, Department of Organic Chemistry, Indian Institute of Science, C.V. Raman Avenue, Bangalore - 560 080	Member
8.	Dr. (Mrs.) Indira Nath, LEPR - Blue Peter Research Centre, Near TEC Building, Cherlapally, Hyderabad 501301	Member
9.	Dr. R.K. Pachauri, Director General, The Energy & Resources Institute (TERI), Darbari Seth Block, Habitat Place, Lodhi Road, New Delhi 110 003	Member
10.	Dr. Placid Rodriguez, Flat 2B Adithya Apartments, 38 Balakrishna Road Valmiki Nagar, Chennai 600041	Member
11.	Dr. T. Ramasami, Secretary, Department of Science & Technology, Technology Bhawan, New Mehrauli Road, New Delhi - 110 016.	Member
12.	Dr. S. P. Sukhatme, Former Chairman, Atomic Energy Regulatory Board, 2-A/8-C, Anjaneya Co-op: Housing Society, Orchid Avenue, Opp: Hiranandani Foundation School, Powai, Mumbai 400076	Member
13.	Dr. Prema Ramachandran, President, National Academy of Medical Sciences, Ansari Nagar, New Delhi	Member
14.	Dr. S.K. Sikka, Scientific Secretary, O/o Principal Scientific Adviser to GOI, Vigyan Bhavan Annexe, Maulana Azad Road, New Delhi - 110011	Member
15.	Dr. Anil. K. Gupta, Professor, Department of Geology and Geophysics, Indian Institute of Technology Kharagpur, Kharagpur 72302, West Bengal	Special Invitee
16.	Dr. R.R. Sonde, Executive Director (Energy Technology), NTPC Limited, 5 th Floor, Engineering Office Complex, Sector 24, Noida 210301	Special Invitee

17. Dr. K. Krishna Kumar, Indian Institute of Tropical Meteorology, Pune, 411008 Special Invitee
18. Dr. V. Krishnamurthy, Chairman, National Manufacturing Competitiveness Council, Room No. 218, 1st Floor, Vigyan Bhawan Annexe, New Delhi - 110 011 Special Invitee
19. Prof. M.S. Ananth, Director, Indian Institute of Technology Madras, I.I.T. Post Office, Chennai 600 036 Special Invitee
20. Prof. P. Radhakrishnan, Vice Chancellor, VIT UNIVERSITY, Vellore - 632 014, Tamil Nadu Special Invitee
21. Prodipto Ghosh, Secretary, Ministry of Environment and Forest, Paryavaran Bhawan, CGO Complex, Lodi road, New Delhi 110003 Special Invitee
22. Prof. Maithili Sharan, Professor and Head, Centre for Atmospheric Sciences, Indian Institute of Technology, Hauz Khas, New Delhi, 110016 Special Invitee
23. Sh. S. Chatterjee, Advisor, Office of PSA to the GOI, New Delhi Special Invitee
24. Dr. R.P. Gupta, Scientist 'E', Office of the PSA to the GOI, New Delhi Special Invitee
25. Sh Neeraj Sinha, Scientist 'E', Office of the PSA to the GOI, New Delhi Special Invitee