



S&T Newsletter



A Quarterly of the
Centre for Science and Technology of the Non-Aligned
and Other Developing Countries (NAM S&T Centre)

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From the Director'S Desk

HAPPY NEW YEAR!



With the beginning of a new decade, we must now gear up for new challenges to unfold new horizons and realise new dreams, and rediscover our strengths to become even more productive to accomplish new heights in South-South cooperation.

The year 2009 that we just bade goodbye, was highly exciting and rewarding, and the Centre continued to execute numerous significant activities with intense involvement of the scientists and professionals from across the globe.

The Centre is privileged to welcome Professor Tarek Hussein, President, Academy of Scientific Research & Technology (ASRT) of Egypt as it's new President. He was unanimously elected to this exalted office during the 12th meeting of the Governing Council (GC) of the Centre held in Cairo on 16-17 November 2009. We express our indebtedness to Prof. Carunia M. Firdausy, Deputy State Minister for Societal Dynamic in the Ministry of Research & Technology of Indonesia for his valuable guidance and support during his tenure as the President of the Centre's 11th GC.

The GC was attended by 34 delegates from 20 member countries; The Ambassadors and senior representatives of 6 non-member countries were also present as observers. The significant highlights of the meeting included the commendations and encouraging remarks on four country members and the first ever industry member in the S&T-Industry Network having joined the Centre's family, and about the innovative measures taken by the Centre leading to significant increase in the scientific activities with minimal expenditure on administrative overheads. Six publications of the Centre on Coastal Ecosystems, Lightning Phenomenon, Traditional & Alternative Medicine, Microelectronics, Science Centres and Surface Engineering edited by eminent academicians, researchers and professionals; and a report titled 'Two Decades (1989-2009) of NAM S&T Centre: The Model for South-South Cooperation in Science & Technology' published to commemorate 20 glorious years of the Centre's establishment were released on this occasion.

In the last quarter, the Centre published three books titled 'Empowerment of Women through Science and Technology Interventions' edited by Prof. Nirupama Prakash, Prof. Barbara Wejnert and Dr. Betty McLellan, 'Enhancing Change through Science Centres' edited by Dr. Aman Kumar Mauloo and Mr. Lebs Mphahlele and 'Surface Engineering' edited by Dr. D. Srinivasa Rao and Dr. Shrikant V. Joshi.

Happy Reading!


(Arun P. Kulshreshtha)

NAM S&T Centre completes Two Decades

The Centre began its journey after having been established in New Delhi, India in August 1989 at the invitation of the Government of the Republic of India. It had been a passage full of struggle for the financial resources, but in the last two decades the Centre has emerged triumphant with support of many well wishing countries and scientific community at large and has provided a highly engaging mechanism for the promotion of South-South (now extended to cover even North-South) cooperation through the interventions of science and technology and successful execution of a large number of programmes in diverse scientific areas. The Centre now has a noteworthy global identity of its own in bringing the developing countries to the frontiers of science through networking, sharing of knowledge and pooling of resources.

A report titled 'Two Decades (1989-2009) of NAM S&T Centre - The Model for South-South Cooperation in Science & Technology' has been prepared by Mr. M. Bandyopadhyay, Senior Expert & Administrative Officer of the NAM S&T Centre on successful completion of the 20 years of the existence of the Centre.

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12th Governing Council of the NAM S&T Centre meets at Cairo, Egypt on 16-17 November 2009



Prof. Tarek Hussein,
President ASRT
Inaugurates the 12th GC

The 12th meeting of the Governing Council (GC) of the NAM S&T Centre was held in Cairo on 16th-17th November 2009 at the invitation of the Academy of Scientific Research & Technology (ASRT) of Egypt. The meeting was attended by 34 delegates from 20 member countries, Argentina, Bangladesh, Burkina Faso, Cuba, Egypt, India, Indonesia, Kenya, Malaysia, Mauritius, Myanmar, Nepal, Nicaragua, Nigeria, Pakistan, South Africa, Sri Lanka, Syria, Uganda and Vietnam. In addition, the Ambassadors and senior representatives of the diplomatic missions of 6 non-member countries, Belarus, Ecuador, Ghana, Jordan, Mexico and Turkey, in Egypt too joined the Ceremonial Opening as Observers.

The GC delegates were welcomed by Prof. M. Tarek Hussein, President ASRT, which was followed by a power point presentation by Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre on the activities of the Centre and the role played by it in fostering partnerships amongst scientists and institutions and in promoting South-South, and also North-South cooperation through S&T interventions for innovation and development in the developing world.

The meeting was inaugurated by Prof. Tarek Hussein on behalf of H.E. Dr. Hani Helal, Minister of



Inauguration of the 12th GC Meeting
(L-R) Prof. Arun P. Kulshreshtha, Prof. Tarek Hussein and
Prof. Mohsen Shoukry

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12th Governing Council Meeting in progress

Higher Education and Scientific Research of the Arab Republic of Egypt, who was unable to join the inauguration due to unforeseen commitment. In the inaugural address Prof. Hussein mentioned that the NAM S&T Centre has set a good example for South-South cooperation facilitating the integration of a developmental approach into national science and technology policies. Referring to the visit of US President Obama to Egypt and his offer of cooperation to utilize S&T for peace and to link the North with the South to work together, he added that the GC meeting would identify specific investment priorities for the next generation of international efforts to harness science and technology in support of sustainable development, and said that a 'Cairo Announcement for Mobilizing Science and Technology for Sustainable Development' would be made at the end of the meeting.

During the Ceremonial Opening Prof. Tarek Hussein released six latest publications of the Centre titled 'Coastal Ecosystems: Hazards, Management and Rehabilitation', 'The Lighting Phenomenon: Need for Awareness, Detection and Protection from Damage Caused by Lighting', 'Traditional and Alternative Medicine: Research & Policy Perspectives', 'Microelectronics: Micro and Nano-electronics and Photonics', 'Enhancing Change through Science Centres' and 'Surface Engineering' that were edited by eminent academicians, researchers and professionals such as Prof. Ravindra Arora, Prof. Manoranjan Sahu, Dr. Krishan Lal, Dr. Shrikant V. Joshi, Dr. D. Srinivasa Rao and Dr. Rattan K. Datta from India, Prof. Theeshan Bahorun from Mauritius, Dr. Tuley De Silva and Dr. Chandima Gomes from Sri Lanka and Dr. Le Mai Huong from Vietnam.

The Governing Council elected Prof. M. Tarek Hussein, President ASRT as the President of the Centre by acclamation to hold the office until the next regular meeting of the GC. Other office bearers elected were Dr. T. Ramasami, Secretary to the Government of the Republic of India in the Department of Science & Technology (DST) and Ms. Lindiwe FLNW Lusenga, Chief Director, Multilateral Cooperation and Africa, Department of Science & Technology of the Republic of South Africa as the Vice-Presidents and Dr. Jorge Luis Fernandez Chamero of the Ministry of Science, Technology and Environment (CITMA) of the Republic of Cuba as the Rapporteur.

Expressing gratitude to the GC members for electing the Arab Republic of Egypt as the President of the Centre during the 12th Session of its Governing Council, Prof. Tarek Hussein said that the activities of the Centre should be prioritised in a few focussed areas and should primarily concentrate on technology and development. The main concern for the Centre however has been the shortage of

adequate funds required to carry out its scientific programmes at the desired level, and the member countries in general, and the Bureau Members in particular, were requested to come forward with generous support to raise sufficient funds to cater to the Centre's requirements.

The GC unanimously confirmed the Minutes of the 11th GC meeting held in Jakarta/Bandung, Indonesia on 21-24 November 2005 and also ratified the Minutes of the 1st and 2nd Bureau Meetings of the 11th GC, respectively held in Havana, Cuba during 25th October 2006 and Livingstone, Zambia during 5th-6th May 2008.

Later, to commemorate the 20 years of the Centre's establishment, a report titled 'Two Decades (1989-2009) of NAM S&T Centre - The Model for South-South Cooperation in Science & Technology' prepared by Mr. M. Bandyopadhyay, Senior Expert & Administrative Officer of the Centre and published by the Centre as a compendium of its scientific activities implemented since its inception was released by Prof. Tarek Hussein in his capacity as the new President of the Centre. The members complimented the Centre on bringing out such valuable publications in various critical areas of relevance to developing countries.

The Director presented a consolidated report highlighting various activities carried out by the Centre and other issues on administration and finance for the period since the last GC meeting. The GC expressed satisfaction that the presentation gave a lucid picture about the scientific achievements of the Centre and the problems being faced by it due to inadequacy of funds. It noted with appreciation the actions taken by the Secretariat of the Centre on various recommendations of the 11th GC and its 1st and 2nd Bureau Meetings and also took note of the multifarious scientific activities in diverse fields undertaken in last 4 years, as well as the Fellowship schemes being implemented by the Centre in partnership with ICCBS, Karachi, Pakistan and ZMT, Bremen, Germany, paving the way for better South-South and North-South cooperation in S&T. The GC also complimented the Centre for making good progress in the execution of the collaborative project on 'Rain Water Harvesting and Groundwater Recharge in Developing Countries HRD and Technology Transfer' that has been assigned to it by the Group of 77 (G-77) under its Perez Guerrero Trust Fund (PGTF). The GC noted the collaborative activities undertaken by the Centre and the partnership MOUs concluded with various international agencies and hoped that useful projects would be evolved and implemented through these arrangements. In particular, the GC noted the collaboration of the Centre with Asian Development Bank (ADB) on Regional Technical Assistance (RETA) on Good Asian Practices for Innovation and Development. In this connection, the President

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suggested that efforts should be made to obtain support from other international and regional agencies such as EU (under its FP-7 programme), JSPS and Korea through joint projects.

The Governing Council accorded in-principle approval to a number of activities proposed by the Centre. The President observed that these activities would be highly useful to the developing countries for capacity building and expanding scientific base, and also invited various countries to participate in various collaborative projects being proposed by Egypt for financial support from EU under FP-7 to be coordinated and implemented by Egypt with technical facilitation of the NAM S&T Centre.

The GC noted with satisfaction that since the last meeting in Indonesia, 4 new countries have joined the Centre as members, bringing the number of members to 44 and suggested that the newly elected office bearers and other members of the GC may make a personal communication with the non-member developing countries located in their respective regions urging them to join the Centre and further strengthen the efforts on South-South cooperation and also appealed to those member countries, which have yet not ratified the Statute of the Centre, to do so at the earliest. It was also noted that an industrial organization has joined the NAM S&T Industry Network for the first time and the Network membership has increased to 12. The member countries were requested to spread the message across to other scientific and industrial organizations in their countries for joining the Network in order to develop industry-institution partnerships aimed at the transfer and commercialisation of technologies.

Regarding the expenditure of the Centre, the GC noted with satisfaction that with some innovative measures the scientific component in the activities of the Centre has increased significantly as compared to administrative overheads, which is reflected in much higher expenditure on workshops, training programmes and other activities undertaken by the Centre. Concern was however expressed on the overall poor financial position of the Centre and the GC made a strong appeal to the non-paying member countries to expedite payment of their membership subscription dues to the Centre. In this context the GC noted that those countries, which have defaulted on their earlier dues, may still avail full financial benefit and other privileges, once the current year's subscription is paid to the Centre, and earlier dues may be paid later in convenient instalments. The GC also advised that efforts should be made to obtain project funding from individual governments and international organizations so as to improve the financial health of the Centre.

The GC approved the actions taken by the Director during the last three years in inculcating the scientific temper, S&T capacity building and eliminating gender bias in the employment policy of the Centre. It was also agreed that any member country may depute its scientists to work in the Centre as interns for short periods provided the entire expenditure on international travel and accommodation and subsistence in Delhi is borne by the sending country.

Considering the need of the developing countries, a proposal was made by the President to set up a Centre for Science & Technology for Sustainable Development in Developing Countries (CSTSD) with financial support from the USA. A special session was held to deliberate on this proposal and critical comments were offered by the GC delegates.

The meeting ended with a vote of thanks proposed by Bangladesh on behalf of the GC delegates to the immediate Past President, Professor Carunia M. Firdausy, and the newly elected President, Professor Tarek Hussein for their guidance to the Centre and conducting fruitful and successful deliberations in the GC meeting. The Director thanked the Government of the Arab Republic of Egypt, and in particular, Professor Tarek Hussein, President ASRT and all the officials of ASRT for making excellent arrangements for hosting the meeting.

(Contd. from Page 1 - NAM S&T Centre completes Two Decades)



The report gives an overview of the background, activities and achievements of the NAM S&T Centre in the last twenty years of its working. Chapter I is the introductory section of the report, giving a short historical background and discussing the rationale in creating the Non-Aligned Movement (NAM), which is followed by the background for the establishment of the NAM S&T Centre and its aims, objectives and functions. Chapter-II deals with the functioning of the Centre, including its administrative structure, member countries, benefits and privileges to the members, NAM S&T-Industry Network and the linkages that the Centre has established over the years with a large number of other inter-governmental and international organizations for collaborating on undertaking various activities and pursuing its objectives. The range of scientific activities and accomplishments of the Centre have been illustrated with interpretation of the large amount of data arising out of such activities in Chapter-III. Chapter-IV deals with the financial and administrative issues relating to the working of the NAM S&T Centre including various sources of revenue, the expenditure pattern, efforts made to economise on administrative overheads, increasing expenditure on scientific activities and generating surplus for use in case of unavoidable circumstances in the future. Chapter-V is the Concluding Chapter which gives a short overview and analysis of the achievements of the Centre and the future perspectives on its functioning. Efforts have been made to include in the report all the relevant information so that it becomes a complete and comprehensive document on the NAM S&T Centre which can be used as a ready reckoner and a reference material by various stakeholders, including the member countries, network members, and the scientific communities in the developing countries at large.

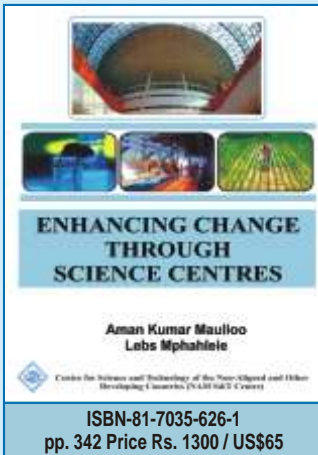
DISTINGUISHED VISITORS TO THE CENTRE

22 Oct. 2009	Dr. Ali M. Birang , Attaché and Head of Technology Cooperation Section, Embassy of the Islamic Republic of Iran in India
27 Oct. 2009	Dr. Vinita Sharma , Scientist-G & Head, Science for Equity, Empowerment and Development (SEED) Division, Department of Science and Technology, Government of India
24 Nov. 2009	Mr. Uroš Zver , Director of Projects, International Center for Promotion of Enterprises (ICPE), Slovenia
26 Nov. 2009	Prof. P. K. Gupta , Secretary General, National Foundation of Indian Engineers (NAFEN), New Delhi, India
02 Dec. 2009	Dr. A. R. Shivakumar , Executive Secretary I/C, Karnataka State Council for Science and Technology, India
16 Dec. 2009	H.E. Ms. Ebyan Mahamed Salah , Ambassador of the Republic of Somalia to India
19 Dec. 2009	Prof. Felizitas Sagebiel , University of Wuppertal, Germany



New Publication

Enhancing Change through Science Centres



In the rapidly changing world, there is a great need for the public understanding of science and technology to create more science literate society at all age levels. Science centres and science museums are vital and powerful media for popularisation of science and creating a scientific temper across the globe. Science centres are among the institutions that can play a role in showcasing science to common people, whereas museums enable people to explore collections for inspiration, learning and enjoyment. The mission statements of science centres and modern museums may vary, but all make science accessible to one and all and encourage the excitement of discovery. They are an integral and dynamic part of the learning environment, promoting exploration from the first 'Eureka!' moment to today's cutting edge research.

In order to address some of the pertinent issues and review the latest status of development related to science centres, science museums, science popularisation and science education, the Centre for Science and Technology of the Non-Aligned and other Developing Countries (NAM S&T Centre) organized its 5th international workshop in its Science Centre series at Johannesburg, South Africa during 25-28 February 2008 and in pursuance thereof, has brought out this publication which includes 28 scientific articles and review papers. This reference material will help the entire scientific community of developing countries in executing the plans and strategies for inspiring the scientific values and temper among their people.

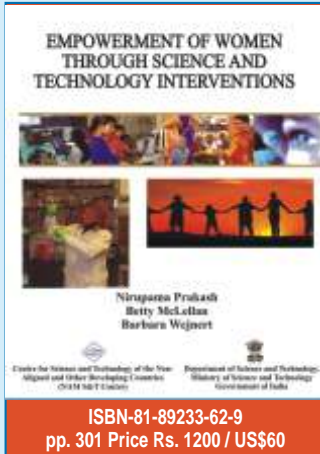
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 4. Enhancing the Reach through Digitisation (*K. G. Kumar, India*)
 5. Role of Pushpa Gujral Science City for Sustainable Development (*R. S. Khandpur, India*)
 6. Outreach Policy of Science Centres (*Iskandar, Indonesia*)
 7. Science, Religion and History: A Case Study (*Phyllis Lam Li Wan, Malaysia*)
 8. Rajiv Gandhi Science Centre: Contributing to the Development of Mauritius (*Aman Kumar Maulloo, Mauritius*)
 9. Science Awareness Campaigns (*Syed Azhar Hasan, Pakistan*)
 10. Scientific Education in the Vietnamese Museum System (*Ngo Thi Loan and Thai Van Tan, Vietnam*)
 11. The Scientific Bases of Weather Modification: Popularising Applied Science through Specialised Centres (*Mladjen uri, Serbia*)
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New Publication

Empowerment of Women through Science and Technology Interventions



Women are a great human resource and their role in the society is vital for its progress. Market economy trends in the new era of globalization have widened the gap between education and technology opportunities for men and women. The involvement and engagement of women in the present day information society on an equal footing with men would directly contribute to improving the livelihood of people, making it more sustainable and thereby promoting the social and economic advancement of societies.

Science and Technology brings economic growth and well-being to people. Undoubtedly, science and technology can be vastly enriched through women's involvement, which closely links to the empowerment of women through science and technology. To reach this millennium goal, women empowerment may be through innovative scientific activities, integrating action oriented literacy, sound micro-finance and micro-enterprise training as well as an understanding of legal rights and advocacy. Apart from the efforts of the United Nations family of organizations, multilateral bodies and civil society, the positive role of women also depends on the supportive attitudes of their local family unit, the local community in each town and village.

This book is primarily based on the deliberations of the International Workshop on Empowerment of Women through Science & Technology Interventions held in Tehran, Iran from 14-16 December 2008, but a number of articles have been contributed by other eminent experts on the subject. 22 papers in this volume are expected to contribute to the understanding of how science and technology can contribute to the upliftment of the status of women and can empower them to gain their rightful place in the society. The data and materials presented in this volume would hopefully serve as a reference material for the professionals working in the field of women's empowerment.

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- Foreword** Dr. Eunice Rodriguez, Associate Professor, Department of Pediatrics and Centre for Education in Family and Community Medicine, Stanford University School of Medicine, California, USA
- Preface** Dr. Nirupama Prakash, Chief, Women Studies & Societal Development Unit Birla Institute of Technology & Science, India; Dr. Betty McLellan, Adjunct Associate, James Cook University Townsville, Australia; and Dr. Barbara Wejnert, Associate Professor, Department of Global Gender Studies, University at Buffalo, New York, USA

Introduction Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre

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Pamukkale Recommendations

On Urbanisation, Land Use, Land Degradation and Environment

As reported in the last issue of the Newsletter (July-September 2009), an international workshop on Urbanisation, Land Use, Land Degradation and Environment was organised by the NAM S&T Centre at Denizli, Turkey on 28th September - 1st October 2009 in which the following set of recommendations was adopted.

WE, THE SCIENTISTS, TECHNOLOGISTS, PROFESSIONALS, ACADEMICIANS AND ADMINISTRATORS FROM Argentina, Bulgaria, Canada, North Cyprus, Egypt, Indonesia, Iran, Ireland, Italy, Kenya, Mauritius, Myanmar, Pakistan, South Africa, Sri Lanka, Syria, Tanzania, Turkey, U.K., and Vietnam,

PARTICIPATING IN the International Workshop on URBANISATION, LAND USE, LAND DEGRADATION & ENVIRONMENT, jointly organized by the Pamukkale University, Turkish Scientific & Technical Research Organisation (TUBITAK) and the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAMS&T Centre) during 28th September - 1st October 2009 at Denizli, Turkey,

HAVING EXTENSIVELY DELIBERATED ON various issues related to knowledge, approaches and experiences concerning the problems and prospects on the URBANISATION, LAND USE, LAND DEGRADATION & ENVIRONMENT,

UNANIMOUSLY EXPRESSING that the workshop has been a resounding success,

CONVEYING GRATITUDE TO the Ministry of Environment and Forests, Governorate of Denizli, Mayorship of Denizli and Pamukkale University,

UNANIMOUSLY CONCLUDE THAT the world is facing a serious environmental crisis due to the unsustainable use of the natural resources and indiscriminate addition of pollutants to the environment. The present challenge faced on this 'Warming Earth' is to make it greener and cleaner before it is passed on to the next generation. The developing countries are custodians of majority of the World's biodiversity, but alien species and land transformations are a threat to the wealth creation of the communities in these countries. This problem needs to be addressed with top priority.

Realising the gravity of the hazards of rapid urbanisation and intense land use leading to immense damage to human habitat and massive loss of biodiversity, these are not looked upon as opportunities to 'build back better', and efforts and investments to learn from land degradation leave much to be desired, although presence of relevant legislations for disorganised and ill-planned constructions in most part of the world do exist. Thus there is an urgent need for proper land use planning practices, dissemination of knowledge and public awareness with respect to environmental degradation. The culture of learning from disasters is growing at a very slow pace, but efforts may be made to ensure that no more lives will be lost on recurrence of such events in future by making sincere and determined efforts in this connection.

Many of the NAM and other developing countries are hit by recurring natural disasters and their problems are more or less of the same genre, and there remains great scope to build joint programmes and partnerships in disaster mitigation and management.

People need right information at the right place at the right time, but not enough is being done to provide easy access to useable information. Proactive initiatives are seldom taken to generate reliable and continuous field data to bridge the information gaps and make practical use of the new knowledge, procedures and techniques to improve disaster specific investigations, measurements, mapping, analyses and design. "Global Environmental Information System" also needs to be taken into consideration for implementation.

Views of the first responders, eyewitnesses, survivors, crisis managers, policy makers, planners, builders, researchers, educators, social scientists and NGOs are seldom systematically studied, analyzed and documented to find appropriate solutions as mitigation strategy.

WE, THE PARTICIPANTS OF THE PAMUKKALE WORKSHOP strongly recommend and propose the following concrete actions by the concerned authorities in all countries with immediate effect:

- o Governmental and non-governmental organizations may enhance theoretical, technical and practical knowledge as well as skills among professionals to identify measures for urbanisation, land use, land degradation and environment to ensure appropriate protection of our planet.
- o National / International training events, technical workshops, seminars, and training programmes may be organised together with other educational and awareness activities for administrative & technical personnel in all sectors of the economy about appropriate use of productive lands.
- o Public may be encouraged and educated by adopting scientifically validated protection measures against degradative forces, and be mandated to maintain regular inspection records.
- o National standards or adoption of international standards for land use planning may be developed and made mandatory to concerned parties. Dangers due to land degradation may be ensured for national heritage sites by investigating their present status and designing and implementing effective and durable protection systems.
- o Basic concepts of land use and environmental protection / safety may be included in the curricula of institutions and schools.
- o Communities may be empowered to integrate their socio-economic growth strategies, water conservation and waste minimization practices to achieve green growth and conservation of natural resources to benefit the current and future generations.
- o Appropriate land use planning instructions in the risky areas may be properly displayed. Due to increase of land degradation hazards in risky areas it may be made mandatory to have highest level of protection in these areas by extensively investigating the conditions of the existing urbanisation and land use practices, and appropriate safety measures taken for an effective land use planning systems for urbanisation.
- o Research institutes may be supported to upgrade the existing conditions by developing databases and encouraged to carry out research on better land use planning and environmental protection technologies to sensitize the concerned authorities for rectifying the shortcomings.
- o Urban planners, architects and engineers may avail of every opportunity offered by the disasters to find out what really went wrong. They may reveal, and not conceal, the failure stories.
- o Policy makers may integrate disaster management with the development process and avail every opportunity to test their policies against disasters.
- o Every country may invest appropriately and adequately in reliably mapping and forecasting multi-hazard scenarios. Time-bound action plans backed by adequate resources may be evolved for the most vulnerable regions.
- o When planning for immediate action, disaster management machinery may be swift enough to respond to complex situations unfolded by every type of disaster.
- o Countries may be networked with a risk detection system to enable the forecast and data collection.
- o Countries may streamline their laws and regulations to facilitate all aspects of land use planning, thereby bringing their regulations into compliance with environment friendly policies. Global encouragement is needed for all countries especially the developed ones to use the "Green Energy" such as solar, wind, water and bioenergy, instead of fuel or, even worse form the nuclear energy.
- o Concerned government agencies may develop short- and long-term 'Rolling Strategic Plans' in view of the fast emerging scenario of multi-hazards and ensure effective execution of sound land use planning practices, and spread of disaster education and training.
- o Developing nations may urgently develop comprehensive national geo-referenced inventories, foster transparent and accountable approaches involving local communities and stakeholders that shall provide a reliable baseline in land-use, planning and zonation decisions.
- o Appeal to the media - print and electronic - to join in giving clarion call to decision makers and public at large to wake up to the potent threat and to forearm by promoting green concepts and taking up, inter alia, energy efficiency related activities as part of their social responsibility. Earth may be made a greener and cleaner place now before it is passed on to the next generation. This is critical now at a time when global warming and climate change pose significant challenges to the entire world. We actively promote adherence to the ethical norms for the appropriate use of our land resources.

Done this day, the 1st October 2009, at Pamukkale - Denizli, Turkey.



Joint NAM S&T Centre - ICCBS Fellowship, 2009

Project Completion Report of Ms. Mudyawati Kamaruddin, Indonesia



Ms. Mudyawati Kamaruddin, Lecturer, Tahirah Al-Baeti Education Foundation, Makassar, Indonesia was affiliated with the International Centre for Chemical and Biological Sciences (ICCBS), HEJ Research Institute of Chemistry, Karachi, Pakistan from 6th April to 5th October 2009 as a Fellow under the Joint NAM S&T Centre-ICCBS Fellowship scheme. She worked on 'Structure Elucidation of Acetylcholinesterase Inhibitors from Marine-derived microorganisms use NMR' under the guidance of Prof. Muhammad Iqbal Choudhary, Director, ICCBS.

Acetylcholinesterase Inhibitors (AChEIs) are still the best available therapeutic agents for Alzheimer's patients. The present sources of currently available AChE inhibitors are mostly plants. To date, only three AChE inhibitors; donepezil, rivastigmine and galantamine, have been approved by US FDA for the treatment of Alzheimer diseases. However, some of these drugs are known to have limitations such as a short half-life or side-effect i.e. hepatotoxicity. Marine microorganisms have potential as important new sources of enzyme inhibitors. The objectives of the research work of Ms. Mudyawati Kamaruddin to screening AChEIs of marine microorganisms as marine natural product in acetylcholinesterase inhibition and to identify structural elucidation of the AChEIs from marine-derived microorganism by spectroscopic (NMR) techniques. Marine microorganisms were isolated from marine specimens such as sponges, alga, biofilms, and animal and plant materials. All of the isolates were cultivated in four different cultivation media. After 7 days incubation, the cultivation media contained secondary metabolites of marine microorganisms and AChE inhibitory activity was measured using TLC assay method. Five of 15 isolates showed white spots on the yellow background on the TLC plate indicating AChE inhibition. The five crude extracts that contained AChE inhibitory activity were subjected to a size exclusion gel column chromatography on Sephadex LH-20 using methanol as an eluent yielding three fractions, MG01 MG05. The bioassay guided fractionation of MG01 (10.1 mg) was further separated and purified by a preparative High Performance Liquid Chromatography, HPLC (Luna 100, C-18, 25010 mm, 10 μ m) using 30:70 methanol in water as a mobile phase with a flow rate of 4.5 ml/min; detection: UV detection at 210 nm yielding compounds M1 (3.37 mg), and M2 (4.8 mg), at retention times of 20, and 23 minutes, respectively. M1 and M2 compounds identified using NMR spectra.

Centre Announces

Trainers' Training Programme on 'Sustainable Rainwater Harvesting and Ground Water Recharge in Developing Countries - HRD and Technology Transfer' 22-27 February 2010, Bengaluru, India

Water is an essential daily need across all cross-sections of the society. With the ever-increasing population, migration of vast multitudes of rural population to metros and urban areas and development of industrial towns, the developing countries are facing great pressure on the existing infrastructure on conventional water supply systems and severe constraints on financial and material resources. Municipal water supply in most cities is unreliable and many villages in the developing countries do not have potable water supply. To provide sustainability, the traditional methods of water harvesting and usage methods need to be revived and if required, modified to suit the present day requirement. Rainwater Harvesting (RWH), which is seemingly an ideal sustainable solution, entails the collection of rain in a scientific and controlled manner for future use and consists of roof top water harvesting, water from open areas such as paved ways, parks, roads, fields and in lakes and ponds.

In order to address the above issues, the Centre for Science and Technology of the Non-aligned and Other Developing Countries (NAM S&T Centre) is executing a collaborative project entitled 'Sustainable Rainwater Harvesting and Ground Water Recharge in Developing Countries - HRD and Technology Transfer'. The project is an integrated effort on rainwater harvesting and ground water recharge as a model solution to solve the water shortage problem in conventional water supply systems. The project aims at capacity building through HRD and technology transfer by (a) preparing a state-of-the-art report and (b) holding a centralized training programme for professionals engaged in implementing relevant schemes that would empower the participants to organize national level training courses to benefit the technicians in their own countries.

As a part of the above mentioned G-77/PGTF Project and also to complement the efforts being made by the Department of Science and Technology (DST), Government of India, under its Technology Mission - Winning, Augmentation and Renovation (WAR) for Water, the Centre for Science and Technology of the Non-aligned and Other Developing Countries (NAM S&T Centre) in association with DST, Government of India and the Karnataka State Council for Science & Technology (KSCST) announce the organisation of a Trainers' Training Programme on 'Sustainable Rainwater Harvesting and Ground Water Recharge in Developing Countries - HRD and Technology Transfer' during 22-27 February 2010 at Bengaluru, India. The training programme has been primarily designed for the field experts nominated by the Focal Points of the NAM S&T Centre in its member countries, and representatives of the concerned organizations and government authorities in other developing countries.

Application for participation in the training programme may be submitted in the prescribed form latest by 5th February 2010. A pre-condition for consideration for selection is that the applicant should submit a tentative future plan of action, which they intend to implement in their respective countries after getting trained from this training programme.



Director NAM S&T Centre meets and visits



Director and Mr. M. Bandyopadhyay with Prof. Mohsen Shoukry, Ms. Jehan and Mrs. Abear Mohamed Attia

During his visit to Cairo in connection with the 12th Governing Council (GC) meeting of the NAM S&T Centre, Prof. Arun P. Kulshreshtha, Director, NAM S&T Centre called on Prof. Mohsen M. Shoukry, Vice President for Scientific & Cultural Relations of the Academy of Scientific Research & Technology (ASRT), Egypt. Mrs. Abear Mohamed Attia, Head, Scientific Relations at ASRT and her colleague Ms. Jehan, as well as Mr. M. Bandyopadhyay, Senior Expert & Administrative



Dr. Engr. Wafik Noseir, Environmental Engineering Consultant, Egyptian Modern Center in Alexandria

Officer, NAM S&T Centre were present during this meeting.

On completion of the GC meeting, the Director accompanied with Mr. Bandyopadhyay visited Alexandria. The visit was hosted by Dr. Engr. Wafik Noseir, Environmental Engineering Consultant at the Egyptian Modern Center [website: www.freewebs.com/wafikn/].



HSCI-2009 Conference in progress

The Director visited Ahmedabad (Gujarat), India to chair a scientific session on 'Experiences in Science Fun Learning' at the 6th International Conference on 'Hands-On Science (HSCI- 2009) - Science for all: Quest for Excellence' held during 27-31 October 2009 at the Science City at



Prof. & Mrs. Subhash C. Bawa, CEPT University, Ahmedabad

Ahmedabad. The Director also called on Prof. Subhash C. Bawa, Professor at the Centre for Environmental Planning & Technology University (CEPT), Ahmedabad and Ex-GM & Scientist of the Space Applications Centre (SAC) of Indian Space Research Organisation (ISRO).

PARTICIPATION OF CENTRE'S SCIENTISTS IN WORKSHOPS/SEMINARS/CONFERENCES

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|----------------------|---|
| 14 Oct. 2009 | Dr. V. P. Kharbanda , Publications Advisor attended a seminar on 'State of Macro Economy' organized in New Delhi by the Indian Council for Research in International Economic Relations (ICRIER) jointly with the Centre for Monitoring Indian Economy (CMIE). |
| 05 Nov. 2009 | Prof. Arun P. Kulshreshtha , Director inaugurated a workshop on 'Microwaves - Principles and Applications' held at Jawaharlal Nehru University (JNU), New Delhi. |
| 20 Nov. 2009 | Prof. Arun P. Kulshreshtha , Director attended a seminar/book launch function on 'Pan-Asian Integration: Linking East and South Asia and II National Strategies for Regional Integration: South and East Asian Case Studies', organised in New Delhi jointly by the Research and Information Systems (RIS) and the Asian Development Bank (ADB). |
| 2-4 Dec. 2009 | Mr. Gaurav Gaur , Research Assistant attended 'Indo-US Symposium on Ayurvedic Siddha & Unani (ASU) Drugs: Development and Marketing' organised in New Delhi jointly by the Center for Research on Indian Systems of Medicine (CRISM) and the Indian Institute of Integrative Medicine (IIIM), Jammu in collaboration with the US Food & Drug Administration (USFDA), National Center for Natural Products Research (NCNPR) and the University of Mississippi, USA. |
| 17 Dec. 2009 | Prof. Arun P. Kulshreshtha , Director and Mr. M. Bandyopadhyay , Senior Expert & Administrative Officer attended 'Indo-EU Workshop on Partnerships in Innovation: Innovation Policies and Framework' organized in New Delhi by the Federation of Indian Chamber of Commerce & Industry (FICCI) in partnership with the Department of Science & Technology, Government of India and the European Commission (EC). |



SCIENCE AND TECHNOLOGY NEWS IN THE DEVELOPING WORLD

Abu Dhabi: International Renewable Energy Agency (IRENA)

A new intergovernmental agency IRENA (International Renewable Energy Agency) with focussed activities on alternative energies in both industrialised and developing countries has been established with its headquarters at Abu Dhabi. Bonn, Germany at the same time will host IRENA's Centre of Technology and Innovation and the Agency's liaison office for cooperation with other organisations active in the field of renewables will be established in Vienna, Austria. At present, IRENA has 138 Signatories and Ms. Helene Pelosse has been appointed the Interim Director-General of the emerging Agency. The overarching goal of IRENA is a rapid transition towards the widespread and sustainable use of renewable energy worldwide. In this regard, IRENA will increase the contribution of renewable energy to environmental and climate protection, economic growth, and social cohesion, including poverty alleviation and intergenerational equity. IRENA will promote the widespread adoption and sustainable use of all forms of renewable energy, taking into account the domestic priorities and benefits derived from a two-pronged approach to implement both renewable energy and energy efficiency measures. Therefore the main tasks of IRENA include the provision of comprehensive advice for its members on selecting and adapting energy sources, technology and system configurations, business models, as well as organisational and regulatory frameworks. In addition, emphasis will be placed on helping countries make the best use of available funding. IRENA will also develop and maintain a comprehensive knowledge base, e.g. on potentials of renewable energies, frameworks and policies, investment mechanisms, technology, electricity grids, conservation, as well as storage and efficiency issues. This knowledge base will also serve other functions of IRENA. A further key task of IRENA will be to enhance capacity building with regard to renewable energies. Moreover, the stimulation of research and cooperation with other organisations, institutions, and networks is of vital importance to IRENA.

Source: IRENA Website www.irena.org

Brazil / India: Pharma Vaccine Know-How

Two innovative tech transfer initiatives in Brazil and India promise to provide these countries with access to state-of-the-art technologies and expertise, spurring local vaccine R&D. Brazil's major vaccine producer, the state-owned Oswaldo Cruz Foundation (known as Fiocruz) of Rio de Janeiro has entered a tech transfer deal with London-based GlaxoSmithKline (GSK), which will enable local researchers to produce GSK's Synflorix pneumococcal vaccine as well as develop vaccines against dengue fever, yellow fever and malaria. In India, Merck of Whitehouse Station, New Jersey, and the London-based charity Wellcome Trust will invest equally in a not-for-profit joint venture focused on developing affordable vaccines for diseases that commonly affect developing countries. The MSD Wellcome Trust Hilleman Laboratories (MWHL) will be set up near New Delhi with a combined cash contribution of \$130 million over seven years, with the focus on vaccine R&D, taking projects to proof-of-concept stage. The GSK-Fiocruz deal builds on decades of experience at the state-owned Fiocruz in negotiating tech transfer agreements. Vaccines against meningococcus types A and C produced by Fiocruz's technical-scientific unit, the Immunobiologicals Technology Institute in Rio de Janeiro (Bio-Manguinhos), which develops vaccines, reagents and diagnostic kits, have also originated from research spurred by technology acquired from the French Merieux Institute in Paris in the 1970s. Later deals with the Japanese Biken Institute of Osaka University and the Japan Poliomyelitis Research Institute in Tokyo have helped Fiocruz build expertise in both measles and polio vaccinology. In addition, Bio-Manguinhos currently produces vaccines against Haemophilus influenzae type B, diphtheria, tetanus, whooping cough and measles/mumps/rubella. The deal calls for Brazil to establish local production for Synflorix, a 10-valent pneumococcal non-typeable H. influenzae protein D conjugate vaccine. Two of the serotypes 1 and 5 are particularly widespread in Brazil. It is the most complex vaccine in the world today in technological terms, in which each of the ten conjugate components involve a complex manufacturing process. The partnership is hoped to extend beyond pneumococcal vaccine to the development of other vaccines, for example, a vaccine against malaria or the development of a new yellow fever vaccine or dengue fever. Brazil currently faces a widespread epidemic of dengue fever, with insect vectors and infections in all of the federation's states. Although GSK will benefit from access to the huge Brazilian market, local scientists anticipate benefits in terms of transfer of technological expertise and knowledge. Technology transfer and use of local expertise in vaccine production is also a focus of the Indian not-for-profit joint venture announced by Wellcome and Merck. Although India currently produces and exports many vaccines, none was developed within the country, except a

version of the recombinant hepatitis B vaccine developed by Shantha.

Source: *Nature Biotechnology*, Vol. 27, December 2009

Burkina Faso: Multimedia Tools to Change Hygiene Behaviour

In Africa, according to an analysis of the hygiene and sanitation situation in 32 African countries (CMAE, ADB, World Bank, WSP, 2008), one hundred children die every hour of diarrhoea. Behaviour factors are often underestimated in meeting the Millennium Development Goals (MDG) for water supply and sanitation. Regular use of latrines, for example, can reduce the risks of diarrhoea by 40%. Hand washing with soap after defecation reduces the risks by 50%. According to this analysis, the main challenge is poor hygiene practices. For example, in African countries, less than 20% of the people wash their hands with soap. In Burkina Faso, solar powered computers, digital cameras and projectors are being used in 20 remote villages to raise awareness over hygiene and help people adopt good practices. The NGO Sahel Solidarité, which has introduced the multi-media hygiene programmes with financial and technical support from the International Institute for Communication and Development (IICD), believes that their high tech approach is having a higher impact on hygiene awareness, compared to using of pictures on cards. The Sahel Solidarité office in Bokin has been equipped with an Internet connection, four computers powered by solar energy, five digital cameras and memory sticks, and portable projection equipment to organise multimedia sessions in remote villages. This project reinforces the communication capacities of local project staff of the NGO in order to inform villagers in the district of Bokin about hygiene and use of water. The introduction of multimedia tools has brought greater participation during the sessions. Pictures are more realistic than drawings on cards, and the screen allows those taking part to have a better view of images and creates a stronger sense of engagement. To avoid embarrassing people, hygienists always discuss the practice with them first and ask their permission to take a picture and show it to the community. The hygiene promoters live in the village and are trusted by the community.

Source: *Water and Sanitation News Source Bulletin*, September 2009

Egypt: Ancient Egyptians, Junk Food and Heart Disease

The modern Western world is no stranger to heart disease. Experts have long believed that atherosclerosis, the hardening of the arteries which causes heart attacks and strokes, is a largely modern ailment caused by our sedentary lifestyle coupled with abominable eating habits. But a new study reported in November 2009 in *Journal of the American Medical Association* is calling these beliefs into question. It turns out that 3,500 years ago, ancient Egyptians were walking around with the same heart problems that plague modern Westerners. Researchers made this surprising discovery when, on a whim, they performed CT scans on 22 mummies housed at the Egyptian National Museum of Antiquities in Cairo to see if they suffered from atherosclerosis. Of the 16 mummies who still had identifiable cardiovascular tissue, nine probably suffered from atherosclerosis. This calcification of the arteries was more prevalent in those who died at an older age, 7 of 8 among those who died when 45 years or older compared with 2 of 8 who died when younger than 45 years. It cannot be said that atherosclerosis was the cause of death, but the simple fact that they had it was a great surprise. It was earlier thought that it was a disease of McDonald's and so this vision of people 3,000 and 4,000 years ago being more pure, free-living and not subject to the evils of modern civilization has been going on for a long time. While ancient Egyptians did not have access to modern junk food, they did eat meat which was often heavily salted. This was especially true of the upper class, the only ones with enough money to afford the expensive mummification process. While the study provides evidence that heart disease is not a modern complaint and that humans in ancient times had the genetic predisposition and environment to promote the development of atherosclerosis, doctors were quick to point out that this should only make us more careful. While genetics may play a large role, diet is also a clear factor and many modern Westerners consume foods far worse for their hearts than the salted meat the Egyptians loved.

Source: *Healthcare Digital*, 19th November 2009

India: Bhuvan Earth Observation Portal of ISRO

On the occasion of the 90th birth anniversary of Vikram Sarabhai, the father of Indian space programme, on 12 August 2009 Indian Space Research Organisation (ISRO) has launched its own edition of a mapping application, known as Bhuvan, a Sanskrit word meaning Earth, with main involvement of the National Remote Sensing Agency (NRSA). Bhuvan uses data provided by satellites including Resourcesat-1 to get the best possible imagery for India to offer resolution up to 10 metres and is considered as a rival to Google Earth and Wikimapia. Some basic features of this new satellite mapping tool are



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access, exploration and visualisation of 2D and 3D image data along with rich thematic information on soil, wasteland, water resources etc.; visualisation of multi-resolution, multi-sensor, multi-temporal image data; superposing of the administrative boundaries of choice on images as required; visualisation of AWS (Automatic Weather Stations) data/information in a graphic view and use tabular weather data of user choice; flying from the current location directly to the selected location; 3D Fly through; Heads-Up Display (HUD) navigation controls (tilt slider, north indicator, opacity, compass ring, zoom slider); navigation using the 3D view Pop-up menu; drawing 2D and 3D objects; Shadow Analysis etc. Particular interest of ISRO / Department of Space would be to provide such functionalities to common man so that he/she adopts participatory approach with scientists to solve simple problems easily and interactively.

Source: *Coordinates*, September 2009

India: Nano Filter for Clean Water

An affordable, compact water purifier launched in India in December 2009 could save millions of lives from waterborne diseases. Just two feet tall, the *Tata Swach* ('swach' is Hindi for 'clean') is being marketed as the 'water purifier for the masses' by India's Tata Group. Each filter consists of a 19-litre plastic box and has a lifespan of 3,000 litres, which can supply enough drinking water for a family of five for a year. The filter does not require running water, electricity or boiling. It uses rice husk ash, a by-product of the rice industry, as a framework on which silver nanoparticles that kill bacteria are mounted. Paddy husk ash is used for cleaning teeth and India produces around 20 million tonnes of it annually. Tata Chemicals will initially produce one million filters a year with the aim of scaling up production to three million within the next five years. It also hopes to export the filter to Africa.

Source: *SciDev.Net*, December 2009

India: Decoding Human Genome

India has successfully decoded the human genome locally making it part of the only six countries in the world to do so, other countries being the United States, United Kingdom, China, Canada and South Korea. The process of genome sequencing was done in New Delhi by the scientists of the Indian Institute of Genomics and Integrative Biology (IGIB) of the Council of Scientific and Industrial Research (CSIR), who took six weeks, a cluster of computers equipped with one teraflop of processing power, bio-informatics tools, and funds of around \$30,000 to map the Human Genome Sequence of a 52-year-old Indian male. The project also involved two years of background work. Genome sequencing is an expensive and time consuming process but is necessary for scientists to be able to predict diseases. Just six years ago it cost a billion dollars to get a sequence done. Prices have fallen drastically since. The breakthrough is expected to line up new advancements in the low-cost health care facilities for the masses whose genomes would be mapped. It will also enable the new possibilities for diagnosis and treatment of various diseases and will allow pharmaceutical companies to produce drugs more attuned with Indian physiology. Furthermore, the human genome mapping could also solve medical mysteries such as why certain people do not respond to certain medications, or could even predict particular diseases likely to be developed in certain groups. For instance, the genome mapping of the 52-year-old person revealed that he was likely to contract cancer and some other diseases in the later stages of his life. The human genome sequence is like a map of the human body. Through this map, one can tell what leads to what. One may use this map to predict mutations in the gene, like predicting how a certain person may get a certain disease. One may foretell for instance, who will get the common bipolar disease or single nuclear polymorphism, or whether a diabetic will develop eye disease or kidney disease. Through the same tool, one may predict the chances of a particular disease affecting a population. One may also explore aspects like why certain drugs don't affect certain people. There are plans to sequence the genomes of 10 more Indians. In comparison, China already has an ongoing project to sequencing the genomes of 100 citizens. When a lot of people will sequence their genes, it will help scientists reliably predict disease probabilities.

Source: *India Briefing*, 10th December 2009

Malaysia: HIV Methadone Therapy

Approximately 80 percent of addicts in Malaysia have HIV as a result of sharing needles and this number is expected to increase if no practical and pragmatic approaches are implemented. Although the Methadone Drug Replacement Therapy introduced by the government has been in place since 2006, only 5% of addicts are following this treatment. There are many cases where the methadone dosage administered to addicts is inadequate and as a result, addicts return to their drug habit of using needles to inject themselves. There are also cases where there is an overdose of methadone and this leads to side effects which jeopardize their health. In this context, the researchers from the Institute for Research in Molecular Medicine (INFORMM) of the Universiti Sains Malaysia (USM) have successfully developed a drug therapy called Methadone Therapy which is not only an

effective method of treating drug addiction but which has the capacity to reduce the transmission of HIV among addicts who use needles. For the first time in the world, two detection kits to identify the genes related to the control of methadone excretion [CYP2B6 and OPRM1 Genes] and to measure the concentration of methadone have been introduced for this therapy. The research, funded by a University Research Grant of RM 3 million began last year. With the new method, one can identify whether the addicts actually take the methadone for treatment and can also determine the appropriate dosage, which will help the addicts overcome their addiction and reduce the risk of HIV transmission through the sharing of needles. Administration of the appropriate dosage is important to ensure that addicts do not return to their habit of using needles to inject drugs. More importantly, this therapy enables the addict to function normally, without being influenced by their addiction. In fact, the addicts' quality of life is getting improved and indirectly, this will reduce the crime rate and other social problems. So far, two clinics in Kota Bahru, Kelantan and Semenyih, Selangor have started using this therapy as well as the two detection kits for purposes of treatment and rehabilitation of addicts.

Source: *ResearchAsia News*, 30th November 2009

Maldives: Underwater Cabinet Meeting

The government of the Maldives held its first underwater cabinet meeting on 17th October 2009 to attract international attention to the dangers of global warming. The Maldives, located southwest of Sri Lanka, has become a vocal campaigner in the battle to halt rising sea levels. Most of the island nation, a tourist paradise featuring coral reefs and white sand beaches, lies less than three feet above sea level and in 2007, the UN's Intergovernmental Panel on Climate Change (IPCC) warned that a rise in sea levels of seven to 24 inches by 2100 would be enough to make the country virtually uninhabitable. President Mohamed Nasheed, dressed in full scuba gear, conducted the 30-minute meeting at a depth of 20 feet off the coast just north of the capital Male. The government arranged a horseshoe-shaped table on the seabed for the ministers, who communicated using white boards and hand signals. The Divers Association of Maldives said the ministers, who had trained over the past two months, felt confident about the unprecedented meeting. As bubbles floated up from their face masks, the president, vice president, cabinet secretary and 11 ministers signed a document calling on all countries to cut their carbon dioxide emissions. The issue had taken on urgency ahead of the UN Climate Change Conference held in December in Copenhagen, where the countries negotiated a successor to the Kyoto Protocol with aims to cut the emission of greenhouse gases such as carbon dioxide that scientists blame for causing global warming by trapping heat in the atmosphere. President Nasheed had already announced plans for a fund to buy a new homeland for his people if the 1192 low-lying coral islands are submerged. He has promised to make the Maldives, with a population of 350,000, the world's first carbon-neutral nation within a decade.

Source: *Telegraph*, 17th October 2009

Morocco: Moroccan Biosafety Association (MOBSA)

In Morocco, the majority of the scientific community looks at Biosafety and Biosecurity only from the perspective of biological diversity concerns (compliance with the Cartagena Protocol). Very little education and awareness exist in terms of the unintended consequences of research and laboratory accidents nor these exist in terms of deliberate misuse of life sciences technology for harm. A group of scientists concerned with disseminating information about the spectrum of biological risks and the impact on public health, animals, agriculture, plants and the environment created the Moroccan Biosafety Association (MOBSA) created in October 2009, which aims at defining Biosafety as a multidisciplinary scientific field. Professionals from different fields, such as biology, chemistry, diagnostics centers, agronomy and food technology, pharmacy, medicine, nursing and law are brought together in this promising discipline. MOBSA will seek to advise and support the government on the implementation of new legislation and standards in areas related to biological safety and biosecurity, on the implementation of the BTWC recommendations, and on biotechnology and associated activities. The key objectives of MOBSA are to contribute to enhance national capacity building in the fields of Biosafety and Biosecurity; develop a national Biosafety expertise (including Faculty in the Universities); elaborate educational modules in French and Arabic (professional, high schools, undergraduate and graduate); national and regional networking; stimulate the safe use of new technologies; training BSL3 and BSL2 users; conduct national and regional surveys and case studies etc. MOBSA is open to anyone working in the field, providing unique networking opportunities.

Source: *Crop Biotech Update*, 13th November 2009

Qatar: Natural Gas Powered Aircraft Maiden Journey

A London-Doha flight of Qatar Airways became the first commercial passenger aircraft to complete flying in six hours fuelled by natural gas. This milestone flight was the first step in making this alternative fuel available to airlines. The Airbus A340-600 aircraft powered by Rolls-Royce Trent 556 engines used an alternative of the blend of synthetic Gas to Liquids (GTL)

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VIP VISITS TO NAM S&T CENTRE



H.E. Ms. Ebyan Mahamed Salah, Ambassador of the Republic of Somalia to India



Mr. Uroš Zver, Director of Projects, International Center for Promotion of Enterprises (ICPE), Slovenia



Dr. A. R. Shivakumar, Executive Secretary I/C, Karnataka State Council for Science and Technology, India



With Prof. Felizitas Sagebiel, University of Wuppertal, Germany

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kerosene and conventional oil-based kerosene fuel, developed by Shell. The fuel blend, known as GTL Jet Fuel, contributes to local air quality of airport as it burns with lower sulfur dioxide. Qatar is set to become the leading producer of GTL in the world once commercial production begins from 2012. Qatar's position as the GTL capital of the world has been further enhanced with this achievement. Commercial aviation is one of the exciting new markets for Qatar to help maximizing the value from their natural resources. Data from the GTL flight will be used by scientists in Qatar to further quantify GTL Jet Fuel use benefits.

Source: *Economic Times*, 13th October 2009

Tanzania: CO₂ Link to Antarctic Ice Cap Origin

Researchers from Cardiff, Bristol and Texas A&M Universities spent weeks in the African bush in Tanzania with an armed guard to protect them from lions to extract samples of tiny fossils that could reveal CO₂ levels in the atmosphere 34 million years ago. They gathered sediment samples in the Tanzanian village of Stakishari where there are deposits of a particular type of well-preserved microfossils that can reveal past CO₂ levels. The rock samples have shown a strong link between falling CO₂ levels and the formation of Antarctic ice sheets 34 million years ago, underpinning computer climate models that predict both the creation of ice sheets when CO₂ levels fall and the melting of ice caps when CO₂ levels rise. Levels of carbon dioxide, the main greenhouse gas, mysteriously fell during this time in an event called the Eocene-Oligocene climate transition. This was the biggest climate switch since the extinction of the dinosaurs 65 million years ago. The study reconstructed CO₂ levels around this period, showing a dip around the time ice sheets in Antarctica started to form. CO₂ levels were around 750 parts per million, about double current levels. CO₂, being an acidic gas, causes changes in acidity in the ocean, which absorbs large amounts of the gas. This can be picked up through chemistry of microscopic

plankton shells that were living in the surface ocean at the time. The evidence from around Antarctica was much harder to find. The ice caps covered everything in Antarctica. The erosion of sediments around Antarctica since the formation of the ice caps has obliterated a lot of the pre-existing evidence that might have been there. The models could be used to predict the melting of the ice. The suggested melting starts around 900 parts per million, a level that could be reached by the end of this century, unless serious emissions cuts were made.

Source: *Planet Ark*, 15th September 2009

United Arab Emirates: Green Energy Institute

The United Arab Emirates bid to become an international hub for renewable energy takes a step forward with the opening of a US\$1.2 billion graduate institution on 6th September focusing on research into alternative energy, sustainability and the environment. The Masdar Institute of Science and Technology (MIST) of the UAE Capital, Abu Dhabi has been launched from a temporary campus at the Petroleum Institute near the outskirts of Abu Dhabi and has started the academic year with 92 students from 22 countries, who are all on a full scholarship. Just over ten per cent of students are from the Emirates. MIST is part of the US\$15 billion alternative energy and clean technology initiative launched in April 2006 by the UAE. Its two-year Master's programme offers five multidisciplinary specialized areas geared towards the R&D of alternative energy and sustainability. MA programmes include Engineering and Systems Management; Information Technology; Materials Science and Engineering; Mechanical Engineering, and Water and Environment. The Massachusetts Institute of Technology (MIT) of the USA will run joint research projects with MIST, as well as help the fledgling institution with student recruitment. MIST is fully devoted to R&D in different fields of energy, which will not only turn UAE into an exporter of green technologies but also establish renewable energy technologies in the Middle East.

Source: *Science Development Network*, 15th September 2009



NAM S&T Centre invites Applications for Fellowship / Internship Schemes

Joint NAM S&T Centre ZMT Bremen (Germany) Fellowship in Ecology and Biogeochemistry of Tropical Coastal Marine Systems

This Fellowship is offered to young scientists and researchers from the developing countries for affiliation with the Leibniz Centre for Tropical Marine Ecology (ZMT), Bremen, Germany [www.zmt-bremen.de] for a period of up to 3 months to work with its senior researchers and faculty members for upgrading research skills in the fields related to Ecology and Biogeochemistry of Tropical Coastal Marine Systems and undertaking short-term joint research projects. Depending on the research topic, the Fellows can also benefit from the ZMT's association with Marine Science Institute of Bremen University, Max Plank Institute for Marine Microbiology and the MARUM Research Centre in Bremen. Under this scheme, the NAM S&T Centre sponsors up to five scientists in a given calendar year (one scientist only from any developing country), and covers the international airfare of the Fellows from its member countries. Applications from non-member developing countries are also welcome subject to certain conditions. ZMT provides a subsistence monthly allowance of 1000 Euros for accommodation and other expenses in Bremen. Selection is strictly on competitive basis based on the applicant's academic and professional background, the plan of work and the mutual research interests of the applicant and ZMT. Applications recommended by the parent institutions (employer) of the applicants may be submitted to the NAM S&T Centre by email along with its attachments, in the relevant format available at the Centre's Website www.namstct.org, which also gives the detailed guidelines for the Fellowship.

Joint NAM S&T Centre - ICCBS Karachi (Pakistan) Fellowship in Natural Products Chemistry, Drugs and Pharmaceuticals [Only for Scientists from Member Countries of NAM S&T Centre]

This Fellowship is offered to the scientists and researchers of the member countries of the NAM S&T Centre for affiliation with the International Centre for Chemical and Biological Sciences (ICCBS) of the H.E.J. Research Institute of Chemistry and Dr. Panjwani Center for Molecular Medicine and Drug Research, Karachi, Pakistan [http://www.iccs.edu/] for a period of up to 3 months to work in the areas of Natural Products Chemistry, Herbal Medicines, Drugs, Pharmaceuticals and Nutraceuticals, Molecular Medicine, Drug Research, Clinical Research etc. in order to enhance their research skills, facilitate exchange of information and contacts and create a network between the scientists and researchers from Pakistan and other countries. Under this scheme, The NAM S&T Centre pays the return international airfare from the home country to Karachi to the selected Fellows only from those member countries of the NAM S&T Centre or members of the NAM S&T Industry Network, which have no outstanding dues towards the annual membership subscription to the Centre. The ICCBS provides free furnished accommodation and a monthly allowance of US\$200 for meals and out of pocket expenses to the selected Fellows. The selection is made strictly based on the professional details of the applicant, plan of work to be carried out and mutual research interests of the applicant and ICCBS. Applications recommended by the parent institutions of the applicants may be submitted to the NAM S&T Centre by email and its attachments in the relevant format available at the Centre's Website www.namstct.org, which also gives the detailed guidelines for the Fellowship.

Scientists from Pakistan are not eligible to apply for this Fellowship.

NAM S&T Centre Research Fellowship in Any Scientific Field [Only for Scientists from Member Countries of NAM S&T Centre]

This Fellowship has been instituted by the NAM S&T Centre to facilitate the international visit of the scientists and researchers of its member countries to the scientific institutions located in another member country for enhancing their research skills, undertaking joint scientific projects, delivering lectures and developing further linkages, but not for attending workshops/conferences or for higher studies, Ph.D. programme etc. All the 44 member countries of the NAM S&T Centre are listed at the Centre's website www.namstct.org. Under this scheme, the Centre covers the expense on the international airfare of one scientist each from each of its member countries in any given year, subject to the host country providing free furnished accommodation, meals and/or a per diem allowance to the Fellow during the period of his/her affiliation with the institute(s). The selection is strictly based on the professional details of the applicant, the plan of work to be carried out and the mutual scientific and academic interests of the applicant and the host institution. A precondition for applying is that the applicant should first approach the host institution(s) to obtain their consent to accept him/her for working in the institution for a specified period with necessary facilities and for providing total hospitality (accommodation, meals and/or a per diem allowance) for such period. Applications recommended by the parent institutions (employer) of the applicants may be submitted to the NAM S&T Centre by email along with its attachments, in the relevant format available at the Centre's website www.namstct.org, which also gives the detailed guidelines for the Fellowship. Up to 5 fellowships are available for award during the current year.

Internship in NAM S&T Centre

As a part of its commitment to promote capacity building in science and technology in the developing countries, the Centre offers opportunity to the young scientists from its member countries (other than India) for short-term affiliation with the NAM S&T Centre to carry out studies on S&T Policy, International S&T cooperation etc. Under this scheme, suitable facilities are provided to the interns for working in the Centre including a computer with Internet connection and other office equipment. The interns are assisted by the Centre in getting access to appropriate Indian organisations and also by providing relevant information in the subject areas of their interest. Any member country may depute its scientists to work in the Centre as interns for short periods provided the entire expenditure on international travel and accommodation and subsistence in Delhi is borne by the sending country.

There is no last date for submitting application for any of the above fellowships/internship, which will be considered on first-come-first basis.

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