I.S.S.N 0971-4200

NAM S&T Newsletter

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

VOL. 34, NO. 4
JANUARY - MARCH 2025

FROM THE DG'S DESK

Greetings and best wishes to all our Esteemed Readers for a successful and fulfilling 2025!

As we step into the New Year, I am pleased to present a brief overview of the NAM S&T Centre's key activities during the first quarter - from January to March 2025. This period has been marked by renewed energy, strategic engagements and continued commitment to advancing Science, Technology and Innovation, especially across the Global South.

The Centre commenced the year with the ***First Meeting of the Bureau of the 16th Governing Council***, convened from **15-16 January 2025** in **Cairo, Egypt** under the generous hosting of the **Academy of Scientific Research and Technology (ASRT), Egypt**. The meeting brought together Bureau Members of the Governing Council, diplomats and senior representatives from the scientific community to review progress and chart our collective path forward for the coming year.

Amongst the major activities of the Centre, an International **Workshop** on ***"Food, Water, Energy Nexus and Sustainability"***, was held in **El-Ain El-Sokhna, Egypt** during **20-21 February 2025**. The workshop provided a timely and dynamic platform for dialogue on the interconnectedness of critical natural resources and the importance of integrated and sustainable approaches to their management.

I am happy to announce the release of a new Monograph by the Centre titled ***"Severe Storms: Anatomy, Early Warning Systems and Aftermath in Changing Climate Scenarios"***, published by *Springer Nature, Singapore*. This comprehensive work offers valuable perspectives on severe storms, an extreme weather event that creates havoc across the world. It discusses fundamental issues related to severe storms and the infrastructure and framework needed for early warning, loss mitigation and disaster resilience.

In continuation to our effort to publish Fact Files on various socially important S&T issues, two new **Fact Files on - "Heatwaves: Impacts and Implications on the Developing World"** and **"Non-Communicable Diseases"**, have been published by the Centre and are being widely disseminated to the stakeholders.

The researchers selected for our International Joint Fellowships: the NAM S&T Centre – ZMT Bremen (Germany) Fellowship, and the NAM S&T Centre – JSS AHER (India) Fellowship for the year 2024 have successfully completed their research projects.

In addition, the Centre welcomed distinguished visitors from various countries offering opportunities for further networking and collaboration and strengthening our efforts to support scientific progress and innovation, especially in the developing nations.

Looking ahead, the Centre is going to shortly organise two scientific events: an **International Workshop** on ***"Role of Women in STI in the Global South,"*** in Mauritius on 17-18 April 2025, and an **International Conference** on ***"Science and Technology Information Management System: Practices and Experiences"***, scheduled for 7-9 May 2025 in Kathmandu, Nepal.

The NAM S&T Centre is committed to enhancing scientific collaboration and empowering researchers worldwide. We remain deeply grateful to our member countries, network members, and last but not the least, our readers - for their continued support and collaboration.

Happy Reading

(Amitava Bandopadhyay)
Director General

First Meeting of the Bureau of the 16th Governing Council of the NAM S&T Centre

Cairo, Egypt, 15-16 January 2025

The 1st meeting of the Bureau of the 16th Governing Council (GC) of the NAM S&T Centre was held during 15-16 January 2025 in Cairo, Egypt, which was hosted by the Academy of Scientific Research and Technology (ASRT), Government of the Arab Republic of Egypt. Delegates including the four Bureau Members (Egypt, Mauritius, Palestine and South Africa); senior diplomats of the Embassies of Argentina, Cambodia, Colombia and Myanmar in Cairo; senior officials of ASRT, scientific agencies of Egypt, and representatives of the NAM S&T Centre Secretariat attended the Opening Session of the Bureau Meeting.

Bureau Members (L-R) Amitava Bandopadhyay, Prof. Dr. Gina Elfeky, Prof. (Dr.) Kiran Bhujun, Dr. Hussein Rabaia and Mr. Selby Modiba

(Contd. on page 2)

Centre Organised

International Workshop on

Food, Water, Energy Nexus and Sustainability

El-Ain El-Sokhna, Egypt, 20-21 February 2025

The interdependence of water, food and energy systems is becoming increasingly evident, especially as climate change accelerates and the global population continues to grow. Despite their relatively lower per capita contribution to global greenhouse gas emissions, developing countries are particularly vulnerable to the disruptions caused by climate change, which affects the stability and security of various interconnected systems. Climate change contributes to both water shortages and excess water (such as flooding) which significantly impact agricultural production, leading to food insecurity and also threatens the availability of safe drinking water. These changes also affect energy production especially in countries

International Workshop on Food, Water, Energy Nexus and Sustainability, Egypt

(Contd. on page 4)

(Contd. from Page 1 - Bureau Meeting Report.....)

During the ceremonial opening, at the outset, the Master of Ceremony, Mrs. Reham Sabry, Supervisor of the General Department of Scientific Relations & International Cooperation, ASRT, Cairo, Egypt welcomed the Members of the Bureau, delegates from other Member Countries and the distinguished representatives from the diplomatic missions of various countries in Egypt.

Prof. Dr. Gina Elfeky, President, ASRT and one of the Vice-Presidents of the 16th GC of the NAM S&T Centre welcomed the Members of the Bureau, delegates from other Member Countries, and the distinguished representatives from the diplomatic missions of various countries in Egypt.

Prof. (Dr.) Kiran Bhujun, Director - Tertiary Education and Scientific Research Division, Ministry of Tertiary Education, Science and Research, Government of Mauritius attended and presided over the meeting on behalf of His Excellency Dr. Kaviraj Sharma Sukon, Hon'ble Minister of Tertiary Education, Science and Research of the Govt. of Mauritius, who could not be present due to other commitments.

Prof. (Dr.) Kiran Bhujun expressed thanks on behalf of the Government of Mauritius to the Government of Egypt for hosting the Bureau Meeting in the historic and vibrant city of Cairo. He quoted the highly relevant statement of Albert Einstein "The important thing is not to stop questioning; Curiosity has its own reason for existing" - the statement that captures the essence of our collective endeavour. He further added that various issues faced by the Member Countries require collective action, and the NAM S&T Centre provides the member states with the tools and networks to find innovative solutions. He mentioned that collaboration is essential for progress, and sharing ideas and resources among the member states leads to greater achievements. He stated that as the Chair of the NAM S&T Centre, Mauritius is dedicated to advancing its goals that can create partnerships that strengthen our collective abilities and impact globally. He added that during its Presidency, Mauritius would host a major event on Women in Science in April 2025, highlighting the importance of empowering women in science. Additionally, Mauritius would hold two more workshops on topics like Renewable Energy and Biotechnology to foster meaningful exchanges and addressing current challenges in 2026 and 2027. He advocated that collaboration is important for progress, but education is its foundation. STEM education is the key to shaping the future, as it sparks curiosity and innovation in young people. Investing in youth helps them to become scientists, engineers, and innovators who can solve future challenges, and we must provide them with necessary tools and opportunities. He added that Mauritius is dedicated to working with Bureau Members to maintain high standards of governance and accountability in the NAM S&T Centre, promoting South-South cooperation and scientific excellence.

Prof. Dr. Gina Elfeky, President, ASRT highlighted the importance of cooperation among member states in scientific and technological research. She stated that Egypt has cooperated with the Centre since 1993, with the ASRT acting as the contact point for Egypt. She mentioned that Egypt would host the next meeting of the Governing Council of the NAM S&T Centre at the end of 2026. She further elaborated on ASRT's activities aimed at building knowledge, achieving Sustainable Development Goals, promoting innovation, and supporting strategic research projects. While elaborating on the long-standing fruitful collaboration between the ASRT and NAM S&T Centre, she invited the Member Countries to send their experts/scientists to participate in the upcoming International Workshop on 'Food, Water, Energy Nexus and Sustainability' in El-Ain El-Sokhna, Egypt that would be jointly organised by ASRT and the NAM S&T Centre during 20-21 February 2025.

Dr. Hussein Rabaia, Vice-President, Higher Council for Innovation and Excellence (HCIE), Government of the State of Palestine and Vice President of the 16th GC of the Centre, in his remarks thanked the NAM S&T Centre for continuous support to Palestine in general and to HCIE in particular. Dr. Hussein also expressed his heartfelt appreciation to Dr. Kaviraj Sharma Sukon, President of the 16th GC of the NAM Centre, for his tireless efforts in advancing the role of the Centre as a Science and Technology Hub for all its member states. He further stated that his nation has been suffering for over 450 days through wars and destruction, and the Palestine government has started social programs to help its people and is working to aid school children despite limited resources. Amidst this unprecedented adversity, HCIE is committed to science, innovation, and resilience despite facing challenges. Recently, Palestinian scientists have participated in NAM S&T Centre's events, and developed new partnerships. He mentioned that the NAM S&T Centre and its members are vital for helping Gaza, and Palestine calls for innovative ideas through research, humanitarian aid and education. Contributions can significantly help Gaza's immediate needs and long-term recovery.

Mr. Selby Modiba, Deputy Director, Multilateral Cooperation, Department of Science & Innovation, South Africa who represented South Africa as one of the Vice-Presidents of the Centre thanked the Arab Republic of Egypt for the hospitality extended to all the foreign delegates and expressed gratitude for the good STI bilateral relationship between Egypt and South Africa. He mentioned that this meeting was happening at a time when South Africa has been facing the harmful effects of climate change, including floods, droughts, and heatwaves. He further pointed out that rapid technological changes are taking place in areas like AI in the advanced countries, while the developing countries are left behind, and the role of NAM S&T Centre is crucial to find solutions to such challenges through technical exchanges focused on innovation. He added that innovation is the future and it is only through innovation that the rapid technological gaps between the global South and North could be closed. This gap can also be reduced when the developing countries innovate. He further added that South Africa has developed a ten-year innovation plan, focusing on development through sectors like energy, health, manufacturing, digitization, and agriculture. He urged the NAM S&T Centre to prioritize innovation activities and encourage partnerships on technology transfer among developing countries. He also mentioned that South Africa currently holds the G20 Presidency, and the Department of Science, Technology and Innovation is leading the Research and Innovation Working Group. The national theme focuses on solidarity, equality and sustainability with three main priorities for the Research and Innovation Working Group: Innovation for development; Biodiversity for sustainable development; and Diversity, equality, inclusion, and accessibility in STI.

Dr. Amitava Bandopadhyay, Director General (DG), NAM S&T Centre expressed his gratitude to the Government of Egypt and other dignitaries, and more specifically to Prof. Dr. Gina Elfeky, President, ASRT for agreeing to host the Bureau Meeting. He appreciated the efforts put in by other colleagues of ASRT, particularly, Prof. Mona Elnaa, Vice President for Scientific & Cultural Relations; Mrs. Reham Sabry, Supervisor of the General Department of Scientific Relations & International Cooperation; and other colleagues within ASRT for the admirable job of shouldering the responsibility of the coordination and day-to-day work in organising the Bureau Meeting on behalf of the Government of Egypt. Dr. Bandopadhyay thanked Prof. (Dr.) Kiran Bhujun for Chairing the meeting on behalf of His Excellency Dr. Kaviraj Sharma Sukon. He also thanked Prof. Dr. Gina Elfeky, Vice-President, NAM S&T Centre; Dr. Hussein Rabaia, Vice-President, NAM S&T Centre and Mr. Selby Modiba who is representing South Africa as one of the Vice-Presidents of the Centre, for their continued support and guidance towards the functioning of the Centre. Dr. Bandopadhyay also thanked all other dignitaries and

(Contd. on Page 3)

(Contd. from Page 2 - Bureau Meeting Report.....)

delegates for attending the Bureau Meeting. He made a presentation on the objectives and functions of the NAM S&T Centre and its role in developing partnerships and promoting South-South and North-South cooperation in Science & Technology. Subsequently, following four books of the NAM S&T Centre published by Springer Nature, Singapore and four Fact Files were released by the Bureau Members and other dignitaries of the 16th GC of the Centre:

1) **Managed Groundwater Recharge and Rainwater Harvesting: Outlook from Developing Countries** – Edited by Dipankar Saha (India), Karen G. Villholth (South Africa) and Mohamed Shamrukh Mahmoud (Egypt) – *Released by* Prof. (Dr.) Kiran Bhujun *(Mauritius).*
2) **Arsenic Remediation of Food and Water - Technological Interventions and Perspectives from Developing Countries** – Edited by Bhaskar Sen Gupta (United Kingdom) and Nadia Valentina Martínez Villegas (Mexico) – *Released byProf. Dr. Gina Elfeky (Egypt)*
3) **Water Management in Developing Countries and Sustainable Development** – Edited by S. Suriyanarayanan (India), Shivaraju H. P. (India) and David Jenkins (United Kingdom) – *Released by* Dr. Hussein Rabaia *(Palestine)*
4) **Emerging Trends in Leather Science and Technology** – Edited by K. J. Sreeram (India) and Luis A. Zugno (Switzerland) – *Released by* Mr. Selby Modiba *(South Africa)*
5) **Four Fact Files** on: (1) *"Rare Diseases: An Emerging Global Health Priority"*; (2) "*Plastic Pollution*"; (3) "*Lightning"; and (4) "Heatwaves: Impacts and Implications on the Developing World" – Released by* Prof. Mona Elnaa (Egypt)

At the end of the Opening Session, Mrs. Reham Sabry proposed a "Vote of Thanks" to all the esteemed delegates and participants.

The Working Level Discussion of the Bureau Meeting was chaired by Prof. (Dr.) Kiran Bhujun, Director – Tertiary Education and Scientific Research Division, Ministry of Tertiary Education, Science and Research, Government of Mauritius on behalf of His Excellency Dr. Kaviraj Sharma Sukon from Mauritius, President of the 16th GC of the NAM S&T Centre.

The Bureau then took up various items of Agenda for discussion:

The Members of the Bureau expressed happiness to note various initiatives of the Centre to establish international S&T partnerships with other inter-governmental organisations and agencies. In this connection, the Bureau urged other Member Countries and agencies to come forward with relevant proposals for implementation in partnership with the Centre. The Bureau accorded in-principle approval for undertaking several international workshops and training programmes by the NAM S&T Centre in partnership with various organisations.

The delegates congratulated the DG, NAM S&T Centre for achieving an impressive output in spite of very limited financial resources.

The Bureau appealed those Member Countries, which have not yet ratified the Statute of the Centre, to expeditiously take up the matter with their respective authorities. In this connection, the Director General clarified that the Ratification (or acceptance, approval or accession, as the case may be) of the Statute by the Member Countries is just a routine formality as required for complete diplomatic recognition of the NAM S&T Centre, and there would be no additional financial burden for the Member States due to ratification.

The Bureau noted the year wise income and expenditure of the Centre and was happy about the efficient financial management by the Centre. The Bureau expressed concern that the Centre had been facing financial constraints due to non-payment of the membership subscription by a number of Member Countries. The Bureau made a strong appeal to the non-paying Member Countries to expedite payment of their membership subscription dues to the Centre.

The Chair of the meeting, Prof. Kiran noted that a database of more than 10000 experts/scientists who had participated in various activities of the Centre is available in the Secretariat, and advised that a request may be sent to these alumni to promote the activities of the Centre and also help in getting their institutions/agencies join the NAM S&T Centre as Industry Network Members.

The DG informed the Bureau that the Secretariat would soon send a general e-mail circular to all the alumni who had their association with the NAM S&T Centre over the years with a request to their institutions to join as Industry Network Members of the Centre and to collaborate with the Centre in the near future.

The meeting ended with the Chairman thanking the Government of Egypt, especially the Academy of Scientific Research and Technology of Egypt for efficiently hosting the meeting and making excellent arrangements for the same. The Chairman thanked Dr. Amitava Bandopadhyay, Director General and the secretarial staff of the Centre for their magnificent work.

Dr. Amitava Bandopadhyay, Director General, NAM S&T Centre thanked the Chairman, Prof. (Dr.) Kiran Bhujun and other Bureau Members and GC Members participating in the Bureau Meeting and offering their support and guidance to the Centre. The Director General also thanked the Government of Egypt, and in particular, Prof. Dr. Gina Elfeky, President ASRT; Prof. Mona Elnaa, Vice President for Scientific & Cultural Relations; Mrs. Reham Sabry, Supervisor of the General Department of Scientific Relations; and other officials of the ASRT for making excellent arrangements for hosting the Bureau Meeting.

(Contd. from Page 1 - Int W_shop on Food, Water..., Egypt.....)

where energy generation relies on hydropower and water-based cooling systems. As water becomes scarcer, the interdependencies between Food-Water-Energy sectors and create a cycle of challenges, exacerbating the vulnerabilities of developing nations. The integrated approach is essential for sustainability and building resilience against the impacts of climate change. The nexus approach emphasizes resource efficiency, sustainable management and technological innovation to create synergies across these sectors while managing trade-offs. Therefore, recognizing these interdependencies and developing integrated solutions is crucial.

In order to deliberate on various issues and to find solutions to the above problems, the **Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre)** in collaboration with the **Academy of Scientific Research & Technology (ASRT)** of Egypt, and other Egyptian partners organized an **International Workshop** on **"Food, Water, Energy Nexus and Sustainability"** in **El-Ain El-Sokhna, Egypt** during **20-21February 2025.**

The workshop was organized with the primary objective of fostering discussions and solutions to bridge these challenges through integrated strategies that can effectively enhance sustainability across these vital sectors. The workshop brought together experts, researchers and professionals from various countries to discuss the interlinked challenges of food, water and energy security, with a focus on finding sustainable solutions to the pressing issues faced by the Global South. Altogether **more than 40** researchers, scientists, experts, academicians and policy makers from **10 countries** including **India, Indonesia, Malaysia, Mauritius, Myanmar, Nepal, Pakistan, Palestine, Zimbabwe** and the host country, **Egypt** participated in the Workshop.

The Inaugural Ceremony began with the Welcome Remarks by **Mrs. Reham Sabry**, Supervisor of the General Department of Scientific Relations & International Cooperation at ASRT. She extended a warm welcome to all the delegates and highlighted the importance of addressing the intertwined issues of food, water and energy security in the context of climate change. **Dr. Ibrahim A. Hassan**, President of ESCOPE and Professor at the University of Alexandria in his Opening Remarks emphasized the significance of the workshop in fostering international collaboration to address the pressing issues faced by the Global South in the fields of food, water, energy and sustainability.

As **Prof. Dr. Gina El-Feky**, President, ASRT, and Vice-President of the 16th Governing Council of the NAM S&T Centre could not attend the event due to prior commitments, and so **Prof. Mona Elnaa**, Vice President of ASRT delivered remarks on behalf of Prof. Dr. Gina, virtually. Prof. Mona spoke about the crucial role of the ASRT and NAM S&T Centre in promoting scientific research and technological advancements in Egypt and emphasized the importance of collective action for sustainable development. **Dr. Amitava Bandopadhyay**, Director General of NAM S&T Centre was not able to attend the workshop due to unavoidable circumstances and his message reiterating the NAM S&T Centre's commitment to fostering South-South cooperation in Science and Technology and the Centre's ongoing efforts to achieve the United Nations Sustainable Development Goals (SDGs), particularly those related to food, water and energy security, was read out by **Ms. Nidhi Utreja**, Programme Officer, NAM S&T Centre.

The two days International Workshop included **5 Technical Sessions, 6 Keynote Lectures, 16 Lectures, a Panel Discussion** and **a Concluding Session**.

Five Technical sessions were: *Food, Water and Energy Nexus: Impacts and Solutions for the Global South; Enhancing Water Security: Challenges and Solutions for Integrated Water Resource Management; Building Sustainable Food Systems in the Changing Climate: Challenges and Innovative Solutions; Water-Energy-Food Nexus Solutions for Urban Sustainability* and *Policymaking and Strategic Approaches for the Water-Food-Energy Nexus*. These sessions were respectively chaired by by **Dr. Dipankar Saha,** Chair Professor at Manav Rachna International Institute of Research and Studies, India; **Prof. Dr. Noha Samir Donia,** Environmental Hydraulics Professor, Faculty of Graduate Studies and Environmental Researches, Ain Shams University, Egypt; **Prof. Magdy Abdel Wahab**, Professor at Cairo University, Egypt; **Dr. Anandharamakrishnan Chinnaswamy**, CSIR-NIIST, India and **Prof. Nour El Gendy** Coordinator of Egyptian Committee for Environmental Issues (ESCOPE), Academy of Scientific Research and Technology (ASRT), Egypt

Six Keynote Lectures were delivered by the following: **Prof. Ibrahim Abdel Galil,** Former CEO, Egyptian Environmental Affairs

(Contd. from Page 4 - Int W_shop on Food, Water..., Egypt.....)

Agency (EEAA), Egypt; **Dr. Dipankar Saha**, India; **Prof. Islam Abo El Magd** President of National Authority of Remote Sensing & Space Sciences (NARSS), Egypt; **Prof. Mohamed El Khayat**,CEO, New and Renewable Energy Authority, Egypt; **Dr. Anandharamakrishnan Chinnaswamy**, CSIR- National Institute of Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram, India and **Prof. Magdy Abdel Wahab** ,Egypt. Titles of their respective lectures were: on "***Water-Energy-Food Nexus in the Arab Region: Challenges and Opportunities***", "***Optimum Utilization of Groundwater in Achieving Clean Water and Sanitation (SDG-6)***", "***Innovative Tools and Applications for Achieving Sustainable Food Security under Climate Variability***", "***Renewable Energy in Egypt: Opportunities and Prospects***","***The Future of the Food Industry in a Changing Climate***" and "***Climate Change Nexus Approach: Case Study from Egypt***".

Fifteen Technical paper presentations were given by participants from 9 countries including the host country Egypt. One paper from India was by **Dr. Pallavi Nagaraju**, Associate Professor, JSS Academy of Higher Education & Research on ***"Life Cycle Impact Assessment of Renewable Energy: a Systematic Review"***. **Ir. (Dr.) Nicco Plamonia**, Research Center for Environmental and Clean Technology, National Research and Innovation Agency (BRIN), Indonesia presented paper on ***"Hydraulic Challenges and Cost Implications of Drinking Water Supply for Nusantara, the New Indonesian Capital".***

From Malaysia, two paper presentations were on "***Sustainability through the Food-Water-Energy Nexus Approach: Insights from Kelantan, Malaysia***" and "***Integrating Water-Energy-Food Nexus Principles in Landscape Architecture***". Speakers for the respective lectures were **Dr. Mohamad Faiz Bin Mohd Amin,** Associate Professor, Faculty of Earth Science, Universiti Malaysia Kelantan (UMK), Malaysia and **Dr. Nurzuliza Binti Jamirsah**, Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia.

Dr. Mohammed Akthar Riad Sultan from Faculty of Social Sciences and Humanities, University of Mauritius in Mauritius delivered lecture under the title ***"Climate Change Impacts on the Food, Water and Energy Nexus in Southern Africa".***

Dr. Aung Khaing Phyo, Deputy Director, Department of Biotechnology Research, Ministry of Science and Technology, from **Myanmar** presented on the "***Impact of Recent Floods on Myanmar's Agriculture***".

From Palestine, **Ms. Shadha S. F. Musallam**, CEO and Cofounder, Agritopia for Agricultural Technology, presented her research work on "***Ozone-Based Disinfection for Treated Wastewater Reuse: A Case Study Using AGZ-60 System***".

Ms. Saima Siddique Tariq, Deputy Scientific Advisor, Ministry of Science and Technology, Government of Pakistan, Islamabad, Pakistan delivered an oral presentation on "***Pakistan Policy Framework for Water Resources and Sustainability***".

From Zimbabwe, a paper entitled *"**Understanding the Water-Energy-Food Nexus for Sustainable Nutrition in Developing Countries***" was presented by **Dr. Melody Ndemera**, Department of Food Processing Technology, Harare Institute of Technology, Harare.

From the host country Egypt, there were 6 presentations by: **Prof. Dr. Noha Samir Donia,** Environmental Hydraulics Professor, Faculty of Graduate Studies and Environmental Researches, Ain Shams University; **Prof. Ahmad Hegazy**, Professor of Applied Ecology, Botany and Microbiology, Cairo University, **Prof. Fawzy Ismail Eissa**, Faculty of Agriculture, Environment and Bio-agriculture Department, Al-Azhar University; **Dr. Nesrin A. Abbas**, Assistant Professor of Economics, Department of Finance & Investment, Faculty of Business, Economics & Information Systems, Misr University for Science & Technology (MUST), **Prof. Nour Shafik Emam El-Gendy**, Academy of Scientific Research and Technology and **Dr. Reda Abdelhameed,** Applied Organic Chemistry Department, Chemical Industries Research Institute, National Research Centre. Their respective presentations were: the "***Relationship between Water, Food, Energy Nexus and Climate Change in Egypt", "Nature-based Solutions and Sustainable Development",*** "***Food Contamination: an Analysis of EU RASFF Notifications for 20 Years***", "***The Economies and Importance of the Water-Food-Energy Nexus in Egypt***", "***Valorization of Wasted Seaweed Biomass for Achieving the Water, Food, Energy Nexus: Blue Economy Turns Green***" and "***Metal-organic Framework Promising Materials for Environmental Applications***".

A Panel Discussion was held on ***"Food, Water, Energy Nexus and Sustainability"*** comprising eminent experts: **Dr. Dipankar Saha**, **Prof. Ibrahim Hassan**, **Dr. Anandharamakrishnan Chinnaswamy**, **Prof. Ahmad Hegazy** and **Prof. Noha Samir Donia**. The session was moderated by **Prof. Nour El Gendy** (Egypt). Through in-depth discussions, the panelists provided a global perspective and addressed the issues faced by countries in the Global South, with a particular focus on sustainable practices, innovation and policymaking.

The workshop concluded with a call for action, urging individuals, communities and governments to take concrete steps towards sustainability. The discussion followed on future opportunities for collaboration and innovation in the food-water-energy nexus, focusing on building resilience, sharing knowledge and resources, and developing sustainable solutions to mitigate the impacts of extreme climate events in developing economies.

Special Feature

COP16.2 Finalises Outstanding Decisions on Biodiversity Monitoring and Financing

COP16.2 refers to the resumed session of the 16th United Nations Biodiversity Conference (COP16), held in Rome from 25-27 February 2025, where countries finalized outstanding decisions, including those related to biodiversity monitoring and financing. Parties were not able to reach agreement on areas of resource mobilisation and finalising the Monitoring Framework in Colombia in October 2024. *In the Rome meeting, all of the outstanding items were agreed upon, including new finance mechanisms and an updated monitoring framework to track implementation of the Global Biodiversity Framework and* was able to finalise that the Parties can move forward in their contributions to the implementation of the Kunming-Montreal Global Biodiversity Framework (KMGBF). Following are the highlights of the meeting:

- **Resource mobilisation**

The majority of the framework for resource mobilisation was discussed but not agreed upon at COP16 in Cali; is now finalised and approved. It includes an agreement to mobilise resources from various sources, including the private sector, government budgets, and multilateral development banks. Now, governments will need to work on the mobilising the 200 billion dollars of funding agreed upon. Twenty billion of this needs to be mobilized in 2025.

Parties agreed on a roadmap for establishing a global financial mechanism for biodiversity, but it is not yet clear what this will look like. The Global Environment Fund (GEF) has been the interim financial mechanism for this, but a long-term solution will be discussed in the next few years.

- **Cali Fund Launched**

The Cali fund was launched at the margins of COP16.2. The Cali Fund is a voluntary fund which makes it possible for large companies that benefit from the use of digital sequence information of genetic resources to pay in a share of their profits towards halting biodiversity loss.

Fifty percent of the funds collected in the Cali Fund are expected to be allocated to Indigenous Peoples and Local Communities, however it is not yet clear how this will be administered or whether these funds will need to go via government agencies. Another element to be determined is how much corporations will voluntarily hand over of the $1 billion expected yearly contributions, and if countries will adopt the national legislation needed to implement it. Sectors that will be targeted for inclusion include agriculture, biotechnology, cosmetics, pharmaceuticals and artificial intelligence.

- **Monitoring Framework for the KMGBF adopted**

The Monitoring Framework – which sets out how Parties will report on their biodiversity actions and how progress will be measured – was approved at COP16.2. This means that Parties can now move forward on how they will be monitoring progress of the implementation of the KMGBF goals and targets. This includes their National Biodiversity Strategies and Action Plans (NBSAPs) and national reports, which they need to submit to the CBD secretariat by February 2026.

Importantly, the revised and updated monitoring framework now includes a new headline indicator on land use change and land tenure in the traditional territories of Indigenous Peoples and local communities, recognising the significant role that these territories play in biodiversity conservation and sustainable use.

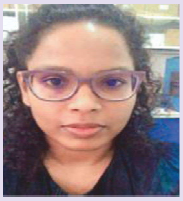
The Planning Monitoring Reporting and Review (PMRR) was also finalised, and in a new approach, allows for contributions for non-Parties. This hopes to support the implementation of the KMGBF through a whole society approach, one of the key principles of the Framework. It also includes a plan to produce a global review and report on the implementation of the KMGBF by COP17 in 2026.

https://transformativepathways.net, March 24, 2025

Joint NAM S&T Centre – JSS AHER, Mysuru, India Fellowship Programme – 2024

Research Completion Report of Dr. Gavini Dilkhushi Liyanaarachchi (SRI LANKA)

Project Title: "Immuno Modulatory Properties of Therapeutic Targets for the Development of Pharmaceuticals"



Dr. Gavini Dilkhushi Liyanaarachchi from Sri Lanka participated in the **Joint NAM S&T Centre – JSS Academy of Higher Education and Research (JSS AHER), Mysuru, Fellowship Programme 2024**. Her research focused on the development of nano-based delivery systems for *Citrus sinensis* (orange) essential oil for potential applications in cosmeceuticals and therapeutics. The research was conducted under the guidance of Dr. Vikas Jain, Associate Professor, Department of Pharmaceutics, JSS College of Pharmacy, Mysuru, India.

Building on prior research where *Citrus sinensis* peel oil exhibited significant inhibition of lipoxygenase, xanthine oxidase and nitric oxide (NO) activity, the current study aimed to overcome the oil's low water solubility through nanoencapsulation. Analysis had shown that 84% of the essential oil comprised D-limonene, followed by linalool, indicating D-limonene as the primary bioactive component.

Under the fellowship, held at JSS College of Pharmacy, Mysuru, Dr. Liyanaarachchi worked on *formulating a nano-gel encapsulating the essential oil*. The study's objectives included encapsulating the oil into nanoemulsion systems, assessing encapsulation efficiency, characterizing nanoparticle properties and evaluating anti-inflammatory activity. Cosmeceutical formulations by incorporating these nanoparticles were also explored.

The study led to the successful development of a nanoemulsion-based delivery system for *Citrus sinensis* oil. The optimized formulation exhibited a particle size of 80 nm with a PDI of 0.189, indicating a monodispersed system. FTIR analysis confirmed no interaction between the essential oil and the base formulation. Cytotoxicity assays indicated that both the pure oil and nano-formulation were non-toxic at concentrations below 30 µg/mL. Moreover, the nanoemulsion demonstrated strong antioxidant activity with 63.69% inhibition, supporting its potential for therapeutic and cosmeceutical applications.

The fellowship programme provided invaluable access to advanced technology, equipment and mentorship in the field of nanotechnology. Dr. Liyanaarachchi gained hands-on experience in cutting-edge techniques, expanded her scientific skill set and deepened her understanding of nano-delivery systems.

Joint NAM S&T Centre - ZMT Bremen (Germany) Fellowship 2024

Research Completion Report of Prof. Amila Sadaruwan Ratnayake (SRI LANKA)

Prof. Amila Sadaruwan Ratnayake from Sri Lanka participated in the Joint NAM S&T Centre - ZMT Bremen Fellowship Programme 2024, under the theme of "*Blue Economy in Tropical Coastal Marine Research*". The fellowship provided Prof. Ratnayake with a unique opportunity to engage in advanced research and foster international collaboration, significantly contributing to his academic and professional growth.

During the fellowship, Prof. Ratnayake focused on interdisciplinary research related to tropical coastal marine ecosystems, with a primary emphasis on nutrient cycling and sediment dynamics in mangrove ecosystems. His research involved analyzing nutrient fluxes and their implications for carbon burial along the east coast of Sri Lanka. Prof. Ratnayake utilized an elemental analyzer to measure total carbon (TC), total organic carbon (TOC) and total nitrogen (TN) contents in 296 samples. Additionally, he conducted stable isotope analysis (δ13C and δ15N) using an element analyzer coupled with an IR-Mass spectrometer for the same samples. Furthermore, Prof. Ratnayake contributed to preparing mangrove distribution maps highlighting changes from 1996 to 2020 in the studied coastal areas.

The programme offered a collaborative research environment where Prof. Ratnayake had the opportunity to work closely with leading marine scientists. He participated in various workshops and discussions, which greatly enhanced his research perspectives and provided new insights into sustainable marine resource management. Networking with researchers from Germany and other NAM member countries was an invaluable aspect of the fellowship, opening doors for future collaborations and joint projects.

In addition to enhancing his research expertise, Prof. Ratnayake plans to share the knowledge and skills gained through the fellowship with colleagues and students at Uva Wellassa University, thereby contributing to capacity building in marine science and resource management at the local level.

Reflecting on his experience, Prof. Ratnayake expressed that the Joint NAM S&T Centre - ZMT Bremen Fellowship Programme 2024 was a transformative opportunity. He conveyed that the fellowship not only strengthened his academic and professional expertise but also deepened his understanding of the interconnectedness of global marine ecosystems. The fellowship underscored the importance of international collaboration in addressing the challenges of sustainable development within the Blue Economy framework.

Science, Technology & Innovation News

PLASTIC POLLUTION

Plastic Shards Permeate Human Brains

A study of microplastics and nanoplastics in brains shows an astonishing increase over time. Microplastics are permeating our world. Our brains are no exception.

Our brains are increasingly plastic. A study of post-mortem brains shows that minuscule shards and flakes of polymers are surprisingly abundant in brain tissue. The findings are both significant and concerning", says Raffaele Marfella, a cardiovascular researcher at University of Campania "Luigi Vanvitelli" in Naples, Italy. He and his colleagues recently found that people with more micro- and nano-plastics (MNPs) in blood vessel plaques were at higher risk of heart attacks, strokes and death.

Plastic levels are tricky to measure. To get the full picture, researchers used several different methods to measure MNPs in 91 brain samples collected from people who died as far back as 1997. The measurements all pointed to substantial increases over the years. From 2016 to 2024, the median concentration of MNPs increased by about 50 percent from 3,345 micrograms per gram to 4,917 micrograms per gram. "The levels of plastic being detected in the brain are almost unbelievable," says study co-author Andrew West, a neuroscientist at Duke University. "In fact, I didn't believe it until I saw all the data" from multiple tests with different samples.

"Microplastics are in the food we eat, the water we drink and even the air we breathe," says Richard Thompson, a microplastic pollution expert at the University of Plymouth in England, who helped discover microplastics. Of course they've made their way into human tissue, he says. Earlier studies have found them in lungs, intestines, blood, liver and placenta.

In the samples collected in 2024, concentrations of MNPs in brain tissue were about 10 times higher than levels in liver and kidney tissue, the researchers report. Scientists had wondered if the blood-brain barrier, a cellular do-not-pass zone, could keep these polymers out. That doesn't seem to be the case.

"This study clearly demonstrates that they are there and in high concentrations," says Phoebe Stapleton, a toxicologist at Rutgers University in Piscataway, N.J. "The next steps will be to understand what they are doing [in the brain] and how the body responds to them".

Tiny shards of plastic of less than 200 nanometres long and 40 nanometres wide were present in human brain tissue. In addition to the levels of MNPs being described, their shapes are unexpected, Stapleton says. Thin, sharp particles — not solid grains — were present in the brain tissue. Many lab studies of MNPs experiment with engineered beads of polystyrene, a plastic extensively used in food industry, medical supplies and more, but the brains didn't have much polystyrene; there was, however, abundant polyethylene, another common household plastic that shows up in grocery bags, shampoo bottle and toys.

Higher MNP levels appeared in 12 brains of people with dementia diagnoses. That result can't say anything about whether one caused the other. Brain changes that come with dementia could allow more plastic to enter, for instance. Puzzlingly, MNP levels weren't linked to age at death, but did vary quite a bit among people, the study shows. Researchers are keen to understand why some people have high levels while others seem to have avoided build-up, West says.

The results come with caveats. The sample sizes were relatively small. Contamination risks and variability in measurements can make interpretation hard. And this study didn't follow plastic levels in living people, so it's not known if or how MNPs might fluctuate over time. Big questions remain, including how MNPs get into the brain, whether they can be removed and perhaps most pressing if they are harmful or benign. "Simply put, we do not know the health implications of microplastics in the brain", West says. He however also says that it would be a mistake to wait to get all the answers before addressing the issue.

Source: www.sciencenews.org; February 3, 2025

MATERIAL SCIENCE

Physicists Measure a Key Aspect of Superconductivity in "Magic-Angle" Graphene

By determining how readily electron pairs flow through this material, scientists' have taken a big step toward understanding its remarkable properties.

Physicists measured how readily a current of electron pairs, represented in yellow and white, flows with no resistance through "magic-angle" graphene, represented as the black lattices. "There's a whole family of 2D superconductors that is waiting to be probed, and we are really just scratching the surface," says Joel Wang, the lead author and a research scientist in MIT's Research Laboratory of Electronics (RLE).

For Superconducting materials, how easily electron pairs can flow depends on a number of conditions, including the density of pairs that are moving through the material. This "superfluid stiffness," or the ease with which a current of electron pairs can flow, is a key measure of a material's superconductivity.

Physicists at MIT and Harvard University have now directly measured superfluid stiffness for the first time in "magic-angle" graphene materials that are made from two or more atomically thin sheets of graphene twisted with respect to each other at just the right angle to enable a host of exceptional properties, including unconventional superconductivity. This superconductivity makes magic-angle graphene a promising building block for future quantum-computing devices, but exactly how the material superconduct is not well-understood. Knowing the material's superfluid stiffness will help scientists identify the mechanism of superconductivity in magic-angle graphene.

The team's measurements suggest that magic-angle graphene's superconductivity is primarily governed by quantum geometry, which refers to the conceptual "shape" of quantum states that can exist in a given material. The results, which are reported in the journal *Nature*, represent the first time scientists have directly measured superfluid stiffness in a two-dimensional material. To do so, the team developed a new experimental method which can now be used to make similar measurements of other two-dimensional

(Contd. on page 9)

(Contd. from Page 8 - STI News)

superconducting materials.

"There's a whole family of 2D superconductors that is waiting to be probed, and we are really just scratching the surface," says Joel Wang. "This work represents a great example of how one can use sophisticated quantum technology currently used in quantum circuits to investigate condensed matter systems consisting of strongly interacting particles," adds co-author Jarillo-Herrero. The study team of co-authors from MIT's main campus and MIT Lincoln Laboratory include co-lead author and former RLE postdoc Miuko Tanaka as well as Thao Dinh, Daniel Rodan-Legrain, Sameia Zaman, Max Hays, Bharath Kannan, Aziza Almanakly, David Kim, Bethany Niedzielski, Kyle Serniak, Mollie Schwartz, Jeffrey Grover, Terry Orlando, Simon Gustavsson, Pablo Jarillo-Herrero, and William D. Oliver, along with Kenji Watanabe and Takashi Taniguchi of the National Institute for Materials Science in Japan.

Source: news.mit.edu; February 5, 2025

INTERNET OF THINGS (IoT)

From Shelf to Sale: How IoT Solutions keep Retail Fresh

IoT solutions are providing the retail industry with powerful tools to navigate the challenges of modern commerce. The IoT – combined with real-time data analytics and AI – is reducing waste, improving operational efficiency, and helping retailers to achieve sustainability targets.

Tracking Expiration with Precision

Inventory management has long been a critical yet challenging aspect of retail. In particular, the ability to track expiration dates across large inventories is essential to minimise waste. "IoT sensors and real-time data analytics always work hand in hand. Today, we see sensors embedded in products, shelves, and storage units that notify retailers about product conditions and availability, helping them monitors shelf life with greater precision and implement FIFO strategies on a daily basis.

"Additionally, store managers are using cloud-based dashboards to help visualise stock turnover. Anything approaching expiration can be quickly marked down or promoted to help reduce waste."

By incorporating IoT sensors and data analytics, retailers gain the capability to adopt first-in, first-out (FIFO) approaches; ensuring products with shorter shelf lives are sold first. Simultaneously, cloud-based systems provide actionable insights to help streamline operations and meet sustainability goals.

Enhancing Cold Chain Monitoring with Retail IoT Solutions

For businesses dealing with perishable goods, cold chain logistics is a vital operational component. IoT sensors, combined with other technologies, are making the monitoring of cold storage during transportation and storage more efficient than ever before.

IoT helps track changes in temperature, humidity, and location through all stages of the supply chain. When temperature fluctuations occur, sensors trigger instant alerts so logistic teams can take corrective measures and avoid product spoilage.

Unsurprisingly, AI is also playing an increasing role."AI data can help businesses optimise their storage strategies, equipment maintenance, and route planning—all in an effort to prevent future food waste."

Smart Shelves are Becoming Indispensable

IoT-enabled "smart shelves" are proving indispensable for retailers looking to optimise inventory management and minimise spoilage due to mishandling or improper storage. Those RFID tags and weight sensors help streamline inventory management in real time while simplifying the restocking process.

IoT and AI facilitate dynamic adjustments to restocking schedules to prevent over-ordering and prioritise perishable goods. Additionally, in cases where items are misplaced on shelves, smart systems can immediately alert store staff to address the issue.

Retail IoT Solutions Enable Accurate Demand Forecasting

Aligned supply chains hinge upon accurate demand forecasting. The inclusion of IoT-generated data, processed via AI, is enabling retailers to refine procurement strategies and improve their responsiveness to market trends. "By processing IoT-generated data with AI models, retailers are now able to predict future demand with greater precision." Additional benefits of this enhanced forecasting are that it helps staff improve coordination with suppliers, minimise overstocking and control waste.

Real-Time Customer Engagement

To help reduce food waste, retailers are leveraging IoT platforms to inform customers of real-time deals on products nearing expiration. IoT, paired with AI, helps to devise personalised promotions and sustainability-focused marketing strategies.

AI-powered recommendation engines allow retailers to tailor offers to customers based on their shopping habits and sustainability preferences.

Supporting Transparency and Sustainability Goals

Sustainability continues to be a key priority for many retailers. By utilising IoT to monitor and report on food waste reductions, companies can demonstrate their commitment to environmental responsibility a move with added consumer and branding benefits. If retailers are committed to reducing food waste, IoT data can help by providing concrete metrics that quantify food waste reductions.

Through smart systems, companies not only track discarded food but also analyse its causes and suggest operational improvements. By prioritising transparency about food waste, retailers reinforce their own commitment to environmental responsibility, enhance consumer trust, strengthen brand loyalty, and even attract new, environmentally-conscious consumers.

IoT solutions, supported by AI and other innovations, are proving to be a game-changer for retail. As retailers further embed IoT into their systems, the benefits will multiply for businesses, consumers, and the environment alike. That's a win-win-win.

Source: iottechnews.com; February 17, 2025

(Contd. on page 10)

(Contd. from Page 9 - STI News)

BIOTECHNOLOGY

Newly Discovered Antigens could Speed the Development of Potent Cancer Immunotherapies

Immune therapy has transformed how cancer is treated, but many tumours continue to evade these treatments due to their resemblance to healthy tissue. Now, researchers at UC San Francisco have found that some cancers, like deadly brain cancer (glioma), make unique, jumbled proteins that make them stand out. These newly recognized cancer-specific proteins, or antigens, could speed the development of potent immunotherapies that recognize and attack hard-to-treat tumours. The study, which was supported through grants from the National Institutes of Health, was published in *Nature* on Feb. 19.

The newly discovered antigens were the product of mistakes in RNA splicing, which controls how RNA molecules – the blueprints for proteins – are pieced together from smaller parts. The study found that in cancers of the brain, prostate, liver and colon, among others, the tumours spliced together bits of RNA to create new forms that had never been seen before, and which were absent in healthy tissues.

Some of these new RNAs produced antigens that attached to the surface of tumour cells, creating an entry for immune therapy. The researchers then engineered immune T-cells to recognize these antigens and were able to destroy glioma in the lab. Such antigens from alternative RNA splicing could vastly expand the number of targets available for immunotherapy – and the options available to patients in need of a cure.

“We think these first antigens could be actionable in the near future, leading to new therapies for glioma patients. But they are the tip of the iceberg and we're excited to look into many more from the data we generated", Hideho Okada, MD, PhD, professor of neurosurgery at UCSF and co-corresponding author of the paper

Precision medicine today relies on either drugs that disable the mutant proteins that cause cancer or on the immune cells that track down cancer-related antigens. But many tumours don't have such mutant proteins or antigens. Even if they do, those targets might not cover all of a tumour. "One of the reasons we think a lot of glioma therapies fail is that they only target one part of the tumour. The rest of the tumour escapes unscathed," said Joe Costello, PhD, professor of neurosurgery at UCSF and co-corresponding author of the paper. "These new antigens lift us over that major hurdle of brain tumour heterogeneity".

To hunt for new targets for cancer therapies, Darwin Kwok, PhD, focused on RNA splicing, which sometimes produces several versions of a protein based on a single gene. Kwok pored through RNA sequencing data from thousands of tumours held by The Cancer Genome Atlas, a program at the National Cancer Institute. He homed in on uniquely-spliced RNA messages (mRNAs) that were consistently found in multiple biopsies per tumour and in multiple patients. The tumours came from prostate, liver, colon, stomach, kidney, and lung cancers.

From the broad analysis, the team found nearly 1,000 cancer-specific mRNAs, common across tumours, cancer types and patients, which had never been documented. None were ever found in healthy tissue. Not every mRNA becomes a protein. Not every protein is attached to the cell surface as an antigen. And not every antigen can be recognized by the immune system. So, the researchers modeled what might happen to each of these mRNAs on the hopeful path to becoming a viable target for immunotherapy. They ended up with 32 antigen candidates, all borne of cancer's alternative RNA splicing, that showed promise as an immunotherapy target, and chose the top four for more rigorous testing. These four antigens had similar shapes to other antigens known to provoke an immune attack.

The researchers first programmed cells to display the four antigens. Then they challenged immune cells obtained from healthy donor blood to react to the antigens. The experiment revealed receptors on these natural immune cells that reliably detected the cancerous antigens – a crucial step toward engineering them into a potential therapy.

"This advance for cancer patients is the epitome of collaboration at UCSF Brain Tumor Center, from computational modelling to laboratory validation and new techniques in brain surgery", Okada said. "It's exactly what the field needs to overcome the most stubborn cancer cases and bring relief to our patients".

Source: www.news-medical.net/news; February 19, 2025

NANOTECHNOLOGY

Nanotechnology offers New Hope for Treating Neglected Tropical Diseases

Neglected Tropical Diseases (NTDs) remain a significant health burden in tropical and subtropical regions, with limited treatment options and diagnostic capabilities. These diseases are often neglected in research and policy, yet they contribute to high mortality and morbidity worldwide. Nanotechnology, particularly the conjugation of nanomaterials with drugs, presents an innovative approach to improving both the diagnosis and treatment of these diseases. Nanomaterials have unique properties that allow for enhanced drug delivery, reduced toxicity, and more precise targeting, making them a promising tool in the fight against NTDs.

Nanomaterials offer significant advantages due to their small size, high surface area-to-volume ratio, and the ability to be engineered for specific applications. These materials can interact at the molecular and cellular levels, enabling targeted delivery of therapeutic agents to diseased tissues, which is crucial for treating parasitic infections. The large surface area of nanomaterials allows for the encapsulation of drugs, peptides, and genetic materials, protecting them from degradation and allowing for controlled release over time. This targeted delivery minimizes systemic toxicity, a significant challenge associated with conventional treatments.

Moreover, nanomaterials can be designed to possess specific chemical functionalities, enhancing their ability to target pathogens or diseased cells with high precision. This reduces the negative impact on healthy tissues and improves the overall safety profile of treatments. Nanotechnology also offers opportunities to develop theranostic platforms that combine diagnostic and therapeutic functions, allowing for early disease detection and personalized treatment.

NTDs, including diseases such as Chagas disease, leishmaniasis and sleeping sickness, are often caused by parasites that are difficult to treat due to their complex life cycles and ability to develop resistance to drugs. Current treatments are often associated with severe side effects and limited efficacy. Nanomaterials conjugated with drugs represent an effective strategy to overcome these challenges. By improving drug delivery and enhancing the bioavailability of therapeutic agents, nanotechnology can make existing treatments more effective and safer.

(Contd. on page 11)

(Contd. from Page 10 - STI News)

In addition to therapeutic applications, nanomaterials play a crucial role in improving the diagnosis of NTDs. Traditional diagnostic methods for these diseases are often invasive, time-consuming, and lack sensitivity. Nanotechnology offers the potential for rapid, sensitive, and cost-effective diagnostic tools. Gold nanoparticles (AuNPs), for example, have been used in point-of-care tests (POCs) for diagnosing Chagas disease and leishmaniasis. These biosensors can detect disease-specific biomarkers with high sensitivity and specificity, allowing for early detection and timely intervention.

Source: www.news-medical.net/news; February 19, 2025

ARTIFICIAL INTELLIGENCE

Artificial Intelligence for Modelling Infectious Disease Epidemics

Infectious disease threats to individual and public health are numerous, varied and frequently unexpected. Artificial intelligence (AI) and related technologies, which are already supporting human decision making in economics, medicine and social science, have the potential to transform the scope and power of infectious disease epidemiology.

The study considered the application to infectious disease modelling of AI systems that combine machine learning, computational statistics, information retrieval and data science. It first outlined how recent advances in AI can accelerate breakthroughs in answering key epidemiological questions and discussed specific AI methods that can be applied to routinely collect infectious disease surveillance data. Secondly, elaborates on the social context of AI for infectious disease epidemiology, including issues such as explainability, safety, accountability and ethics. Finally, summarized some limitations of AI applications in this field and provided recommendations for how infectious disease epidemiology can harness most effectively current and future developments in AI.

Source: www.nature.com; February 19, 2025

SCIENCE AND SOCIETY

Digital Health Platforms: Connecting Patients with Providers

In today's fast-paced world, digital health platforms have revolutionised how patients interact with healthcare providers.

Imagine having instant access to your medical records, the ability to consult with your doctor virtually, and receiving personalised health recommendations tailored just for you. These platforms not only enhance convenience but also empower patients to take charge of their health journey like never before. So, how exactly are these platforms reshaping the landscape of healthcare delivery?

- **The rise of health portals and digital health apps**

With the increasing prevalence of digital health platforms, you now have easy access to health portals and digital health apps for managing your healthcare needs efficiently. These platforms offer a convenient way to schedule appointments, access medical records, receive lab results, and communicate with healthcare providers from the comfort of your own home. By utilising these digital tools, you can save time and energy that would have been spent on traditional in-person visits.

Digital health apps also empower you to take control of your health by tracking your fitness goals, monitoring chronic conditions, and setting medication reminders. With just a few taps on your smartphone, you can stay informed about your health status and make informed decisions about your well-being. Furthermore, these platforms often provide educational resources and personalised health recommendations based on your medical history and lifestyle choices.

- **Convenient access to health information**

Patients benefit from the convenience of accessing health information on digital health platforms. Through these platforms, you can easily view your medical records, test results, and upcoming appointments from the comfort of your own home. This instant access allows you to stay informed about your health status without having to make phone calls or visit the doctor's surgery.

Moreover, digital health platforms often provide educational resources and personalised health tips tailored to your specific needs. This empowers you to take a proactive approach to your health by making well-informed decisions and adopting healthier habits. In addition, the ability to communicate with healthcare providers through secure messaging features enhances convenience. You can ask questions, request prescription refills, or seek clarification on treatment plans without the need for face-to-face appointments.

- **For healthcare providers: Streamlining workflows and improving patient care**

Healthcare providers benefit significantly from digital health platforms by streamlining workflows and enhancing patient care. These platforms offer tools that simplify administrative tasks like scheduling appointments, managing patient records, and processing billing. By digitising these processes, you can save time and reduce the likelihood of errors, allowing you to focus more on delivering quality care to your patients. Digital health platforms also facilitate better communication and coordination among healthcare teams. Through secure messaging features and shared access to patient data, you can collaborate more effectively with colleagues, leading to improved patient outcomes and continuity of care.

Additionally, these platforms often include decision-support tools that offer insights based on patient data, helping you make informed clinical decisions quickly and accurately.

- **Integrating these platforms with traditional healthcare systems**

To enhance efficiency and optimise patient care, seamlessly integrating digital health platforms with traditional healthcare systems is essential. By connecting these two systems, you can create a more cohesive healthcare experience for both patients and providers. Through integration, patient data from digital platforms can be easily shared with healthcare professionals, enabling better-informed decision-making and coordinated care.

(Contd. on page 12)

(Contd. from Page 11 - STI News)

Integrating digital health platforms with traditional systems also streamlines administrative tasks. Appointment scheduling, prescription refills, and access to test results can all be centralised, saving time for both patients and healthcare staff.

This integration can lead to improved communication between patients and providers, enhancing overall healthcare outcomes. Furthermore, combining digital health platforms with traditional systems allows for a more comprehensive approach to patient care. Providers can access a patient's complete medical history and treatment plans in one place, facilitating personalised care and continuity across different healthcare settings. Ultimately, integrating these platforms creates a more efficient and patient-centred healthcare ecosystem.

- **Data security and patient information**

Ensuring robust safeguards for patient information on digital platforms is paramount in maintaining data security standards within the healthcare industry. When utilising digital health platforms, it is crucial to prioritise protecting sensitive patient data from potential breaches or unauthorised access. Implementing encryption protocols, secure login procedures, and regular security audits can help fortify the defence mechanisms against cyber threats. Data security breaches can have severe consequences, leading to compromised patient confidentiality, financial loss, and damage to the healthcare provider's reputation.

By staying vigilant and proactive in implementing robust security measures, you can help mitigate these risks and uphold patient trust in the digital healthcare ecosystem. Moreover, adhering to regulatory standards such as the GDPR (General Data Protection Regulation) is essential to ensure compliance with data privacy laws and safeguard patient information. Regular staff training on data security best practices and maintaining updated security software are also crucial steps in safeguarding patient data on digital platforms.

- **Bridging the gap between patients and providers for a healthy future**

Overall, digital health platforms play a crucial role in connecting patients with healthcare providers, offering a convenient and efficient way to access medical services. From scheduling appointments to accessing medical records, these platforms enhance the healthcare experience for both patients and providers.

By bridging the gap between patients and healthcare professionals, digital health platforms promote proactive health management, streamlined workflows and improved communication, ultimately leading to better patient outcomes.

Source: www.innovationnewsnetwork.com; February 26, 2025

Women and Science: Women from least developed countries are not being represented in global climate negotiations – A study

Since 2008, women have accounted for roughly one in three UNFCCC delegates, yet gender parity remains a distant goal.

A recent study has revealed that women from the world's least developed countries (LDCs) face significant challenges in achieving adequate representation in global climate negotiations.

The research, conducted by the International Institute for Environment and Development (IIED), explores the factors behind the low participation of women in the United Nations Framework Convention on Climate Change (UNFCCC) discussions, specifically focusing on delegates from the 45 LDCs.

Since 2008, women have accounted for roughly one in three UNFCCC delegates, yet gender parity remains a distant goal, with only about 10 per cent of heads of delegation being women. The report highlights that LDCs, in particular, show lower rates of female involvement compared to other regions. The research aims to explore the factors that contribute to this gender imbalance through surveys, interviews, and case studies from Rwanda, Mozambique, and Sierra Leone.

The study applies a gender needs framework to examine women's participation in UNFCCC negotiations across four domains: governance, gender-based education and assets, gender-based rights and participation, and leadership and decision-making.

Around two-thirds of the 143 survey respondents (64 per cent) reported that barriers prevent women from taking active roles at the talks, while a similar proportion (66 per cent) believed women were underrepresented at the highest levels.

The study identifies several challenges, including a lack of women in leadership roles within the climate and environmental sectors, restrictive laws, cultural practices, and institutional barriers. Additionally, limited access to quality education, training, healthcare, financial resources, and technology further hinders women's participation. Nearly half (48 per cent) of respondents felt their governments were not doing enough to improve female representation within their negotiating teams.

However, the report highlights positive steps taken by countries such as Rwanda, Mozambique, and Sierra Leone. Mozambique is addressing the lack of qualification criteria for negotiators by developing criteria that prioritise women in the selection process. Rwanda has institutionalised a comprehensive approach to gender equality and women's empowerment in the UNFCCC framework, while Sierra Leone has introduced a transparent nomination process.

The report suggests several actions to improve women's representation, including enhancing policy and institutional support for women's participation, creating targeted funding mechanisms, developing selection criteria for delegations, offering gender-focused training, refining UNFCCC session logistics, providing childcare services, and increasing funding for organisations that support capacity-building for women and youth negotiators.

These recommendations aim to foster more inclusive and diverse representation in climate negotiations, ensuring that women have a stronger voice in shaping global climate policies.

Source: www.downtoearth.org.in; February 26, 2025

Brief News

AI Proteins Tackle Deadly Snake Venoms

Machine learning has supercharged the field of Computational protein design, Protein designed using artificial intelligence (AI) can block the lethal effects of toxins delivered in the venom of cobras, adders and other deadly snakes. This is the research by David Baker, a computational biophysicist and Susana Torres, a biochemist at University of Washington in Seatle, USA.

Nature, Pg 776, Vol 637; January 23, 2025

Super Greens: Seaweed Farms Lock up carbon

Seaweed farming leads to a build-up of carbon in the sediments underneath the seaweed beds, potentially contributing to climate change mitigation. Carlos Duarte at King Abdullah University in Thuwal, Saudi Arabia and his colleagues produced what they say is the first direct estimate of carbon storage beneath seaweed farms. The study finds that older seaweed farms have more carbon in their sediments than do younger farms, with the oldest site storing up to 140 tonnes of carbon per hectare.

Nature, pg 1025, Vol 637; January 30, 2025

A breakthrough- nuclear battery capable of transforming nuclear energy into electricity

A groundbreaking advancement in energy technology has emerged as researchers successfully developed a nuclear battery capable of transforming nuclear energy into electricity using light emission. This innovation could help repurpose radioactive waste, offering a sustainable solution to one of the most persistent challenges in nuclear power production. Nuclear power plants provide about 20% of the electricity in the United States while producing minimal greenhouse gas emissions. However, they also generate radioactive waste, which poses significant health and environmental risks. Safe disposal of this waste remains a key concern for the industry. The newly developed nuclear battery presents a potential way to convert this hazardous by-product into a useful energy source.

www.innovationnewsnetwork.com; February 27, 2025

Rare Genetic disorder treated in womb for the first time

The child conceived with a genetical disorder known as spinal muscular atrophy, which affects motor neurons that control movement, and leads to progressive muscle weakening. 'Until now treatments for muscular atrophy were given after birth' says Richard Finkel, a neuroscientist at St. Jude Children's Research Hospital in Memphis, Tennessee, who led the study. With the demand of parents for treatment before birth and with the approval of FDA, 32 week pregnant mother was treated with the drug. The baby has been effectively treated with no manifestation of the condition, says Mitchell Farar, a paediatric neurologist at University of New South wales, Australia. The child is nearly three years old , showing no signs of the often fatal motor neuron disease.

Nature , pg 869, Vol. 638; February 27, 2025

Shrinking of Glaciers

The rate of melting of glaciers has accelerated in the past decade and since 2000, they have shrunk by more than 5 per cent on average. 'Any degree of warming matters for glaciers', says Noel Gourmelen at the University of Edinburgh, UK. 'They are barometer of climate change'. The new numbers come from global consortium of hundreds of researchers called Glacier Mass Balance Intercomparison Exercise.

New Scientist, Pg 12, ; March 1, 2025

Fungus offers a new way to cut down on methane in cow burps

Soil fungi can make a compound that disrupts how cow stomachs produce the potent greenhouse gas methane. A species of fungus found in soil can be fed to cows to cut down on the potent greenhouse gas methane in their burps. “It's a fungal soup,” says Matthew Callaghan at Roam Agricultural, a startup in Australia aiming to grow large amounts of the fungus in bioreactors. Instead of feeding cows the fungi directly, however, the company plans to extract the methane-reducing compound they make – called bromoform and added to feed

www.newscientist.com; March 4, 2025

Innovative biorobotic arm uses artificial muscles to combat tremors, paving way for wearable solutions

It is estimated that about 80 million people worldwide live with a tremor, for example, those who live with Parkinson's disease. The involuntary periodic movements sometimes strongly affect how patients are able to perform daily activities, such as drinking from a glass or writing. Scientists at the Max Planck Institute for Intelligent Systems (MPI-IS), the University of Tübingen and the University of Stuttgart under the Bionic Intelligence Tübingen Stuttgart (BITS) collaboration equipped worked on a biorobotic arm with two strands of artificial muscles strapped along the forearm. The research paper is published in the journal *Device*.

www.techxplore.com; March 6, 2025

Just a Smidgen of Yellow-Fever Vaccine is Enough

Small doses of the yellow fever vaccine shield as effectively as the standard dose, a clinical trial in Kenya and Uganda suggests. Manufacture of the vaccine is difficult and supply is often limited in places with recurrent outbreaks. That leaves many people at risk of falling ill with the disease, which is spread by mosquitoes and can be fatal. Derick Kimathi at the Kenya Medical Research Institute in Kiliki and his colleagues assigned 120 trials participants to receive a standard dose of 13,803 units of the yellow fever vaccine. Another 120 participants were assigned to each of three dosages level: 250 units, 500 units and 1000units. After 28 days participants injected with 500 and 1000 units but not those in 250 unit group, had protective antibody levels similar to those in people who had received the full dose. The findings suggest that less than 10% of standard vaccine dose can still provide protection against the virus. This could help to make the jab available to many more people in places where supplies are limited.

Nature, Vol. 639; March 18, 2025

A SPECIAL REPORT-GEOSPATIAL TECHNOLOGY/FOOD SECURITY

New UN Report offers insights into How Geospatial Technology can Advance the Global Food Security Agenda

Food and Agriculture Organization (FAO) and the United Nations Office for Outer Space Affairs (UNOOSA) emphasize importance of collaboration to make space technologies benefit small-scale farmers.

Rome - Many of the new satellites currently in Earth's orbit are equipped to provide revolutionary tools and data to improve global food security and strengthen agrifood systems. A new report from the Food and Agriculture Organization of the United Nations (FAO) and UNOOSA aims to inform and guide an array of experts and policy makers on the various intersections of space technology and farming, forestry and land-use management as well as climate and environmental trends.

“Space technology has emerged as a game changer. Satellite imagery, global navigation satellite systems data and their integrated applications are now critical tools for agriculture, enabling stakeholders, ranging from local farmers to international policymakers, to monitor crop health, manage water resources, detect and control pests, and plan for weather uncertainties, among various other applications,” according to Lifeng LI, Director of FAO's Land and Water Division, and UNOOSA Director Aarti Holla-Maini in their introduction to “Leverage Space Technology for Agricultural Development and Food Security.”

The use of geospatial technologies is far from new, having begun in 1957. Since then, more than 17,000 satellites have been launched, with the rate now reaching nearly 3,000 each year. But its potential has been magnified by the increasing precision and diverse capacities of satellites, as well as a host of cloud-based applications that make granular Earth data increasingly accessible all the way to smartphones.

There is a growing need to bridge the gap between space and agriculture – from technical interoperability and data harmonization to capacity development initiatives, and the need for international collaboration to ensure small-scale farmers and developing countries can access and benefit from satellite data.

FAO's track record

FAO's prize-winning Hand-in-Hand Geospatial Platform has been leveraging the power of satellite-derived analytics and data, integrating more than two million layers of open-access geospatial and agricultural statistics data from global providers.

In addition, FAO's forest cover monitoring tool SEPAL has been providing anyone with a mobile device an increasingly precise way to detect landscape changes in practically real time, with the help of the easy-to-use Google Earth Engine platform and the precious inputs of the satellite services of numerous FAO Member countries.

Another cutting-edge FAO tool is WaPOR , which taps satellite data to track actual water consumption in cropping fields with a high level of precision, enabling farmers and policy makers to optimize resource utilization.

FAO's ability to bring space technology directly to farmers – through tools like SEPAL and WaPOR – is a unique offering. Geospatial technologies are also contributing to local and international emergency response efforts, pest control, soil fertility management, water stress assessments, crop calendars, efficient fertilizer and pesticide use, and a growing set of precision agriculture techniques.

The report

This new report recommends strengthening global capacities in the use of satellite data for agriculture, increasing international coordination on agriculture-focused satellite missions, and improving accessibility and interoperability between space data and services. It promotes the establishment of a centralized UN imagery procurement hub for satellite outputs to reduce duplication and enhance synergies.

It also emphasizes that increased collaboration and integration will not only lead to greater concrete benefits for all, but also contribute to mitigating a looming risk of the rapidly expanding space activities – space debris, which can threaten the operational safety of satellites and hinder future missions.

Multi stakeholder partnerships are and will be needed to harness the full potential of space technology for agriculture, the report emphasizes.

The report, broken out to cover the upstream, midstream and downstream sections of the space-agriculture value chain, emphasizes that making sure developing countries have access to the appropriate spatial infrastructure, establishing standards for methods, data, information and procedures, and avoiding temporal and spatial coverage gaps in remote-sensing data, are all key to optimizing global agrifood systems strategies.

One of UNOOSA's central agendas is to help UN Member states establish legal and regulatory frameworks for their space activities, while FAO is actively working with the International Organization for Standardization (ISO) to develop a functional meta-language for land cover and land use matters. Effective exercises in data harmonization, integration and interoperability are all imperative to make the most of the innovative opportunities that geospatial technologies offer. They also are the enabling condition for disseminating the benefits through cloud computing platforms, such as SEPAL, as well as for enabling farmers to upload field-verified observations, which allow for more holistic and effective policies and projects.

Source: www.fao.org; February 7, 2025

FACT FILES

Heatwaves: Impacts and Implications on the Developing World

Heatwaves are among the most pressing and intensifying climate-related hazards, increasingly affecting populations worldwide. Driven by rising global temperatures and changing weather patterns, heatwaves are growing in frequency, duration, and intensity. These extreme temperature events pose serious risks to human health, agriculture, water resources, energy systems, and national economies, particularly in developing countries, where adaptive capacity is limited.

Several factors contribute to the heightened vulnerability of developing countries to extreme heat: high population density, reliance on climate-sensitive sectors like agriculture, insufficient infrastructure and lack of access to cooling facilities or reliable forecasts. Additionally, in many regions, there is an absence of comprehensive data on heat-related mortality and morbidity, as well as a shortage of city-specific Heat Action Plans (HAPs) tailored to local contexts. Despite increasing awareness, heatwaves continue to cause widespread disruptions and significant loss of life, especially among vulnerable populations such as outdoor laborers, the elderly and those in low-income urban settlements.

Recognizing the importance of this escalating climate threat, the NAM S&T Centre has published its sixth Fact File titled ***"Heatwaves: Impacts and Implications on the Developing World".*** The Fact File addresses the growing global threat of heatwaves, covering their occurrences at global, regional, national and local levels. It highlights the increasing frequency and severity of heatwaves across continents, with particular emphasis on the vulnerability of developing and least-developed countries (LDCs). The document outlines the wide-ranging impacts of heatwaves on sectors such as health, agriculture, water resources, energy, food security and biodiversity. For effective management and mitigation of heat waves, the document stresses the importance of localized Heat Action Plans (HAPs), early warning systems, and the need for specific meteorological thresholds.

This Fact File has been jointly prepared by the NAM S&T Centre and South Asian Meteorological Association (SAMA), New Delhi. The Fact File has been conceptualized and edited by **AVM (Retd.) Prof. Ajit Tyagi** along with contributions from esteemed experts including **Dr. Poulomi Chakravarty, Prof. Someshwar Das, Dr. Swagata Payra** and **Dr. Mohan Kumar Das** from SAMA.

Non-Communicable Diseases

Non-Communicable Diseases (NCDs) are increasingly recognized as one of the greatest public health threats of the 21st century. Unlike infectious diseases, NCDs are not transmissible between individuals and are typically chronic, progressing slowly over time. The four main categories of NCDs cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes are responsible for over 74% of global deaths annually, with a staggering 17 million people dying prematurely before the age of 70.

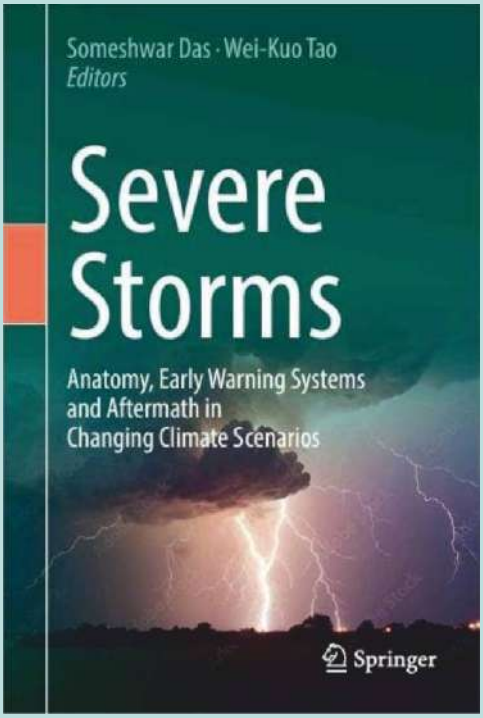
NCDs are driven by a complex interaction of genetic, environmental and behavioral factors. Key modifiable risk behaviors that contribute to metabolic abnormalities including hypertension, obesity, elevated blood glucose and high cholesterol, which further increase disease risk. Low- and middle-income countries bear the brunt of this crisis, accounting for 86% of premature NCD-related deaths. These conditions not only strain health systems but also hinder economic development and quality of life, particularly in underserved communities.

Recognizing the urgency of this issue, the NAM S&T Centre has released another Fact File on "*Non-Communicable Diseases"* in collaboration with JSS Medical College, JSS Academy of Higher Education & Research (JSS AHER), Mysuru, Karnataka, India. This document provides - an overview of non-communicable diseases and their main types; percentage of total deaths due to NCDs in various regions; risk factors for NCDs under non-modifiable, modifiable, metabolic and environmental risk factors categories and strategies that can be adopted for prevention (Primordial, Primary, Secondary and Tertiary prevention) and control of NCDs to reduce their impacts at Global, National, and Community levels.

The Scientific Editor of this Fact file is **Dr. Praveen Kulkarni,** Professor of Community Medicine and Vice Principal, JSS Medical College, JSS AHER, Mysuru. This fact file has been conceptualized by **Prof. Basavanagowdappa Hathur**, Professor of General Medicine and Vice Chancellor, JSS Medical College, JSS AHER, Mysuru, with inputs from the **Mr. Madhusudan Bandyopadhyay**, Senior Adviser, NAM S&T Centre.

New Publication

Severe Storms: Anatomy, Early Warning Systems and Aftermath in Changing Climate Scenarios



The thunder storms and dust storms severely disrupt the routine of human life, transportation, electricity and other essential services. While the natural disasters cannot be prevented or controlled, the loss of human lives and loss of property can be substantially minimized by issuing accurate forecast/advisories of the impending disasters through field observations, research and the use of numerical modeling. Considering the scientific importance of the subject and socio-economic significance, the NAM S&T Centre , New Delhi has brought out the publication titled "**Severe Storms: Anatomy, Early Warning Systems and Aftermath in Changing Climate Scenarios".**

The monograph, consisting of three parts contains 26 chapters by leading scientists across the world. The first part of the book comprises of 8 chapters provides information on the observational aspects of different types of severe storms through satellite, radar, aircraft, and ground based network of stations and all these issues are discussed. The second part of the book through 12 chapters discusses numerical modeling and data assimilation techniques aimed at development of Early Warning Systems and finally the third part of the book consisting of 6 chapters provides an outlook of the severe storms in a changing climate scenario, their socio-economic impacts and policies for disaster mitigation.

This book is of great interest to atmospheric scientists and other researchers, practitioners, policy and decision makers, international institutions, governmental and non-governmental organizations, educators, as well as students.

TABLE OF CONTENTS

12. **Wind Characteristics Associated with Turbulence in the Atmospheric Boundary Layer During Severe Storms,** *Jaya Singh*
13. **Dynamics of Rainstorms Over Southern Himalayan Slopes and Foothills and Their Simulation by Numerical,** *Hatsuki Fujinami, Shiori Sugimoto, and Kenichi Ueno*
14. **Physical and Dynamical Characteristics of Severe Storms: Bangladesh Perspective,** *T. Rashid, D. A. Quadir, F. Akter, S. D. Shuvo, M. Islam, M. N. Ahasan, and M. A. Rahman*
15. **Assimilation of Surface Mesonet Observations and Ground-Based Radar and Lidar Data for Improved Prediction of Mesoscale Convective Systems,** *Zhaoxia Pu and Linbo Wei*
16. **Rapid Update Cycle Data Assimilation for Severe Storm Prediction,** *Ashish Routray, Devajyoti Dutta, Shivaji Singh Patel, John P. George, and V. S. Prasad*
17. **Ensemble Forecasting of Severe Storms Over Indian Region,** *Paromita Chakraborty, S. Kiran Prasad, and Someshwar Das*
18. **Lightning Forecasting and Utilization of AI/ML in Early Warnings,** *Rituparna Sarkar and Parthasarathi Mukhopadhyay*
19. **Severe Storms Forecasting and Forecast Demonstration Project over the Indian Region,** *Soma Sen Roy, Pradeep Sharma, and M. Mohapatra*
20. **How Long Could Winter Storms Last? Assessing Cold-Season Event-Based Extreme Precipitation Events Over the Conterminous U.S.,** *Toshi Matsui and David M. Mocko*
21. **Disaster Risk Reduction Climate Change and Monsoon Rainstorms,** *R. Krishnan, Kalik Vishisth, D. C. Ayantika, K. M. Sumit, and Ramesh Vellore*
22. **Severe Storms in Changing Climate Scenario with a Distinctive Emphasis on South Asia and India,** *Jagabandhu Panda, Debashis Paul, Ankan Sarkar, Asmita Mukherjee, Ipshita Bhasi, Geo Tom, Sushant Das, Nitin Lohan, Debjyoti Roy, and Sushil Kumar*
23. **Historical Trend and Future Projection of Extreme Precipitation in Nepal from High-Resolution CMIP6 Data,** *Shankar Sharma, Piyush Dahal, Suresh Marahatta, Archana Shrestha, Vishnu Prasad Panday, and Binod Pokharel*
24. **Evolution of Storms: From Solar to Severe,** *Aditi Upadhyay and A. P. Dimri*
25. **Socio-Economic Implications of Severe Storms in the Changing Climatic Scenarios: A Case of South Asia,** *Jagdish Jadhav, Pramod Kamble, Devesh Sharma, Hemlata Manglani, Gyana Ranjan Panda, and Priya Rajput*
26. **Disaster Risk Reduction Policies in the Aftermath of Severe Storms for Asia and the Pacific Region,** *Sanjay Srivastava and Prangya Paramita Gupta*
27. **Epilogue - Challenges in Prediction of Severe Storms,** *Someshwar Das and Wei-Kuo Tao*

Visit of ISTIC-UNESCO Delegation to NAM S&T Centre

On 23 January 2025, the NAM S&T Centre had the honour of hosting Prof. Dr. Mohd. Basyaruddin Bin Abdul Rahman, Chairman of the Governing Board and Ms. Tengku Sharizad Binti Tengku Chik, Director of the International Science, Technology and Innovation Centre for South-South Cooperation (ISTIC), Kuala Lumpur under the auspices of UNESCO, Kuala Lumpur, Malaysia.

The delegation was accompanied by other team members of ISTIC-UNESCO, including Ms. Zarmila Salmi Sabot, Administrative Executive; Ms. Hannah Norazharuddin, Senior Programme Executive and Mr. Hazman Al-Hafiz Hazal, Assistant Programme Executive.

The visit served as a valuable platform to further strengthen the long-standing strategic partnership between ISTIC-UNESCO and the NAM S&T Centre. The discussion focused on expanding joint scientific engagements through a range of activities such as: organization of training programs, initiation of a joint fellowship scheme and to bring out Comprehensive Fact Files on socially important S&T issues.

This visit reaffirmed the mutual commitment to advancing South-South Cooperation in Science, Technology and Innovation. The NAM S&T Centre looks forward to continued synergy and impactful cooperation with ISTIC-UNESCO in the years ahead.

As a part of the joint collaboration, a Training Workshop on “Climate Change Education” may be jointly organized by ISTIC; Universiti Negeri Malang, Indonesia and the NAM S&T Centre, tentatively in September 2025 in Malang, Indonesia.

Meetings and Visits of Director General, NAM S&T Centre

Meeting with Mr. M. N. Ranasinghe, Former President of the NAM S&T Centre Governing Council and Former Secretary, Ministry of Education, Govt. of Sri Lanka

Dr. Amitava Bandopadhyay, Director General, NAM S&T Centre, New Delhi visited Sri Lanka during January 30 – February 1, 2025 for discussion on future scientific collaboration with partner agencies from Sri Lanka. He was accompanied by Mr. Sunil Kumar Madhavan, Accounts Manager and Mr. Rahul Kumra, PS to DG & Assistant Administrative Officer, NAM S&T Centre. Dr. Bandopadhyay had the privilege of meeting with Mr. M. N. Ranasinghe, Former President of the NAM S&T Centre Governing Council and Former Secretary, Ministry of Education, Govt. of Sri Lanka.

During the meeting wide-ranging discussions were held on potential future collaborations including the prospect of a joint scientific publication with scientific institutions/universities in Sri Lanka. During the meeting, Dr. Bandopadhyay presented an overview of various scientific activities of the NAM S&T Centre which includes various scientific programmes such as International Workshops/Conferences, Training Programmes and Training Workshops in the areas of relevance to the developing world. He highlighted some of the Centre's key initiatives, such as the publication of Books, Monographs and Fact Files; Fellowship Programmes among other impactful scientific endeavors. He also highlighted the Centre's recent publication activities especially 11 recent books/monographs published through leading International Publisher Springer Nature, Singapore.

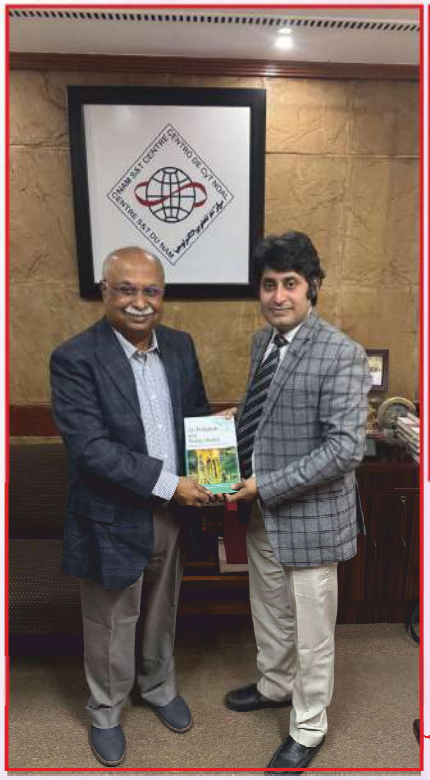
This meeting marks an important step towards fostering greater scientific collaboration and strengthening ties between the NAM S&T Centre and Sri Lankan S&T institutions/universities.

Meeting with Dr. S.A.D. Samaraweera, Deputy Director General, National Institute of Education (NIE), Sri Lanka

Dr. Amitava Bandopadhyay, Director General; Mr. Sunil Kumar Madhavan, Accounts Manager and Mr. Rahul Kumra, PS to DG & Assistant Administrative Officer, NAM S&T Centre, met Dr. S. A. D. Samaraweera, Deputy Director General and Dr. Anthoni Durage Ashoka De Silva, Professor, National Institute of Education (NIE), Sri Lanka during their visit to Sri Lanka. The meeting focused on exploring future proposals for Science and Technology collaboration between NIE, Sri Lanka and the NAM S&T Centre.

Dr. Bandopadhyay proposed that a joint International Workshop may be organised in Sri Lanka, which was readily agreed by Dr. Samaraweera. It was suggested that the workshop, centered around the theme of 'STEM Education', be held in Colombo in 2026 in physical mode, which will be jointly organised by the NIE and NAM S&T Centre. The exact dates and the specific topic will be finalised through mutual discussion. Additionally, Dr. Samaraweera accepted the proposal for a collaborative Fact File on “STEM Education” as a joint initiative between the NAM S&T Centre, New Delhi and the National Institute of Education (NIE), Sri Lanka. Dr. Bandopadhyay also invited Dr. Samaraweera so that NIE joins the NAM S&T – Industry Network as a Member, which was cordially received.

Distinguished Visitors to the Centre



Prof. Dr. Mohd Basyaruddin Bin Abdul Rahman, Chairman, Governing Board; Dr. Tengku Sharizad Binti Tengku Chik, Director; Ms. Zarmila Salmi Sabot, Administrative Executive; Ms. Hannah Norazharuddin, Senior Programme Executive; and Mr. Hazman Al-Hafiz Hazal, Assistant Programme Executive, ISTIC, Kuala Lumpur, Malaysia.

Mr. Afzal Mehdat Adnan, First Secretary (Political), Bangladesh High Commission, Chanakyapuri, New Delhi, India

Prof. Dr. Dilip Subba, Vice-Chancellor; Mr. Bhojraj Adhikari, Chief, Planning and Evaluation Division; and Dr. Rabindra Prasad Dhakal, Secretary, Nepal Academy of Science and Technology (NAST), Kathmandu, Nepal.

H. E. Ambassador Molalign Asfaw, Deputy Head of Mission of Ethiopia; and Ms. Hilina Mekonnen, Second Secretary, Embassy of the Federal, Democratic Republic of Ethiopia, Chanakyapuri, New Delhi, India.

Centre Announces

International Workshop on
ROLE OF WOMEN IN SCIENCE, TECHNOLOGY AND INNOVATION IN THE GLOBAL SOUTH
April 17-18, 2025
Reduit, Mauritius

Women make major contribution to the socio-economic development of any country. Inclusiveness of women in various developmental activities and engaging more women in Science & Technology and Research are being increasingly advocated in the United Nations Conferences and other international and national forums.

So far, most of the countries in the Global South, no matter their level of development, have not achieved gender equality in Science Technology and Innovation (STI). Even though women have made tremendous progress towards their increased participation in STI, they are still under-represented in these fields due to various factors, including societal stereotypes, gender bias, unequal opportunities and a lack of representation in the leadership roles. By empowering women and promoting gender equality, a more inclusive, diverse and strengthened scientific ecosystem can be developed.

In view of the above, the *Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre); New Delhi* in partnership with the *Ministry of Tertiary Education, Science and Research, Republic of Mauritius,* announces the organization of an International Workshop on the "**Role of Women in Science, Technology and Innovation in the Global South**" during **17-18 April, 2025** in Reduit, Mauritius.

Women scientists, researchers, educators and students, government officials, policymakers and representatives of international organizations, NGOs and industry from the NAM and other developing countries are invited to participate in this Workshop.

For further details, please visit Centre's Website: www.namstct.org.

Centre Announces

International Conference on
SCIENCE AND TECHNOLOGY INFORMATION MANAGEMENT SYSTEM: PRACTICES AND EXPERIENCES
May 7-9, 2025
Kathmandu, Nepal

The effective management of Science and Technology (S&T) information is a cornerstone of informed decision-making, effective policy formulation and planning for national development. It enables countries to monitor their scientific progress, optimize resources and align strategies with their socio-economic goals. For countries in the developing world, managing S&T information involves data collection, organization and dissemination through national surveys, institutional research and digital platforms. By systematically collecting and analyzing data on the scientific advancements, workforce trends and infrastructure needs, the S&T information management plays a pivotal role in fostering sustainable growth and innovation-driven development in the Global South.

However, there are some challenges in developing an effective S&T information management system, such as inconsistent methodologies, limited resources, financial constraints, shortage of skilled manpower and inadequate infrastructure, particularly in the remote areas. Many nations still lack comprehensive S&T management information systems (MIS), impeding data-driven development. Addressing these challenges requires a concerted effort in improving the management of scientific and technological data.

In view of the above, the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi, India in partnership with the Nepal Academy of Science and Technology (NAST), Kathmandu, Nepal, announces the organization of an International Conference on **'Science and Technology Information Management System: Practices and Experiences'** during **7 to 9 May, 2025 in Kathmandu, Nepal**.

Scientists, government officials/policymakers, data and information management professionals, representatives from research and academic organizations, who are engaged in managing and utilizing science and technology data to enhance data management practices and foster policy and innovation, are invited to participate in this Conference.

For further details, please visit Centre's Website: www.namstct.org.

EDITOR: Dr. Kavita Mehra ❖ **ASSOCIATE EDITOR:** Ms. Nidhi Utreja ❖ **CONTRIBUTORS:** Ms. Jasmeet Kaur Baweja and Ms. Abhirami Ramdas
COMPILATION & DESIGN: Mr. Pankaj Buttan ❖ **PUBLISHED BY:** Dr. Amitava Bandopadhyay, Director General, Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), Core 6A, 2nd Floor, India Habitat Centre, Lodhi Road, New Delhi-110003 (India)
PHONE: +91-11-24645134, 24644974 ❖ **E-MAIL:** namstcentre@gmail.com ❖ **WEBSITE:** https://www.namstct.org
Lovely Printers, New Delhi, E-mail: lovelyprintersindia@gmail.com; Ph: 9811086866.