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. 35, NO. 1
APRIL - JUNE 2025

FROM THE DG'S DESK

Warmest Greetings to all our Esteemed Readers!!

The NAM S&T Centre continues to deepen its commitment to fostering Science, Technology and Innovation (STI) cooperation among developing countries. In a world where resilience, sustainability and digital transformation have become global imperatives, the catalytic role of the NAM S&T Centre for South-South collaboration is becoming more relevant than ever. The Centre is also facilitating the implementation of UN Sustainable Development Agenda - 2030 in the countries of the Global South.

The second quarter of 2025 was marked by significant milestones towards multilateral engagements and capacity building. Notably, the Centre successfully organized two important international events: an International Workshop on *"Role of Women in Science, Technology and Innovation in the Global South"* during 17-18 April 2025 in Mauritius; and an International Conference on *"Science and Technology Information Management System: Practices and Experiences"* during 7-9 May 2025 in Nepal which culminated in the adoption of the 'Kathmandu Resolution'. Both these events brought together experts, policymakers, academicians, researchers and other stakeholders, affirming the importance of shared learning in addressing our collective developmental challenges.

We welcomed JSS Science and Technology University (JSS STU), Mysuru, India as a valued member of the NAM S&T–Industry Network. Such partnerships between academic institutions and the Centre are crucial in advancing STI in making a real-world impact.

I am also happy to announce that the Centre has released two important publications – A book titled "Combating Plastic Pollution in Terrestrial Environment — Challenges and Strategies for a Sustainable Future"; and a Monograph on "Food Toxicity and Safety", both published by Springer Nature, Singapore.

Recognizing the vital role of the Circular Economy in advancing sustainable and inclusive development, the Centre is pleased to release its eighth Fact File titled "Circular Economy for Inclusive and Sustainable Development in the Global South" in collaboration with Universiti Kebangsaan Malaysia (UKM), Selangor, Malaysia.

We have launched a new Fellowship Programme in partnership with JSS STU, Mysuru aimed at capacity building in interdisciplinary research on various disciplines of Science and Technology.

Looking ahead, the Centre is going to organize International Workshops on – "Energy Efficiency, Conservation and Transition for Achieving Net Zero and Sustainable Development Goals" during 9-10 September, 2025 in Kerala (India) in collaboration with the Energy Management Centre, Thiruvananthapuram, Kerala, India; and on "STI Policy: Artificial Intelligence for Climate Learning Futures" during 22-25 September, 2025 in Malang (Indonesia) in collaboration with ISTIC, Kuala Lumpur, Malaysia and University of Malang, Indonesia. In addition, the Centre will participate in the 8th ASTECHNOVA International Energy Conference 2025 – "Beyond Net Zero: Pathway to Climate Energy Positive" during 8-9 October 2025 in Yogyakarta (Indonesia) as a Scientific partner.

I take this opportunity to thank all our member countries, partner institutions and collaborators for their continued trust and partnership.

Happy Reading!!

(Amitava Bandopadhyay)
Director General

International Workshop on

Role of Women in Science, Technology and Innovation in the Global South

Réduit, Mauritius, 17-18 April 2025

Advancement of STI requires diversity in research and expansion of the pool of the talented researchers, bringing in broader perspectives, fresh ideas and creativity; which means getting more women involved working in these fields. 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 STI.

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Centre Organised

International Conference on

Science and Technology Information Management System: Practices and Experiences

Kathmandu, Nepal, 7-9 May 2025

The effective management of Science and Technology (S&T) information is crucial for informed decision-making, policy development and national growth, particularly in developing countries. It enables monitoring of scientific progress, resource optimization and alignment with socio-economic goals.

However, challenges such as inconsistent methodologies, limited resources and inadequate infrastructure hinder the development of robust S&T information systems. Addressing these issues is vital for

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Encouraging and supporting women's participation in STI is essential for scientific advancements and innovation. 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 (MoTESR), Republic of Mauritius, organized an International Workshop on the "**Role of Women in Science, Technology and Innovation in the Global South**" during 17-18 April, 2025 in Réduit, Mauritius.

The two day workshop was attended by 38 scientists, experts and S&T professionals from 9 countries, viz. **Egypt, India, Kenya, Malaysia, Nepal, Palestine, South Africa, Zambia** and the host country **Mauritius -** including a few participants who had attended the Workshop and presented their papers online. The event comprised 6 Technical Sessions, which included: 1 Special Invited Lecture, 3 Keynote Lectures and 25 Paper Presentations.

Prof. (Dr.) Kiran Bhujun, Director of the Tertiary Education and Scientific Research Division at the Ministry of Tertiary Education, Science and Research (MoTESR), Republic of Mauritius acted as the **Master of Ceremony** during **Opening Ceremony**. Prof. (Dr.) Kiran Bhujun, in his Opening Remarks mentioned that MoTESR, Mauritius is proud to host this workshop in collaboration with the NAM S&T Centre. He welcomed international delegates from various countries and local participants from Mauritius. He mentioned that this event marked a significant step towards fostering collaboration and sharing knowledge on the critical role of women in science, technology and innovation. In his Remarks, **Dr. Amitava Bandopadhyay**, Director General, NAM S&T Centre emphasized that the Workshop was being held to understand the critical needs to empower women in STI. He further acknowledged the continued support of Mauritius to the NAM S&T Centre, which currently holds the Presidency of its Governing Council. Several collaborative Workshops had previously been conducted in Mauritius on diverse S&T themes. He provided an overview of the NAM S&T Centre and mentioned that over the period, Centre has undertaken several scientific initiatives including organization of international workshops and training programs, fellowships, multilateral collaborative S&T projects and publications. For this Workshop, women scientists and experts from various NAM Member Countries have been sponsored, along with participation of Mauritian experts, and the Centre reiterates its commitment to expanding S&T partnerships with institutions in Mauritius and beyond.

The Chief Guest **Mr. N Jugmohunsing**, Permanent Secretary, MoTESR, Mauritius, in his address, welcomed the participants and acknowledged the presence of both international and local delegates, noting the global importance of advancing STI. He highlighted the historic yet often unrecognized contributions of women to STI, stressing the need for continued efforts despite the progress made so far. Mr. Jugmohunsing concluded by emphasizing that women make-up over half of Mauritius's population and that their growing involvement in science and innovation is both necessary and promising.

A **Special Invited Lecture** was delivered by **Prof. (Dr.) Romeela Mohee**, Higher Education Commissioner (HEC), Mauritius. In her lecture, Prof. Dr. Mohee highlighted the critical need for gender-inclusive policy making. She emphasized that in many countries, laws impacting women - such as those related to childbirth are often devised without the active involvement of women. Prof. Mohee called for greater participation of women in legislative and policy formulating bodies, asserting that inclusive governance is essential for informed, equitable and impactful laws within the STI sector and beyond.

There were six Technical Sessions entitling: (i) Women in Science for a Sustainable Future; (ii) Gender Equality for Empowering Women; (iii) Women in STEM; (iv) Women in Research and Emerging Technologies; (v) Gender Gaps in STEM and (vi) R&D, Training and Capacity Building Programs for Women. Respective technical sessions were chaired by Prof. (Dr.) Kiran Bhujun, Mauritius; Dr. Maphuti Carol Madiga, South Africa; Prof. Dr. Gina Elfeky, Egypt; Dr. Vidushi Neergheen, Mauritius; Mr. Vedanand Bhurosah, Mauritius and Dr. Anshu Bhardwaj (India).

During the Workshop, three Keynote lectures were delivered by **Prof. Dr. Gina Elfeky (Egypt), Dr. Madhvee Madhou (Mauritius)** and **Prof. Basyruddin Abdul Rahman (**in Online-mode, **Malaysia**). The titles of respective lectures were titled "Academy of Scientific Research and Technology: Beyond Women's Support", "Gender Gaps in Research and Development: The Case in Mauritius" and "Bridging Boundaries, Building Futures: Partnerships in Science for Global Progress - Empowering Women as Agents of Change"; and "Geosciences and Gender Inclusivity: Bridging the Gap for a Sustainable Future".

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In various technical sessions- from India eight papers were presented by **Dr. Anshu Bhardwaj; Dr. Nimisha Vedanti; Dr. Roja Rani Anupalli; Dr. Pooja Gokhale Sinha; Prof. V. Madhurima; Dr. Sharda Prashant Kosankar;Prof. (Dr.) Sunita Tanwar and Dr. Shankramma Kalikeri .** Titles of the respective presentations were "Personal Experiences with STEM Education and Research: Towards Sustainable Platforms for Engagement and Advancements"; "Geosciences and Gender Inclusivity: Bridging the Gap for a Sustainable Future"; "Women in Science – Gender Equality in STEM in India"; "Exploring Role of Women in Mitigating Climate Change: Scientific and Societal Perspectives"; "Gender Barriers in STEM Field: An Exploration of the Experiences of the Female Professionals"; "Career Barriers for Women in Science, Technology, and Innovation"; "From Barriers to Breakthroughs: A Structural Roadmap for Indian Women in STEM using Interpretive Structural Modelling Approach" and "Empowering Women in Science, Technology and Innovation: Bridging Gaps through R&D, Capacity Building and Training".

From Kenya, a paper entitled "Factors Influencing the Low Uptake of STEM Disciplines among Young Women in Higher Education in Kenya" was presented by **Ms. Doreen Maryanne Maraka .**

Two papers **"**Women in Deep-Tech: Leading the Graphene Ecosystem for a Sustainable Future" and "Empowering Women in STI: Advancing Gender Equality and Sustainability through Independent Verification and Validation" were presented by **Dr. Anis Zafirah Mohd Ismail** and **Ms. Anjana Devi N Kuppusamy** respectively from **Malaysia.**

Dr. Tista Prasai Joshi from **Nepal** delivered a lecture titled "Women in STEM: Context, Current Status and Challenges in Nepal".

Paper entitled "The Role of Palestinian Women in Science and Technology" was delivered by **Ms. Dalia Khatib** from **Palestine** in Online-mode.

Another paper titled "South Africa Status Report on R&D, Capacity Building and Training for Women in Science, Technology, and Innovation" was presented by **Dr. Maphuti Carol Madiga** from **South Africa.**

There were 11 paper presentations from the host country, **Mauritius.** The presenters were **Dr. Anjusha Durbarry, Dr. Rajwantee Dalliah, Dr. Roumita Seebaluck–Sandoram, Dr. Noshmee Baguant, Dr. Jaishree Vaijanathappa, Dr. Bhamini Kamudu Applasawmy, Dr. Poonam Veer Ramjeawon, Dr. Veronique Francois-Newton, Dr. Zareen Nishaat Beebeejaun-Muslum, Dr. Khayati Moudgil** and **Dr. Randhir Roopchund**. Titles of their respective papers were: "Empowering Academia: Advancing Gender-Inclusive Technology-Enabled Learning in Mauritius", "Women Endeavours in Technology Integration and Pedagogical Innovations in the Teaching and Learning of Heritage Languages in a Diaspora Context", "Bridging the Gender Gap in STEM through Model Glider Competition", "Promoting Gender Equality in Engineering Higher Education in Mauritius", "Implementation of Gender Equality Strategies for Mitigating Barriers in Scientific Organizations: Supporting Initiatives and Resistances", "Leveraging Female Role Models to Inspire Girls in STEM: A Case Study from the Rajiv Gandhi Science Centre", "Promoting the Participation of Women Scientists and Researchers in Blue and Green Research and Innovation in Mauritius", "Unveiling the Silent Struggle: The Impact of Polycystic Ovarian Syndrome (PCOS) Awareness Deficiency on Women's Health in Mauritius", "Bridging the Gender Gap in STEM: Strategies for Enhancing Women's Participation in Science, Technology, and Innovation in Mauritius", "Rising Above: Overcoming Barriers and Empowering Women in Science & Technology"and "Analyzing the Participation of Women for the Socio-Economic Development in the Mauritian Context".

A Panel Discussion was also held during the Workshop on "Science, Technology and Innovation for Gender Inclusive Sustainable Development" to explore the critical role of gender equity in driving sustainable progress. The session was chaired by Prof. Dr. Kiran Bhujun and the Panel Members included: (i) Prof. V. Madhurima (India); (ii) Ms. Doreen Maryanne Maraka (Kenya); (iii) Ms. Anjana Devi N Kuppusamy (Malaysia); (iv) Dr. Vidushi Neergheen (Mauritius) and (v) Dr. Tista Prasai Joshi (Nepal).

Key issues were highlighted by panel members from different countries. It was concluded that while various countries have implemented encouraging policies and programs, common barriers like societal expectations, lack of mentorship, unconscious bias and poor policy enforcement persist. Sustainable solutions must include dedicated funding, inclusive infrastructure and cultural change to support women's advancement in science and technology.

Concluding Remarks were given by Prof. (Dr.) Kiran Bhujun, Ministry of Tertiary Education, Science and Research, Mauritius and Dr. Amitava Bandopadhyay, NAM S&T Centre, New Delhi. Prof. Bhujun expressed confidence that with collective action and sustained efforts, the ideas emerged from the paper presentations can be transformed into a global reality. Dr. Amitava Bandopadhyay emphasized the importance of sustained collaboration, knowledge sharing and policy-driven action to create gender-inclusive STI ecosystems. He reaffirmed the NAM S&T Centre's dedication to support initiatives that empower women scientists and advance inclusive development across the Global South.

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supporting research, fostering innovation and guiding evidence-based policy decisions.

Against this backdrop, 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, organized an International Conference on **'Science and Technology Information Management System: Practices and Experiences'** from 7 to 9 May, 2025 in Kathmandu. The Conference brought together over 150 participants including scientists, researchers, academicians and policymakers from eight countries viz., Egypt, India, Indonesia, Kenya, Mauritius, Myanmar, Pakistan and the host country Nepal, to share knowledge and strategies for enhancing S&T information systems in the developing world.

The **Inaugural Session** started with introductory remarks by **Dr. Rabindra Prasad Dhakal**, Secretary, NAST, Nepal. Dr. Dhakal warmly welcomed the Chief Guest, distinguished guests and participants, underscoring the critical importance of effective S&T information management in the context of developing countries. **Dr. Amitava Bandopadhyay**, Director General, NAM S&T Centre welcomed the delegates and briefly explained the idea behind organizing this Conference. In his address, he provided a brief overview of the NAM S&T Centre. He highlighted the importance of effective S&T information management for informed policymaking and national development, particularly in the developing world.

A **Special invited lecture** was delivered by **Prof. Dr. Shashidhar Ram Joshi,** Institute of Engineering, Pulchowk Campus, Tribhuvan University, Nepal on ***'An Overview of S&T Information System of Nepal'***. Prof. Joshi presented an overview of Nepal's S&T information system, focusing on its historical development and its comparison with neighbouring countries.

In his inaugural address, **the Hon'ble Mr. Raghuji Pant**, Minister, Ministry of Education, Science and Technology, Government of Nepal, provided an overview of the current state of ICT in Nepal. He underscored the challenges faced by the sector, particularly the low remuneration of ICT professionals and discussed the broader implications of ICT on human welfare in the country.

Prof. Dr. Dilip Subba, Vice Chancellor, NAST, Nepal outlined the effective management of S&T information management system. He expressed hope that all the participants would definitely be benefitted by this three days conference.

The Conference comprised seven Technical Sessions**,** titled: *Managing S&*T Data *in Low-Resource Environments; Current and Emerging Issues in S&T Information Management; Policies and Governance in S&T Data Management; Integration of Emerging Technologies in S&T Information Management; Open Access, Data Sharing and Equitable Access to S&T Knowledge; Early Career Researchers in S&T Information Management and Enhancing the Security and Integrity of Information Systems in S&T Domains***.** The sessions were respectively chaired by: **Dr. Pratima Pradhan,** Kathmandu Engineering College, Kalimati, Kathmandu, Nepal; **Dr. Surendra Shrestha**, Nepal Open University, Lalitpur, Nepal; **Dr. Bhushan Raj Shrestha,** Member, Nepal Research and Education Network (NREN), Kathmandu, Nepal; **Prof. Dr. Bal Krishna Bal**, Kathmandu University, Nepal; **Mr. Vedanand Bhurosah**, Assistant Director, Tertiary Education and Scientific Research, Ministry of Tertiary Education, Science and Research, Republic of Mauritius; **Dr. Rabindra Bista**, Kathmandu University, Nepal and **Dr. Kavita Rani Mehra**, Advisor, NAM S&T Centre, New Delhi, India.

During the course of three days, five Keynote Lectures were delivered by **Prof. Elyjoy Muthoni Micheni**, Deputy Vice Chancellor, Academic, Research and Student Affairs, Tom Mboya University, Kenya', **Prof. Dr. Manish Pokharel,** Academician, NAST, Nepal, **Dr. Anoop Madambikkattil Bharathan,** Chief Scientist, CSIR-Structural Engineering Research Centre, Chennai, India, **Prof. Dr. Subarna Shakya,** Academician, NAST, Nepal and **Er. Mona Nyachchayon**, CEO, Monal Tech. Pvt. Ltd., Nepal. The respective titles of their lectures were: *'Best Practices in Managing Scientific and Technological Data in Resource- Constrained Environments'; 'AI Driven Education for Humans'; 'Impact of Infrastructure Constraints on Engineering Innovations in R&D Institutions'; 'Open Access, Data Sharing and Equitable Access to Scientific and Technological Knowledge' and 'Enhancing the Security and Integrity of Information Systems in S&T Domains'.*

During the seven technical sessions, twenty two paper presentations from seven countries and ten poster presentations from the host country were made.

One technical paper from Egypt was presented by **Dr. Mohamed Ramadan Abdelsalem Rezk,** Director, Egyptian Science, Technology and Innovation Observatory, Academy of Scientific Research and Technology (ASRT), Cairo, Egypt on *'Measuring the Performance of the Innovation Ecosystem in Egypt'.*

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From India, three paper presentations were made by **Dr. Manjunath Aradhya Aradhya Varuna Nagabhushan**, Dean (Research), JSS Science and Technology University, Mysuru, Karnataka, India on *'Brain to System: Efficient Data Representation from EEG Signals'*; **Dr. Bikasha Chandra Panda,** Professor, Indira Gandhi Institute of Technology, Sarang, Odisha, India on *'Need for Information Management System for Integrity Appraisal of Existing RCC Bridge Structure'* and **Dr. Satyabrata Mohanta,** Professor, Indira Gandhi Institute of Technology, Sarang, Odisha, India on *'Responsible Research and Ethical Publishing in Open Access Journals'*.

Mr. Lindung Parningotan Manik, Junior Researcher, National Research and Innovation Agency (BRIN) from Indonesia made presentation on *'Determinants of Research Data Governance: Demographics, Digital Behaviors, Policy and Practice Knowledge'*.

From Mauritius, **Mr. Vedanand Bhurosah**, Assistant Director, Tertiary Education and Scientific Research, Ministry of Tertiary Education, Science and Research, Republic of Mauritius gave a paper presentation on *'The Formulation of a Science and Technology Information Management System in Mauritius'*.

Dr. Nay Min Tun, Director-in-Charge, Department of Technology Promotion and Cooperation, Ministry of Science and Technology, Nay Pyi Taw from Myanmar presented paper on *'The Study on Establishing a Science and Technology Information Management System in Myanmar'*.

From Pakistan, a paper was presented by **Mr. Zain ul Abedin,** Joint Scientific Adviser (International Liaison), Ministry of Science and Technology, Government of Pakistan, Islamabad, Pakistan on *'Science and Technology Information Management: Practices and Experiences- The Perspective of Pakistan'*.

Fourteen papers were presented by the host country Nepal. The presenters were: **Dr. Rajib Subba,** Assistant Professor & Coordinator, Digital Technology Program Coordinator, Public Affairs and Resource Mobilization, Madan Bhandari University of Science and Technology; **Dr. Bimala Devi Devkota,** Science and Technology Information System Centre (STISC), NAST**; Mr. Ram Datta Bhatta,** Government of Nepal; **Dr. Roshan Koju,** Director, Social Security Fund**; Dr. Swotantra Dangi,** Nepal Insurance Authority; **Dr. Ritu Raj Lamsal,** Assistant Professor, Madan Bhandari University of Science and Technology; **Dr. Ramesh Koirala,** Nanjing University; **Dr. Meghnath Dhimal**, Senior Research Officer, Nepal Health Research Council; **Mr. Suresh Gautam**, Nepal Open University; **Mr. Youba Raj Poudyal**, Graduate School of Science and Technology, Mid-West University; **Mr. Diwas Parajuli**, Kathmandu University; **Mr. Om Prakash Mahato**, Nepal Telecommunications Authority; **Ms. Elisha Rajbhandari**, Ex-Assistant Project Coordinator, Asia Pacific Telecommunity and **Mr. Sushil Kumar Singh,** Himalayan Institute of Science and Technology, Purbanchal University.

Respective titles of their presented papers were *'Leveraging Digital Technologies for Humanitarian Response: Lessons from the 2015 earthquake in Nepal'*; *'Science and Technology Information System Centre in Nepal: Status, Program and Plan'; 'Navigating Nepal: Revolutionizing Citizen Localization with an Address Sharing Model'*; *'Multilayered Data Governance Framework for Robust E-Governance in Nepal: Bridging Gaps in Policy and Implementation'*; *'Application of Agriculture Insurance Real Time Software in Nepal'; 'Harnessing Emerging Technologies in Key Sectors for Sustainable Development in Nepal'*; *'Data Management Techniques Implemented in High-energy Astrophysics'; 'Health and Health Research Management System in Nepal'; 'Bone Suppression in Chest X-Ray Using Auto-Encoder and U-NET'*; *'Leveraging IoT and MEMS for an effective Earthquake Early Warning System in Nepal'*; *'Voice-Guided Indoor Assistive System for Visually Impaired with Relative Position Audio Feedback'*; *'Safeguarding Digital Trust in Nepal: Combating Online Financial Fraud in the Era of Rapid Digitalization'; 'Measures to Prevent Unsolicited Commercial Messages (Spam) in the Asia-Pacific Region'* and *'Security Model Development for E-Government Implementation in Nepal'*.

During the technical session, '*Integration of Emerging Technologies in S&T Information Management', a* series of **Poster Presentations** showcased diverse research initiatives. Topics presented included designing an agricultural digital ecosystem, enhancing stakeholder management in housing and using vibration analysis for bridge health monitoring. Other highlights involved user-centric redesign of EMIS, blockchain for data security, crisis intelligence systems, malicious URL detection via machine learning, big data in e-governance, AI adoption challenges in least developed countries and WiFi-based human activity recognition.

A **Panel Discussion** was held on the theme: *'Shaping the Future of Science and Technology Information Management: Challenges, Opportunities and Global Perspectives'*. The panel experts included **Mr. Anil Dutt** (Nepal), **Er. Guna Kehsari Manandhar Pradhan** (Nepal), **Prof. Elyjoy Muthoni Micheni** (Kenya), **Dr. Pradip Paudyal** (Nepal) and **Dr. Anoop Madambikkattil Bharathan** (India). The session was chaired by Dr. Rabindra Prasad Dhakal (Nepal) and moderated by Dr. Bhojraj Ghimire (Nepal). During the panel discussion, extensive deliberations were held and ideas were exchanged on several critical challenges and opportunities related to Science and Technology (S&T) Information Management in the developing countries. In the end, the panel collectively emphasized the need to enhance ICT literacy across the global population The panel discussion underscored the multifaceted strategies required to strengthen S&T information systems in the Global South.

In the **Concluding Session,** Dr. Rabindra Prasad Dhakal provided a comprehensive synopsis of the Conference proceedings and extended a warm welcome to the Chief Guest, the **Hon'ble Mr. Prithvi Subba Gurung**, Minister, Ministry of Communication and Information Technology, Government of Nepal. During the session, following an in-depth discussion and thorough deliberation among the participants, **the Kathmandu Resolution** on **'Science and Technology Information Management System: Practices and Experiences'** was unanimously adopted. The adopted Resolution includes key recommendations directed at governments, institutions, policymakers, end-users and other relevant stakeholders.

On behalf of Dr. Amitava Bandopadhyay, Director General, NAM S&T Centre, a special note of gratitude was conveyed by **Dr. Kavita Rani Mehra**.

In his address, the Hon'ble Minister, **Mr. Prithvi Subba Gurung**, emphasized that effective data and information management is a critical priority for developing countries. He underscored the importance of establishing information technology as a key industry to foster advancements in cloud computing, big data analytics and cyber security.

The session concluded with a Vote of Thanks delivered by **Prof. Dr. Dilip Subba** who expressed sincere gratitude to the Hon'ble Minister, participants and contributors for their active engagement and valuable insights during the discussions.

Kathmandu Resolution

On
SCIENCE AND TECHNOLOGY INFORMATION MANAGEMENT SYSTEM: PRACTICES AND EXPERIENCES

WE, THE DELEGATES, participating in the International Conference on **"Science and Technology Information Management System: Practices and Experiences"** during May 7-9, 2025 in Kathmandu, Nepal – representing governments, academic and research institutions, and S&T agencies in countries including **Egypt, India, Indonesia, Kenya, Mauritius, Myanmar, Nepal** and **Pakistan,** as well as other relevant stakeholders;

APPRECIATING the Nepal Academy of Science and Technology (NAST), Kathmandu, Nepal and the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi for organizing the International Conference on such an important topic;

RECOGNIZING that effective Science and Technology (S&T) information management is essential for promoting research collaboration, innovation, policy formulation and sustainable development in developing countries, as they face common challenges such as limited infrastructure, funding gaps and lack of skilled human resources in managing S&T information management systems;

REALIZING that regional and international cooperation is vital for capacity building and sharing best practices in S&T information management systems as well as to strengthen open access and data-sharing frameworks to enhance visibility, inclusivity and impact of research across the Global South, and that harmonized efforts can accelerate the integration of artificial intelligence, machine learning and digital repositories to support evidence-based decision-making;

RECALLING the aim of the Conference which is to provide a dynamic platform for the exchange of knowledge, sharing of best practices and experiences in science and technology information management systems, and identify successful models, address common challenges and propose actionable strategies for advancing S&T information systems among NAM member and other developing countries; and

COMMITTING ourselves to: (i) foster collaboration in the development and implementation of regional and international S&T information management systems; (ii) promote policies that support open science, capacity building, digital infrastructure development and inclusive access to scientific knowledge; and (iii) support initiatives that enhance the digitalization, standardization and sustainability of S&T data systems in developing countries;

UNANIMOUSLY RESOLVE AND RECOMMEND THE FOLLOWING:

- **Establishment of a Knowledge-Sharing Network:** A knowledge-sharing network for S&T information management system will help facilitate joint research initiatives, sharing of resources and best practices.
- **Capacity Building and Training Programs:** Human Resource Development (HRD) through capacity building programs focused on S&T data curation, analytics and system design, tailored to regional needs considering gender inclusiveness.
- **Development of National S&T Information Policies**: These policies will promote interoperability among information systems, enabling seamless data exchange and collaboration across institutions and countries, while ensuring data security and compliance with open-access standards.
- **Mobilization of Resources and Technical Support**: Support from multilateral organizations, donor agencies and private sector partners for development of sustainable information management systems.
- **Promotion of Collaborative Research Portals**: Such portals will connect researchers, policymakers and institutions across developing countries, enabling co-creation of knowledge and innovation.
- **Integration of Emerging Technologies:** Incorporating technologies like AI and big data analytics into national S&T information systems will improve efficiency, better access to data and support evidence-based planning and management.
- **Strengthening of Monitoring and Evaluation (M&E) Mechanisms:** Robust M&E frameworks should be established to assess the effectiveness, sustainability and impact of S&T information systems.
- **Encouragement of Public–Private Partnerships (PPPs):** Promoting PPPs can foster innovation, mobilize additional resources and accelerate the development of advanced information technologies in S&T management systems.
- **Fostering Regional and International Collaboration:** Such collaboration can encourage partnerships between countries, international organizations and regional bodies to share best practices, co-develop tools and platforms and together address the common challenges being faced in S&T information management systems.

This Resolution may be referred to the governments of various NAM and other developing countries for their consideration.

THUS, RESOLVED AND UNANIMOUSLY ADOPTED ON 9th MAY, 2025 IN KATHMANDU, NEPAL

Special Feature

Seventy-Eighth World Health Assembly Meeting: Historic Outcomes, Consequential Highlights

The Assembly is the WHO's highest decision-making body and the Seventy-eighth World Health Assembly (WHA78), the annual meeting of World Health Organization's (WHO) Member States was convened from 19 May to 27 May, under the theme "One World for Health". Member States considered approximately 75 items and sub-items across all areas of health, engaging in lively debate and adopting consequential resolutions to improve health for all.

Dr Tedros Adhanom Ghebreyesus, WHO Director-General said "The adoption of the Pandemic Agreement and the approval of the next increase in assessed contributions, along with the numerous other resolutions that Member States adopted are a sign to the world that we can achieve cooperation in the face of conflict, and unity amid division."Some of the highlights of the meeting are following:

i. World's first pandemic agreement: equity for all

On 20 May, Member States adopted the historic WHO Pandemic Agreement. The adoption of the Agreement is a once-in-a-generation opportunity to safeguard the world from a repeat of the suffering caused by the COVID-19 pandemic. The Agreement aims to enhance global coordination and cooperation, equity and access for future pandemics, all while respecting national sovereignty.

Over the next year, Member States will build on the Resolution, by holding consultations on the Pathogen Access and Benefit Sharing system (PABS), an annex to the Agreement which would enhance equitable access to medical advancements.

ii. Sustainable financing: protecting the future of global health

In a changing financial landscape, Member States united to protect WHO's critical work by approving the second 20% increase in assessed contributions (ACs). By 2030–2031, ACs will make up 50% of WHO's core budget, providing more predictable, resilient, and flexible funding.

The Assembly's commitment to sustainable financing did not stop there; at a high-level pledging event during WHA78, health leaders pledged at least US$ 210 million for WHO's Investment Round, the fundraising campaign for the Organization's global health strategy for the next four years (the Fourteenth General Programme of Work). In addition to the US$ 1.7 billion already raised for the Investment Round, these pledges mark a significant step toward sustainable financing of WHO. Since launching in May 2024, the Investment Round has attracted 35 new contributors – moving WHO closer to the broader donor base envisioned in the Director-General's ongoing transformation agenda.

iii. Action for health: major decisions and resolutions

WHA 78 was steadfast in addressing ongoing health issues and adaptable in targeting threats and conflicts. The accomplishments of the Assembly spanned many areas of health as Member States -

- adopted a new resolution highlighting the global health financing emergency;
- endorsed first-ever resolutions on lung and kidney health;
- adopted a new resolution on science-driven norms and standards for health policy and implementation;
- adopted a new target to halve the health impacts of air pollution by 2040;
- adopted an innovative resolution to promote social connection with growing evidence linking it to improved health outcomes and reduced risk of early death;
- adopted a resolution for a lead-free future;
- adopted a resolution to address rare diseases, protecting the over 300 million people globally who live with one of more than 7000 rare diseases;
- agreed to expand the provisions of the International Code of Marketing of Breast-milk Substitutes to tackle the digital marketing of formula milk;
- adopted a resolution to accelerate the eradication of Guinea worm disease.

The Assembly adopted other resolutions on digital health, the health and care workforce, medical imaging, nursing and midwifery, sensory impairment, and skin diseases, among others. Two new official WHO health campaigns were established: World Cervical Cancer Elimination Day and World Prematurity Day.

iv. Strengthening health emergency preparedness and response

The World Health Assembly also discussed WHO's work in health emergencies. Over the last year, WHO responded internationally to 51 graded emergencies across 89 countries and territories, including global outbreaks of cholera and mpox – a public health emergency of international concern – as well as multiple humanitarian crises. Working with over 900 partners across 28 health clusters, WHO helped provide health assistance for 72 million people in humanitarian settings. Nearly 60% of new emergencies were climate-related, highlighting the growing health impacts of climate change.

www.who.int/news, May 28, 2025

Science, Technology & Innovation News

HEALTH

Gut Microbes may help protect patients from Chemotherapy Side Effects

Chemotherapy doesn't just kill cancer cells. It also affects the microbes in the digestive tract. Researchers at UC San Francisco have discovered that some gut bacteria can reduce the side effects of these potent treatments, and that one family of cancer drugs may actually boost these protective bacteria. The phenomenon could help physicians to predict the severity of a patient's side effects, and it points the way to supplements that could help those whose guts aren't sufficiently protecting them. "These studies emphasize the important relationship between the gut microbiome and drug toxicity," said Peter Turnbaugh, Ph.D., a professor of microbiology and immunology at UCSF. "A more detailed understanding of this relationship could provide new strategies to optimize the treatment of cancer.

www.medicalxpress.com, May 20, 2025

Blood Test Detects Multiple Cancer Types through Cell-Free DNA

Researchers from Geneseeq and a network of Chinese academic hospitals have validated a blood test that can detect a broad range of cancers with high accuracy using cell-free DNA. A multi-cancer early detection (MCED) test identified cancer with 87.4% sensitivity and 97.8% specificity in an independent validation cohort, and it correctly predicted the tissue of origin around 83% of the time.

Cell-free DNA (cfDNA) circulating in the bloodstream, shed by tumors, has emerged as a promising target for non-invasive detection. Sensitivity for early-stage and less common cancers has remained low, yet the non-invasive nature of the tests makes them a compelling area for improvement. In the study published in *Nature Medicine*, researchers designed a whole-genome sequencing based blood test to detect cancer signals and predict the tissue of origin using machine learning models trained on cfDNA fragmentation patterns. Retrospective model training used data from 3,076 cancer patients and 3,477 non-cancer controls. Validation involved an internal cohort of 1,746 participants and an independent cohort of 1,465 participants. An ongoing prospective analysis enrolled 3,724 asymptomatic individuals at two Chinese medical centers. Researchers analyzed plasma-derived cfDNA using low-coverage whole-genome sequencing. Samples were processed under a double-blind protocol in which data analysts and clinical teams were separately blinded to clinical outcomes and molecular results. Sequencing data were input into two supervised machine learning classifiers: one trained to identify the presence of a cancer signal and the other to infer the tissue of origin. Both models drew on multidimensional fragmentomics features, including cfDNA fragment size, copy number variation, nucleosome positioning, and inferred methylation profiles. Bioinformatic pipelines were standardized across all phases. Model training and calibration occurred before validation began, using a fixed algorithm to prevent performance drift. All sequencing and analysis steps were conducted using the same laboratory procedures regardless of cohort or disease status.

In the independent validation cohort, the test achieved a sensitivity of 87.4% and a specificity of 97.8%. Sensitivity for early-stage cancers was 79.3% for stage I and 86.9% for stage II. Sensitivity reached 100% for liver and bile duct cancers, 94.5% for lung, 90.5% for ovarian, and 82.3% for colorectal. Sensitivity for pancreatic cancer was 76.9%, including 58.3% for stage I. Tissue-of-origin prediction in the same cohort was accurate in 83.5% of cases based on the top-ranked prediction and 91.7% when the two most likely predictions were considered. Nearly half of the cancers detected by the test were not identified through standard screening or physical examination. High sensitivity for cancers typically identified late in the disease course such as liver, ovarian, and pancreatic are extremely compelling and prediction of tissue origin adds further clinical relevance for early treatment. Investigators conclude that the validation findings "... indicate that the MCED test has strong potential to improve early cancer detection and support clinical decision-making."

www.medicalxpress.com, June 2, 2025

Gene Editing could Treat Damage from 'Irreversible' Kidney Disease

Using CRISPR to correct the mutations behind polycystic kidney disease could counter some of the damage the condition causes

The damage to the body caused by the most common type of inherited kidney disease was thought to be irreversible. But now, animal studies suggest that correcting the responsible mutations via CRISPR gene editing can reverse at least some of it. Polycystic Kidney Disease (PKD) causes extensive changes to the kidneys over time. “It really seemed unlikely that you could change that even if you correct [the mutation],” says Michael Kaminski at the Charité Berlin University of Medicine in Germany. “But now it seems that the disease might be more plastic than somehow previously appreciated.”

PKD leads to fluid-filled cysts that grow larger over time, forming in the kidneys and often also in the liver. These organs eventually fail, meaning people need dialysis or a transplant to stay alive. But even before the kidneys fail, their damaged and swollen state can cause many other issues, from high blood pressure and infections to excessive pressure on other organs. With the adult form of the disease, which is estimated to affect 12 million people worldwide, cysts may not grow large enough to cause symptoms until people are in their 30s, during which time there could have been extensive changes to the kidneys and liver. Kaminski's team has used a form of CRISPR called base editing to correct a mutation in a gene called *Pkd1* that causes the disease in mice. The methods his team used meant the mutant gene was mainly corrected in the liver, and the number and size of cysts there declined after the treatment. There were also signs of improvement in the kidneys, says Kaminski.

Separately, 'Xiaogang Lis team at the Mayo Clinic in Rochester, Minnesota, did a similar study using methods that better target the kidneys. This suggests that the number and size of cysts there can also be reduced, says Li. Both sets of researchers used viruses to deliver the gene-editing machinery. This could be an issue if repeat doses are needed, as the immune response to viruses can stop treatments from working. “That's a concern,” says Li. “But so far, based on the animal model, the immune response is very limited.” Replacing the viruses with lipid nanoparticles like those used in mRNA vaccines would avoid the potential immune issue, but these particles can't penetrate deep enough into the kidneys via blood to be effective, says Kaminski. “But I think an approach where you would deliver [lipid nanoparticles] through the urethra could be more realistic,” he says. Another issue is that base editing can correct only single-letter mutations and so wouldn't work for people whose disease is caused by longer mutations. But Li says he has achieved similar results with a technique called prime editing, which can correct longer mutations. More broadly, the finding by the teams that

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PKD may be reversible should inspire much more research into this approach. At present, the only approved treatment is a drug called tolvaptan, which only somewhat slows progression and requires people to drink large quantities of fluids.

www.newscientist.com, June 10, 2025

MATERIAL SCIENCE

New Marine-Biodegradable Polymer Decomposes by 92% in one year

A Strong Yet Biodegradable Alternative to Nylon; Development of Polyester-Amide Material That Decomposes in Marine Environments While Retaining High Mechanical Strength

Nylon-based products such as clothing and fishing nets are notoriously slow to degrade, especially in marine environments, contributing significantly to global ocean pollution. A Korean research team has now developed an innovative material that can be produced using existing manufacturing infrastructure and effectively addresses this problem. A joint research team led by Dr. Hyun-Yeol Jeon and Dr. Hyo-Jeong Kim at the Korea Research Institute of Chemical Technology (KRICT), Senior Researcher Sung-Bae Park, Professor Dong-Yeop Oh at Inha University, and Professor Je-Young Park at Sogang University has developed a high-performance polyester-amide (PEA) polymer that decomposes by over 92% in one year under real marine conditions, while maintaining strength and flexibility comparable to nylon. This material is not only scalable and recyclable but also applicable to a wide range of uses such as textiles, fishing nets, and food packaging. Unlike conventional biodegradable plastics that suffer from low durability and heat resistance, the PEA polymer combines ester (for biodegradability) and amide (for toughness) linkages in an optimal ratio. This design offers both high degradability and mechanical durability.

Traditionally, the synthesis of polymers with both ester and amide groups required toxic organic solvents. However, the team developed a new two-step melt polymerization process that eliminates the need for solvents and enables industrial-scale production (up to 4 kg) in a 10-liter reactor. Importantly, this method is compatible with existing polyester manufacturing facilities with only minor modifications, enhancing its industrial scalability. Marine biodegradability tests conducted off the coast of Pohang showed that the new PEA achieved up to 92.1% degradation within one year significantly outperforming existing biodegradable plastics such as PLA (0.1%), PBS (35.9%), and PBAT (21.1%). Even more complete biodegradation occurs under composting conditions, where microbial populations are higher. The tensile strength of the PEA reached up to 110 MPa, surpassing that of nylon 6 and PET. In practical experiments, a single PEA fiber strand was able to lift a 10 kg object without breaking. When woven into fabrics, it also withstood ironing at 150°C, confirming its high thermal resistance.

In addition to performance, sustainability was a key focus of the research. The PEA was synthesized using long-chain dicarboxylic acids derived from castor oil (a non-edible crop), and caprolactam derivatives recovered from recycled nylon 6 waste. This upcycling approach reduced CO_2emissions to just one-third that of conventional nylon 6—lowering emissions from 8–11 kg CO_2eq/kg to 2.3–2.6 kg CO_2eq/kg. The team is currently evaluating the material for commercialization, with expectations for industrial adoption within two years. Dr. Sungbae Park stated, "The key achievement is that this material overcomes the limitations of conventional biodegradable plastics while offering nylon-level performance." KRICT President Young-Kuk Lee added, "This technology marks a pivotal step toward the commercialization of biodegradable engineering plastics and will significantly contribute to solving the global marine plastic pollution crisis."

www.newswise.com, May 14, 2025

ELECTRONICS

Physicists discover a new Type of Superconductor that's also a Magnet

The "one-of-a-kind" phenomenon was observed in ordinary graphite.

Magnets and superconductors go together like oil and water or so scientists have thought. But a new finding by MIT physicists is challenging this century-old assumption. In a paper appeared in the journal Nature, the physicists report that they have discovered a "chiral superconductor" a material that conducts electricity without resistance, and is also, paradoxically, is intrinsically magnetic. What's more, they observed this exotic superconductivity in a surprisingly ordinary material: graphite, the primary material in pencil lead. Graphite is made from many layers of graphene atomically thin, lattice-like sheets of carbon atoms that are stacked together and can easily flake off when pressure is applied, as when pressing down to write on a piece of paper. A single flake of graphite can contain several million sheets of graphene, which are normally stacked such that every other layer aligns. But every so often, graphite contains tiny pockets where graphene is stacked in a different pattern, resembling a staircase of offset layers.

The MIT team has found that when four or five sheets of graphene are stacked in this "rhombohedral" configuration, the resulting structure can exhibit exceptional electronic properties that are not seen in graphite as a whole. In their new study, the physicists isolated microscopic flakes of rhombohedral graphene from graphite, and subjected the flakes to a battery of electrical tests. They found that when the flakes are cooled to 300 millikelvins (about -273 degrees Celsius), the material turns into a superconductor, meaning that any electrical current passing through the material can flow through without resistance. They also found that when they swept an external magnetic field up and down, the flakes could be switched between two different superconducting states, just like a magnet. This suggests that the superconductor has some internal, intrinsic magnetism. Such switching behavior is absent in other superconductors.

"The general lore is that superconductors do not like magnetic fields," says Long Ju, assistant professor of physics at MIT. "But we believe this is the first observation of a superconductor that behaves as a magnet with such direct and simple evidence. And that's quite a bizarre thing because it is against people's general impression on superconductivity and magnetism." Ju and his colleagues in team has been exploring the electrical properties of pentalayer rhombohedral graphene. The researchers have observed surprising properties in the five-layer, staircase-like graphene structure and most recently that enables electrons to split into fractions of themselves. This phenomenon occurs when the pentalayer structure is placed atop a sheet of hexagonal boron nitride (a material similar to graphene), and slightly offset by a specific angle, or twist. Curious as to how electron fractions might change with changing conditions, the researchers followed up their initial discovery with similar tests, this time by misaligning the graphene and hexagonal boron nitride structures. To their surprise, they found that when they misaligned the two materials and sent an electrical current through, at temperatures less than

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300 millikelvins, they measured zero resistance. It seemed that the phenomenon of electron fractions disappeared, and what emerged instead was superconductivity.

The researchers went a step further to see how this new superconducting state would respond to an external magnetic field. They applied a magnet to the material, along with a voltage, and measured the electrical current coming out of the material. As they dialed the magnetic field from negative to positive (similar to a north and south polarity) and back again, they observed that the material maintained its superconducting, zero-resistance state, except in two instances, once at either magnetic polarity. In these instances, the resistance briefly spiked, before switching back to zero, and returning to a superconducting state. The team suspects that the unique configuration of rhombohedral graphene is the key. The material has a very simple arrangement of carbon atoms. When cooled to ultracold temperatures, the thermal fluctuation is minimized, allowing any electrons flowing through the material to slow down, sense each other, and interact. “Everything we've discovered in this material has been completely out of the blue,” says Zhengguang Lu, a former postdoc in the group and now an assistant professor at Florida State University. “But because this is a simple system, we think we have a good chance of understanding what is going on, and could demonstrate some very profound and deep physics principles.”“It is truly remarkable that such an exotic chiral superconductor emerges from such simple ingredients,” adds Liang Fu, professor of physics at MIT. “Superconductivity in rhombodedral graphene will surely have a lot to offer.

www.news.mit.edu, May 22, 2025

ARTIFICIAL INTELLIGENCE

Biotech Firm Aims to Create 'ChatGPT of Biology'

A UK biotech firm spent years gathering genetic data that has uncovered 1 million previously unknown microbial species and billions of newly identified genes but even this trove of data may not be enough to train an AI biologist.

A British biotech firm called Basecamp Research has spent the past few years collecting troves of genetic data from microbes living in extreme environments around the world, identifying more than a million species and nearly 10 billion genes new to science. It claims that this massive database of the planet's biodiversity will help train a “ChatGPT of biology” that will answer questions about life on Earth – but there's no guarantee this will work. Jörg Overmann at the Leibniz Institute DSMZ in Germany, which houses one of the world's most diverse collections of microbial cultures, says increasing known genetic sequences is valuable, but may not result in useful findings for things like drug discovery or chemistry without more information about the organisms from which they were collected. “I'm not convinced that in the end the understanding of really novel functions will be accelerated by this brute-force increase in the sequence space,” he says. While such “generative biology” models have grown ever more complex since, they haven't gotten much better, says Frances Ding at the University of California, Berkeley. One reason could be a lack of biodiverse data. “Current models in biology are trained on datasets that disproportionately represent well-studied species (e.g., *E. coli*, mice, humans), and these models are worse at predicting properties about sequences from other parts of the tree of life,” she says.

Researchers at Basecamp set out to address this biodiversity gap. The company's growing database now contains samples from more than 120 sites in 26 countries, according to a report the company posted. Jonathan Finn, the company's chief science officer, says the collection efforts focused on extreme environments that hadn't yet been widely sampled, ranging from the frigid water beneath Arctic sea ice to jungle hot springs. “Most of the samples that we've been going after are prokaryotic samples: bacteria, microbes and their viruses,” says Finn. “I know we've got some fungi in there.” Genetic analysis of these samples revealed differences in genes shared nearly universally across the tree of life based on this; the company estimates the data contains information from more than 1 million species that don't occur in public genomic datasets used to train AI biology models. These collectively contain around 9.8 billion newly identified genes, a 10-fold increase in the total number of known genes, each of which encodes a potentially useful protein, the researchers say.“By showing these models a large piece of nature, they should have a better understanding of how biology works,” says Finn. “We're trying to build a ChatGPT of biology.” But Basecamp is banking on the idea that all the new material could be valuable and it's not alone. “This is one of the most exciting things I've seen in a long time,” says Nathan Frey, a machine learning researcher at Genentech, a biotech firm in the US. In general, he says work on AI models for biology has focused on improving algorithms or generating more data in labs rather than actually going out in the world and collecting samples. Further, if the new genes really are substantially different from those we already know, Overmann doesn't see how existing tools can easily predict their functions, or how the data can be used for training a new model. “You don't have any clue what the majority of the genes do,” he says. The company could well have assembled a treasure trove of new biology, but without more old-fashioned laboratory work to understand what there is it may remain mysterious, even to the most powerful AI.

www.newscientist.com, June 17, 2025

CLIMATE AND ENVIRONMENT

Thousands of Animal Species Threatened by Climate Change

A novel analysis suggests more than 3,500 animal species are threatened by climate change and also sheds light on huge gaps in fully understanding the risk to the animal kingdom. The study was published in *BioScience.* "We're at the start of an existential crisis for the Earth's wild animals," said Oregon State University's William Ripple, who led the study. "Up till now, the primary cause of biodiversity loss has been the twin threats of overexploitation and habitat alteration, but as climate change intensifies, we expect it to become a third major threat to the Earth's animals." Ripple, distinguished professor of ecology in the OSU College of Forestry, and collaborators in the U.S. and Mexico used publicly available biodiversity datasets to examine animal data for 70,814 species from 35 existing classes. They categorized the species by class and climate change risks as assessed by the International Union for Conservation of Nature. The researchers found that at least one-quarter of the species in six different classes are threatened by climate change; these classes include arachnids and chilopodans (centipedes) as well as anthozoans and hydrozoans (marine invertebrates related to jellyfish and corals). Smaller percentages of other classes' species are also directly at risk from a warming climate. "We are particularly concerned about

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invertebrate animals in the ocean, which absorbs most of the heat from climate change," Ripple said. "Those animals are increasingly vulnerable because of their limited ability to move and promptly evade adverse conditions." Sudden impacts on animal communities can take the form of mass mortality from extreme events like heat waves, wildfires, droughts and floods."The cascading effects of more and more mass mortality events will likely affect carbon cycle feedbacks and nutrient cycling," Ripple said. "Those effects also likely will have an impact on species interactions such as predation, competition, pollination and parasitism, which are vital for ecosystem function." The 90% reduction in mollusk populations along Israel's coastline because of escalating water temperatures shows how susceptible invertebrates are, he said. Other examples include the deaths of billions of intertidal invertebrates during the 2021 Pacific Northwest heat dome, and the catastrophic die-off of corals across 29% of the Great Barrier Reef following a severe 2016 marine heat wave. Mass mortalities have not been limited to invertebrates, Ripple notes. In 2015 and 2016, about 4 million common murres off the west coast of North America starved to death via an altered food web caused by an extreme marine heat wave.

The same heat wave caused a 71% decline in Pacific cod because of an increase in metabolic demand and a reduced prey base, and marine heat waves have likely played a role in the deaths of approximately 7,000 humpback whales in the North Pacific. "Our analysis is meant to be a preliminary effort toward assessing climate risk to wildlife species," Ripple said. "Understanding the risk is crucial for making informed policy decisions. We need a global database on mass mortality events due to climate change for animal species in all ecosystems, and acceleration in assessing currently ignored species." "There is also a need for more frequent climate risk assessments of all species and better consideration of adaptive capacity," Ripple said. "We need the integration of biodiversity and climate change policy planning on a global scale."

www.sciencedaily.com, May 20, 2025

World Leaders Rally for 'Full-Speed' Climate Action ahead of COP30

At a high-stakes virtual summit on Wednesday, UN Secretary-General António Guterres and Brazilian President Luiz Inácio Lula da Silva brought together 17 national leaders from major economies and climate-vulnerable countries. The goal was to accelerate global climate ambition ahead of COP30, which will be hosted in Brazil. The meeting was part of a joint mobilisation strategy by the two leaders to strengthen global action under the Paris Agreement and build momentum for stronger national climate plans to be announced in 2025. The session included China, the European Union, the African Union, the Association of Southeast Asian Nations, and small island developing States. Mr. Guterres described it as one of the most diverse meetings of national leaders focused exclusively on climate for some time, carrying a powerful unifying message."**As we heard today, the world is moving forward. Full-Speed ahead. No group or government can stop the clean energy revolution**", he declared at a press briefing afterwards. Following are some of the highlights of the session:

- **New National Commitments**

UN Secretary-General António Guterres said many leaders pledged to deliver ambitious new climate plans, formally known as National Determined Contributions (NDCs), as soon as possible in what he called a "strong message of hope". Guterres announced that President Xi Jinping confirmed during the meeting that China's updated NDCs would cover all economic sectors and all greenhouse gases — a clarification he described as "extremely important" for climate action. He added that these pledges provide a vital opportunity to chart a bold path for the next decade and most importantly, help speed up a just transition away from fossil fuels to renewables.

- **Economic Opportunity of the Century'**

Renewable energy production is "**the economic opportunity of the century,"** he said, describing it as the **"pathway out of climate hell**." "**The clean energy sector is booming creating jobs and boosting competitiveness and growth worldwide… Science is on our side and economics have shifted**."The UN chief noted that prices for renewables have fallen dramatically, offering "the surest route to energy sovereignty and security, ending dependence on volatile and expensive fossil fuel imports." Since the 2015 Paris Agreement, global projections for warming have declined, from over 4°C this century to 2.6°C if current plans are implemented. But that still falls short of limiting temperature rise to 1.5°C above pre-industrial levels the goal agreed in Paris by nations and endorsed by climate scientists. The Secretary-General urged leaders to submit national plans that align with that target, cover all greenhouse gases and sectors, and signal a full commitment to achieving net zero emissions by 2050.

- **Strategic Mobilisation**

According to a senior UN official summit was "just another step" in the important effort to sustain political momentum during a pivotal year for combating climate change. The group of invitees, the official said, was "small but representative," including major economies, regional powers, former COP hosts, and climate-vulnerable nations.**"This meeting is about reminding leaders that climate remains a key priority that collaboration and multilateralism still matter."**

- **Call for Justice and Finance**

Mr. Guterres underscored the need to direct far more support to developing countries, which face the most severe impacts of climate change despite contributing the least to global emissions."Africa and other parts of the developing world are experiencing faster warming – and the Pacific islands are seeing faster sea-level rise even while the global average itself is accelerating," he said. He called on countries to deliver a credible roadmap to mobilise $1.3 trillion per year for developing nations by 2035, double adaptation finance to $40 billion this year, and increase contributions to the new Loss and Damage Fund created at COP28.

- **No let up on Climate Action**

The Secretary-General also announced a high-level UN event in September, just weeks ahead of COP30 to assess progress on climate plans and finance. The message was clear, according to Mr. Guterres. "**We cannot, must not, and will not let up on climate action**".

www.news.un.org, April 23, 2025

Brief News

Researchers discover a new Antifungal Drug

A newly discovered bacterial weapon against fungi can kill even drug-resistant strains, raising hopes for a new antifungal drug. Researchers in China have found a new type of antifungal called mandimycin, reported in the journal Nature. Mandimycin killed fungal infections in mice more effectively than amphotericin B and several other commonly used antifungal drugs. It even worked against resistant *C. auris* strains. Zongqiang Wang of China Pharmaceutical University in Nanjing and colleagues combed more than 300,000 bacterial genomes looking for possible weapons against fungi. One strain of *Streptomyces netropsis* contained a cluster of genes that encode enzymes for building the compound mandimycin. Mandimycin soaks up molecules that all forms of life share, yet appears to target only fungi

www.sciencenews.org, April 1, 2025

Shrinking Glaciers

Swiss glaciers are entering summer 2025 with 13 per cent lower snow cover than the 2010-20 average, says a study by *Glacier Monitoring Switzerland (Glamos)*. The study found that despite heavy snowfall in 2024, glaciers in north-eastern Switzerland have particularly low snow cover due to rapid melting. The southern and south-western regions retained near average levels due to mid April snowfall.

The Guardian Weekly, pg. 5, April 25, 2025

Solar Powered Device pulls Water from Thin Air

A device powered by sunshine can harvest drinkable water from the air – even in one of the world's driest deserts. Chad Wilson at the Massachusetts Institute of Technology in Cambridge and his colleagues designated a device to capture moisture from the air using a spongy hydrogel, which they loaded with salt to boost its absorbency. The gel sucks water from the air during the cool night time. During the day, the device converts sunlight into thermal energy to heat the hydrogel. The gel releases the moisture which then collects on a condenser. In tests the system produced 1.7 litres of water per square meter of solar panel per day in urban areas and 0.6 litres in the extreme conditions of Chile's Atacama Desert. It is estimated that such a device could cost around US$150 per square per meter and lasts for 20 years.

Nature, pg 826, 641, May, 2025

England has just given the thumbs up to Gene-Edited Plants

A UK parliamentary committee has given green lit to gene-edited plants. According to Michael, this is great news, as it will boost food production and reduce waste. Research on potatoes reveals that unlike normal potatoes, the gene-edited ones don't turn brown when cut. That means there is less wastage, because many people and businesses discard discoloured potatoes that are perfectly good to eat.

www.newscientist.com, May 7, 2025

China unveils 'Meltdown Proof' Thorium Reactor

Chinese scientists have achieved a breakthrough in clean energy technology by adding fresh fuel to an operational thorium reactor. The 2-megawatt experimental reactor is located in Gobi desert and uses molten salt as the coolant and fuel carrier, with thorium as the fuel source. The latest milestone puts China at the forefront in the race to build a practical thorium reactor-long considered a more abundant and safer alternative to uranium. In the 1960s, the US scientists built and tested molten salt reactors, but Washington eventually shelved the programme in favour of uranium-based technology. China is already building 10-MWthorium reactor.

Down to Earth, pg 11, May 1-15, 2025

A new Antibiotic to treat Gonorrhoea

A new antibiotic pill has shown promise in treating sexually transmitted infection gonorrhoea, including forms of infection that no longer respond to existing drugs. The new drug gepotidacin, was tested in a major international study published in The Lancet on April 14. The drug is already being used to treat urinary tract infections. This is the first new gonorrhoea treatment in decades that has shown strong results, offering hope at a time when health officials warn that gonorrhoea may soon become difficult to treat.

Down to Earth, pg 12, May 1-15, 2025

CAR-T Cell Cancer Therapies Pose Risk to the Brain

CAR-T cell therapies can be highly effective cancer treatments but some recipients have reported long-term difficulties either the thinking or memory. To learn more about this, Anna Gerabhty at the Stanford School of Medicine in California and her colleagues monitored the effects of CART-T therapies in mice. The team found that the treatments produced an inflammatory immune response in the brain and caused deficits in attention and short term memory. The treatment also impaired important cells called myelin forming glial cells in a region of the brain crucial for those functions. The researchers also found that cognitive performance of the mice treated with CART cells could be restored by giving the animal a drug that blocks an immune system protein called CCR3.

Nature, Volume 641, pg 825, May 2025

Making Hydrogen with Soda Cans and Seawater is Scalable and Sustainable

MIT engineers have developed a new aluminum-based process which could significantly shrink the carbon footprint associated with making hydrogeno producing hydrogen gas that they are testing on a variety of applications including an aluminum-powered electric vehicle. The group recently designed a small reactor, about the size of a water bottle that takes in aluminum pellets and seawater to generate hydrogen, enough to power an electric bike for several hours. They previously demonstrated that the process can produce enough hydrogen to fuel a small car. The team is also exploring underwater applications, and are designing a hydrogen reactor that would take in surrounding seawater to power a small boat or underwater vehicle.

www.techxplore.com, June 3, 2025

Centre Welcomes

JSS Science and Technology University (JSS STU), Mysuru, India
As a New Member of the NAM S&T–Industry Network

The NAM S&T Centre warmly welcomes the JSS Science and Technology University, Mysuru, India as an esteemed member of the NAM S&T - Industry Network.

JSS STU is built on a strong reputation of SJCE, Mysuru, and passionately committed for providing education in Science, Technology, Engineering & Mathematics (STEM) and Management. It is steadfast to find solutions to some of the great challenges of our time through scientific research and technological innovations. JSS STU is the second University established by JSS Mahavidyapeetha, besides the JSS Academy of Higher Education and Research; a health science focused deemed University at Mysuru. JSS STU plays a key role in providing high quality skilled manpower in the fields of Science, Engineering & Technology and Management to transform the society through research and innovation. JSS STU is committed to deliver quality education at all levels and provide opportunities for aspiring youth to meet the global needs of society in every sector.

Joint NAM S&T Centre - JSS STU, Mysuru, India
A New Fellowship Programme - 2025

The NAM S&T Centre is pleased to invite applications, for the first time, from suitable candidates, for the **"Joint NAM S&T Centre – JSS STU, Mysuru, India Fellowship Programme"**, for the year **2025**.

The NAM S&T Centre in collaboration with the JSS Science and Technology University (JSS STU), Mysuru, Karnataka, India, in follow up of the Memorandum of Understanding signed between the two sides has initiated a **"Joint NAM S&T Centre – JSS STU Fellowship Programme"** to provide opportunities to scientists, researchers and academicians of its Member Countries and Members of the NAM S&T – Industry Network (list of Member Countries and Network Members can be found on the Centre's website; www.namstct.org) to affiliate with JSS STU and its constituent units in various fields of Science, Technology, Engineering and Management.

This Fellowship Programme is offered to scientists and researchers of the NAM S&T Centre Member Countries and its S&T-Industry Network Members to affiliate with the JSS Science and Technology University (JSS STU), Mysuru, Karnataka, India [www.jssstuniv.in] and its constituent units ***for a period of six weeks to work in the areas of Science, Technology, Engineering and Management and enhance research skills, facilitate the exchange of information and contacts and create a network between scientists and researchers from India and other developing countries.***

The objective of this Fellowship Programme is to provide opportunities to the scientists and researchers from the NAM and other developing countries for working in JSS STU, facilitate international research collaborations and to strengthen scientific, technological and academic networking between the NAM S&T Centre and JSS STU.

Up to 5 scientists, researchers or academicians from the Member Countries and S&T-Industry Network Members of the NAM S&T Centre will be sponsored annually to conduct short-term research at JSS STU and its constituent institutes under this Joint Fellowship Programme.

The last date for submission of applications for the Fellowship Programme is **August 29, 2025**.

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

For further details, please visit at the Centre's Website - www.namstct.org.

New Publication

Combating Plastic Pollution in Terrestrial Environment– Challenges and Strategies for a Sustainable Future

At present, the world is witnessing an alarming increase in plastic pollution, particularly in terrestrial environments. The consequences of plastic pollution are far-reaching, affecting ecosystems, human health, and the global economy. The growing challenges require urgent attention, innovative strategies, and a concerted global effort to mitigate its devastating effects. Considering this, the NAM S&T Centre has brought out the publication titled "**Combating Plastic Pollution in Terrestrial Environment - Challenges and Strategies for a Sustainable Future"** edited by S. Suriyanarayanan, Shivaraju H. P. (India), and Kandiah Pakeerathan (Sri Lanka)

The book features contributions from scientists and researchers across nine countries highlighting the pressing challenges posed by plastic waste and showcasing effective management techniques. Through its 25 chapters, the book provides an extensive overview of the sources and various types of impacts of plastic pollution and exploring the innovative reuse of plastic waste. The chapters delve into various strategies for combating plastic pollution, including microbial degradation, community initiatives and advanced technological solutions, thereby offering a holistic view of the issue.

The book not only serves as a resource for understanding the scope of plastic pollution but also aims to inspire action and collaboration among researchers, policymakers, environmental professionals and students.

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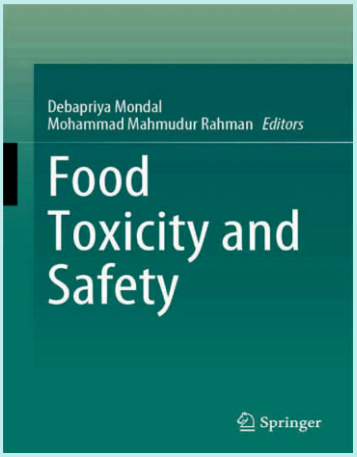
New Publication



Food Toxicity and Safety

Globally, food safety due to chemical contamination is a very big public health concern and emerging as a new challenge to the scientific community. The issue of food safety is considered as a shared responsibility amongst different national authorities and requires a multi-sectoral approach to be addressed across all levels of the food chain.

Considering the scientific importance of the subject, the **NAM S&T Centre**, New Delhi has brought out the book titled "**Food Toxicity and Safety"** edited by Debapriya Mondal (UK) and Mohammad Mahmudur Rahman (Australia). The book addresses the serious issue of food safety and toxicology and put food hazards and their associated human health risks in a true perspective. The book comprises 15 chapters contributed by scientists and experts from countries including Australia, India, Peru, USA, UK and Zimbabwe. Through four sections of the book, it deals with the issues such as challenges in food safety, heavy metal contaminations in food, highlighting arsenic contamination in the food and food chain system and the way forward.

The book is an informative source of reference to the researchers and scientists working in the area of food science and technology, food regulators, policymakers, producers, healthcare providers, educators, consumers and other stakeholders.

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

Meeting with Dr. The Hon'ble Kaviraj Sharma Sukon, Hon'ble Minister, Ministry of Tertiary Education, Science and Research, Mauritius

Dr. Amitava Bandopadhyay, Director General, NAM S&T Centre, New Delhi visited Mauritius during April 17-18, 2025 to attend the International Workshop on *"Role of Women in Science, Technology and Innovation in the Global South"* jointly organized by the NAM S&T Centre and the Ministry of Tertiary Education, Science and Research, Govt. of Mauritius. Dr. Bandopadhyay took this opportunity to meet Dr. The Hon'ble Kaviraj Sharma Sukon, Minister of Tertiary Education, Science and Research, Mauritius in his office. Prof. Dr. Kiran Bhujun, Director, Tertiary Education, Science and Research, Mauritius and Mr. Sunil Kumar, Accounts Manager, NAM S&T Centre were also present during the meeting.

During the discussion, Dr. Bandopadhyay briefed the Hon'ble Minister about various ongoing and recent scientific activities of the NAM S&T Centre including the scientific programmes such as International Workshops/Conferences; Training Programmes and Training Workshops in the areas of relevance to the developing world. He also highlighted a few key initiatives of the Centre such as publication of Books/Monographs and Fact Files, Fellowship Programmes etc. Dr. Bandopadhyay also briefly highlighted the contents of more than 10 Books/Monographs that have published by the Centre through the leading International Publisher, Springer Nature, Singapore.

The Hon'ble Minister briefly discussed various areas of Science & Technology that are important for Mauritius including Blue Economy. In response, Dr. Bandopadhyay proposed to jointly organize an International Workshop on **"Blue Economy"** by the NAM S&T Centre in collaboration with the Ministry of Tertiary Education, Science & Research in March/April 2026. The proposal was in principle accepted.

The Hon'ble Minister in his capacity as President of the Governing Council of the NAM S&T Centre released the recently published Monograph on **"Severe Storms: Anatomy, Early Warning Systems and Aftermath in Changing Climate Scenarios"** published by Springer Nature, Singapore.

Meeting with Prof. Dilip Subba, Vice Chancellor, Nepal Academy of Science and Technology (NAST), Lalitpur, Nepal

Dr. Amitava Bandopadhyay, Director General, NAM S&T Centre, New Delhi visited NAST, Nepal during May 6-8, 2025 to attend the International Conference on *"Science and Technology Information Management System: Practices and Experiences"* jointly organized by NAST, Nepal and NAM S&T Centre in Kathmandu, Nepal during May 7-9, 2025. Dr. Bandopadhyay met Prof. Dilip Subba, VC, NAST during the Conference and had wide ranging discussions on areas of S&T collaboration between the two sides. Based on the discussion, Prof. Subba also agreed to jointly publish a Fact File on *"Life in the Himalayas"*. In addition, NAST will also contribute an article on "S&T Activities of NAST" for publication in the NAM S&T Newsletter. Dr. Bandopadhyay also met Dr. Rabindra Prakash Dhakal, Secretary, NAST and other senior officials of NAST to explore other possible areas of collaboration with Nepal Academy of Science and Technology.

8th ASTECHNOVA International Energy Conference 2025 – "Beyond Net Zero: Pathway to Climate Energy Positive"

8-9 October 2025 in **Yogyakarta, Indonesia**

The Department of Nuclear Engineering & Engineering Physics, Faculty of Engineering, **Universitas Gadjah Mada, Indonesia** in association with the **Non-Aligned Movement Centre for South-South Technical Cooperation (NAM CSSTC), Jakarta, Indonesia**; and the **Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi**, is organising **the 8th ASTECHNOVA International Energy Conference 2025** - "**Beyond Net Zero: Pathway to Climate Energy Positive**", during **8-9 October 2025** in **Yogyakarta, Indonesia.** NAM S&T Centre has joined the event as a scientific partner.

The Conference aims to identify and address the issues and challenges due to fossil resource shortages, discuss the emerging innovations to ensure sustainable energy security and strengthen partnerships among universities, industries and government institutions.

The NAM S&T Centre has nominated three distinguished experts: (i) **Dr. S. Suriyanarayanan,** Associate Dean (Research), JSS Science and Technology University, Mysuru, Karnataka, India; (ii) **Mr. Dinesh Kumar AN,** Joint Director, Energy Management Centre, Department of Power, Govt. of Kerala, Thiruvananthapuram, Kerala, India; and (iii) **Dr. Rabindra Prasad Dhakal,** Secretary, Nepal Academy of Science and Technology (NAST), Lalitpur, Nepal – to deliver keynote lectures on the subject during the Conference.

FACT FILE

Fact File: Circular Economy for Inclusive and Sustainable Development in the Global South


Document No. STI-FF/08/2025

A Fact File on

CIRCULAR ECONOMY

for

Inclusive and Sustainable Development in the Global South

[A Joint Publication of the NAM S&T Centre and Universiti Kebangsaan Malaysia (UKM)]

FROM THE DG'S DESK

(Amitava Bandopadhyay)

Overview

Introduction

Circular Economy (CE) is a sustainable development approach that emphasizes reducing waste and conserving resources through reuse, recycling and repair, particularly crucial for the Global South. It offers solutions to pressing issues like environmental degradation, resource scarcity, social inequality and inadequate infrastructure, all of which are worsened by rapid urbanization and dependence on extractive industries.

CE replaces the traditional linear 'take-make-dispose' model with closed-loop system that extends product lifecycles, lowers ecological impacts and promotes economic resilience. However, its implementation is challenged by weak policies, limited technological infrastructure, lack of financing, especially for small and medium enterprises and the exclusion of informal waste workers. Despite these challenges, successful initiatives in Rwanda, Kenya, South Africa and Latin America show CE's promise. These include plastic bag bans, recycling laws and renewable energy adoption, demonstrating CE's potential to create jobs, enhance public health and support inclusive and sustainable growth.

Recognizing the critical importance of CE for sustainable and inclusive progress, the NAM S&T Centre has released its eighth Fact File titled **'Circular Economy for Inclusive and Sustainable Development in the Global South'**. The Fact File has been conceptualized and edited by Dr. Umawathy Techanamurthy, Senior Lecturer, Department of Engineering Education, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malayasia, Selangor, Malaysia. The document provides a complete analysis of CE, covering its environmental, economic and social impacts; draws on regional insights, policy frameworks and grassroots innovations from Africa, Asia and Latin America and outlines the practical strategies for successful implementation of CE in developing countries.

Fellowship Awardees

JOINT NAM S&T CENTRE- JSS AHER FELLOWSHIP-2025

The NAM S&T Centre announced the "Joint NAM S&T Centre – JSS AHER, Mysuru, India Fellowship Programme" in collaboration with JSS Academy of Higher Education & Research (JSS AHER), Mysuru, India. For 2025, the Centre has received a good number of applications and the following five candidates have been selected to undertake research in Science, Technology, Engineering and Medicine for up to 6 weeks at affiliated institutes of JSS AHER:

Egypt — **Dr. Mohammed Kamal Abdelalem Rashed,** Doctoral Researcher, Environmental Virology Lab, Water Pollution Research Department, Environment and Climate Change Research Institute, National Research Center (NRC), Giza, **Egypt**
Research Guide: **Dr. Akila Prashant,** Professor & Head, Department of Biochemistry, JSS Medical College, Mysuru, Karnataka, India

Indonesia — **Ms. Agustin Herliatika,** Researcher, Research Centre for Animal Husbandry, Organization Research for Agriculture and Food, National Research and Innovation Agency (BRIN), Bogor, **Indonesia**
Research Guide: **Dr. Archer Ann Catherine**, Assistant Professor, Department of Microbiology, JSS AHER, Mysuru, Karnataka, India

Malaysia — **Mrs. Nur Syafiqah Farhanah,** Ph.D. Scholar, Department of Chemical Engineering and Process, Faculty of Engineering and Built Environment, University Kebangsaan Malaysia, Selangor, **Malaysia**
Research Guide: **Dr. Siddesha J M,** Assistant Professor, Division of Biochemistry, School of Life Sciences, JSS AHER, Mysuru, Karnataka, India

Mauritius — **Dr. Chandra Tatsha Bholah,** Lecturer, University of Technology, **Mauritius**
Research Guide: **Dr. M.V.S.S.T. Subba Rao**, Professor, Department of Biochemistry, JSS Medical College, Mysuru, Karnataka, India

Sri Lanka — **Lieutenant Commander Anuruddha Heenatigala,** Chief Coordinator, Nano and Modern Technology Wing, Centre for Defense Research and Development, Pitipana, Homagama, **Sri Lanka**
Research Guide: **Dr. Gurubasavaraj V Pujar**, Professor, Department of Pharmaceutical Chemistry, JSS College of Pharmacy, Mysuru, Karnataka, India

JOINT NAM S&T CENTRE-ZMT BREMEN FELLOWSHIP-2025

The "Joint NAM S&T Centre–ZMT Bremen Fellowship Programme", initiated in 2008, offers an opportunity to scientists from developing countries to affiliate with the Leibniz Centre for Tropical Marine Research (ZMT), Bremen, Germany, in order to upgrade their research skills and conduct joint research in Ecology, Biogeochemistry, Modelling and Tropical Coastal Marine Systems. Research proposals focusing on the Blue Economy were highly encouraged.

For 2025, the Centre has received a fairly good response with an ample number of applications. The following five candidates have been sponsored under the Fellowship to undertake research at ZMT, Bremen, for up to 3 months:

Bangladesh — **Dr. Mohammad Atique Rahman,** Associate Professor, Department of International Relations, University of Dhaka, **Bangladesh**
Workgroup Leader: **Prof. Dr. Raimund Bleischwitz**, Scientific Director, ZMT, Bremen, Germany

India — **Mr. Soumya Kanta Nayak,** Senior Research Fellow, Hydrogeology & Env. Geochemistry Group, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, **India**
Workgroup Leader: **Prof. Dr. Nils Moosdorf**, Workgroup Leader "Submarine Groundwater Discharge"; Professor for Coastal Hydrogeology, Kiel University, Germany

Indonesia — **Dr. Lusita Meilana,** Researcher, Center for Coastal and Marine Resources Studies (CCMRS), International Research Institute for Maritime, Ocean and Fisheries (i-MAR), IPB University, Bogor, **Indonesia**
Workgroup Leader: **Prof. Dr. Achim Schluter**, Institutional and Behavioral Economics, ZMT, Bremen, Germany

Kenya — **Ms. Allela Abbie Akinyi,** PhD Scholar/Adjunct Lecturer, Egerton University, Nakuru, **Kenya**
Workgroup Leader: **Dr. Véronique Helfer**, Senior Scientist/Mangrove Ecology, ZMT, Bremen, Germany

Malaysia — **Dr. Noorjima Binti Abd Wahab,** Lecturer/Graduate, Coordinator in Faculty of Applied Social Sciences, University Sultan Zainal Abidin (UniSZA), Terengganu, **Malaysia**
Workgroup Leader: **Dr. Annette Breckwoldt**, Senior Scientist, Co-Lead Programme Area 5: Ocean Literacy, Equity and Leadership, ZMT, Bremen, Germany

Distinguished Visitors to the Centre

Mr. Vedanand Bhurosah, Assistant Director, Tertiary Education and Scientific Research, Ministry of Tertiary Education, Science and Research, Republic of Mauritius.

Dr. V. N. Manjunath Aradhya, Dean (Research); and **Prof. Dr. S. Suriyanarayanan**, Associate Dean (Research), JSS Science and Technology University (JSS STU), Mysuru, Karnataka, India

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

Research Completion Report of Dr. Deegendra Khadka (NEPAL)

Dr. Deegendra Khadka, Senior Scientific Officer at Nepal Academy of Science and Technology (NAST), Lalitpur, Nepal successfully completed his research under the Joint NAM S&T Centre – JSS AHER, Mysuru, India Fellowship Programme, 2024. The study "**Anti-hyperglycemic Activity of *Rhododendron arboretum* Flower Extract on Streptozotocin-induced Diabetic Mice**"was carried out under the expert guidance of **Dr. M.V.S.S.T. Subba Rao**, Professor of Cellular & Molecular Biology, CEMR Laboratory, Department of Biochemistry, JSS Medical College, JSS Academy of Higher Education & Research (JSS AHER), India at the Center of Excellence in Molecular biology and Regenerative medicine (CEMR) Laboratory, JSS AHER, Karnataka, India.

The research investigated the anti-hyperglycemic effects of *Rhododendron arboreum* flower extracts (NA4 and NA5) in *streptozotocin* (STZ)-induced diabetic mice. The flowers, collected from the high-altitude Manaslu region of Nepal, were processed and administered to experimental groups of *Swiss albino* diabetic mice. The study showed that both extracts significantly reduced fasting blood glucose levels, indicating strong anti-diabetic potential without notable toxicity.These findings support the traditional use of *R. arboreum* in managing metabolic disorders and highlight it as a natural alternative for diabetes treatment.

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

Research Completion Report of Dr. W.J.A.B.N. Jayasuriya (SRI LANKA)

Dr. W.J.A.B.N. Jayasuriya, a researcher from Sri Lanka, successfully completed her research under the Joint NAM S&T Centre – ZMT Bremen, Germany Fellowship Programme, 2024, conducted within the thematic framework of **"Blue Economy in Tropical Coastal Marine Research"**. The study *"***Effect of Changes in Temperature, Light Intensity and UV Exposure on Jellyfish *Cassiopea andromeda*"**was conducted under the expert supervision of **Dr. Andreas Kunzmann**, Head of the Working Group Ecophysiology at the Leibniz Centre for Tropical Marine Research (ZMT), Bremen, Germany.

The project focused on assessing the physiological and biochemical responses of the 'upside-down jellyfish' (*Cassiopea Andromeda)* and its symbiotic algae (*Symbiodinium*) to various environmental stress conditions, including reductions in water temperature, changes in light intensity and exposure to UV-B radiation. Experiments were carried out at 'the Marine Experimental Ecology' (MAREE) facility in a controlled indoor aquaculture system.

Results of the study revealed that environmental stress significantly influenced the jellyfish's key physiological parameters, including diameter, wet weight and bell pulsation rate, with notable reductions under high light and UV conditions. Photosynthetic efficiency increased under low light treatment in both juvenile and adult jellyfish, while exposure to UV radiation led to a marked decline. Further analysis showed that higher *zooxanthellae* counts and *chlorophyll* concentrations were positively correlated with photosynthetic performance, although a weak correlation was found between wet and dry weights. These findings also suggest that *C. andromeda* may adapt to environmental changes by modulating symbiont density and pigment content.

Centre Announces

International Workshop on
ENERGY EFFICIENCY, CONSERVATION AND TRANSITION FOR ACHIEVING NET ZERO AND SUSTAINABLE DEVELOPMENT GOALS
September 9-10, 2025
Thiruvananthapuram, Kerala, India.

Energy efficiency, conservation and the transition to sustainable energy systems are critical for achieving Net Zero emissions and realizing the Sustainable Development Goals (SDGs) outlined by the United Nations. According to the International Energy Agency (IEA), energy efficiency improvements are one of the most immediate and cost-effective measures for reducing global carbon emissions, which is crucial for achieving both climate goals and improving energy affordability.

With the urgency to combat climate change, achieving energy efficiency and conservation – a sustainable energy transition has become a global priority. However, developing countries face distinct challenges with limited access to modern technologies, financial constraints and the need to balance social and environmental goals; these nations require tailored solutions.

In order to deliberate on the above issues, the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (**NAM S&T Centre**), New Delhi, India, in collaboration with the Energy Management Centre (**EMC**), Kerala, India [the State Designated Agency to enforce the Energy Conservation Act 2001, Department of Power, Government of Kerala] is organizing an **International Workshop** on "***Energy Efficiency, Conservation and Transition for Achieving Net Zero and Sustainable Development Goals***" during **9-10 September 2025** in **Thiruvananthapuram, Kerala, India**.

Researchers, scientists, innovators, government officials, policymakers, legal experts and representatives from industry and non-government organizations are invited to participate in this Workshop. Experts engaged in energy efficiency, conservation and transition strategies will find this Workshop particularly beneficial. All those desirous for participating in the Workshop, **except those from India,** should submit their applications **electronically** to the Director General, NAM S&T Centre, New Delhi at e-mail: **namstcentre@gmail.com**. However, **applicants from India** should submit their requests directly to **Mr. Dinesh Kumar AN,** Joint Director, Energy Management Centre, Kerala, India at e-mail: **emck@keralaenergy.gov.in**.

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

Centre Announces

International Training Workshop on
STI POLICY: ARTIFICIAL INTELLIGENCE FOR CLIMATE LEARNING FUTURES
September 22-25, 2025
Malang, Indonesia

The escalating impacts of climate change - ranging from severe floods to prolonged droughts highlight the urgent need for informed and anticipatory actions. At the core of this challenge is climate literacy, which enables individuals to understand, evaluate and act on climate-related information. However, climate literacy remains underdeveloped, especially in the Global South, where access to high quality educational tools and locally relevant resources are limited, hindering meaningful progress.

At the same time, generative AI technologies like ChatGPT are rapidly transforming how people access and process information, offering scalable, personalized learning opportunities. These tools hold immense potential for advancing climate change education. AI's ability to support climate literacy is well known, but there are challenges too like misinformation, cultural and linguistic bias and regional accuracy gaps. There is need for intentional design, governance and policies to ensure AI-enabled climate education is ethical, inclusive and impactful.

In view of the above, the Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre); New Delhi, India in partnership with the International Science, Technology and Innovation Centre for South-South Cooperation under the auspices of UNESCO (ISTIC), Kuala Lumpur, Malaysia; and the Universitas Negeri Malang (UM), Malang, Indonesia, announces the organization of an International Training Workshop on **"STI Policy: Artificial Intelligence for Climate Learning Futures"** during **22-25 September, 2025** in **Malang, Indonesia.** The Training Workshop will be hosted by Universitas Negeri Malang, Indonesia.

Applications for participation in the Training Workshop (except from Indonesia) may please be sent to the Director General, NAM S&T Centre, New Delhi at e-mail: **namstcentre@gmail.com** as early as possible. Applicants from Indonesia should, however, submit their requests only to the Universitas Negeri Malang (UM) at e-mail: **ketua.lp2m@um.ac.id**.

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