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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)

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FROM THE DG'S DESK

Season's Greetings to all our readers for a happy and prosperous New Year 2026!

As we come to the end of 2025, I am pleased to present a brief overview of the major achievements of the NAM S&T Centre during the last quarter of the year.

An International Conference on "**Heat and Heatwave Trends and their Health Implications in the Global South**" was organised by the Centre in partnership with the JSS Science & Technology University (JSS STU), Mysuru, India, and the Scientific Committee on Problems of the Environment (SCOPE), the Netherlands, during 6-7 November 2025 in Mysuru. The Centre also organised an International Workshop on "**Clean Water and Sanitation in the Developing World: Perspectives, Best Practices and Future Challenges**" in collaboration with the Indian Ocean Rim Association Secretariat, Mauritius, during 20-21 November 2025 (virtual mode).

The NAM S&T Centre was one of the partners in the organisation of the Conference "***ASTECHNOVA 2025***", held during 8-9 October 2025 in Yogyakarta, Indonesia, and nominated three subject experts to represent the Centre and deliver invited lectures at the Conference. The event addressed various issues related to energy security and sustainability to achieve net-zero targets.

In pursuance of its objective of S&T knowledge creation and dissemination, the Centre published two more fact files on: (i) "**Change Management in Higher Education: Perspectives from Developing Countries**" in collaboration with JSS Academy of Higher Education & Research (JSS AHER), Mysuru, India; and (ii) "**Bone Diseases and Disorders in the Global South: Challenges and Prevention**" jointly with JSS AHER, Mauritius.

As our continued commitment to nurture young researchers and foster meaningful academic exchange, five researchers from member countries were selected under the "*Joint NAM S&T Centre - JSS STU Fellowship Programme 2025*". For 2026, the Centre is pleased to invite applications for its three Fellowship Programmes for affiliation at – (i) ZMT, Bremen (Germany); (ii) JSS AHER, Mysuru (India); and (iii) University of Malang (Indonesia).

We are also delighted to announce three upcoming international events: (i) "**Promoting Blue Economy and Overcoming its Implementation Challenges**", 26-27 March 2026, Mauritius; (ii) "**Generic Drugs: Science, Technology, Regulatory Issues and Societal Dimensions in the Developing World**", 23-24 April 2026, Mysuru, India; and (iii) "**Lifestyle Diseases in the Developing World: Perspectives, Current Status and Future Challenges**", 14-15 May 2026, Mauritius.

Needless to mention, our progress is made possible through the unwavering support of our Member Countries, Network Members, partner institutions, and esteemed readers. As we step into 2026 with renewed purpose and determination, we look forward to deeper collaborations and impactful knowledge dissemination across the Global South.

Happy Reading!

(Amitava Bandopadhyay)
Director General

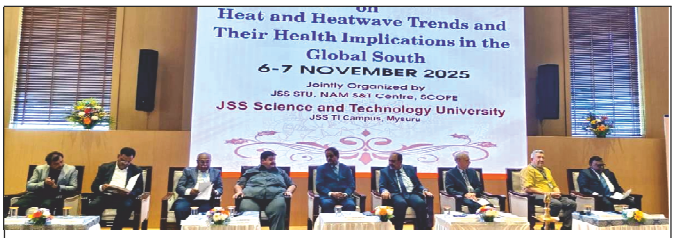
Centre Organised

International Conference on

Heat and Heatwave Trends and their Health Implications in the Global South

Mysuru, Karnataka, India 6-7 November 2025

Extreme heat and heatwaves have emerged as major climate-related health threats worldwide, contributing to rising mortality and exacerbating cardiovascular, respiratory, metabolic and mental health conditions. The World Health Organization (WHO) identifies heat stress as a leading climate-sensitive cause of death, with risks expected to intensify due to ongoing climate change. Vulnerability to heat varies significantly across age groups, pre-existing health conditions, occupational exposure and socio-economic contexts, underscoring the need for targeted, equitable and evidence-based interventions.



Inauguration of the International Conference on Heat and Heatwave Trends and their Health Implications in the Global South

(Contd. on page 2)

International Workshop on

Clean Water and Sanitation in the Developing World: Perspectives, Best Practices and Future Challenges

20-21 November 2025 [Virtual Mode]

Access to clean water and adequate sanitation is a basic human need and essential for sustainable development. However, millions in the developing countries do not have access to clean drinking water and proper sanitation, leaving them highly vulnerable to waterborne diseases. Addressing these challenges requires not only technological innovations but also inclusive policies, community participation and sustainable approaches to water management.

Participants of the International Workshop on Clean Water and Sanitation in the Developing World

(Contd. on page 4)

(Contd. from Page 1 - Intl Conf. on Heatwaves...., Mysuru, India)

In response to these challenges, the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi, in partnership with the JSS Science and Technology University (JSS STU), Mysuru, Karnataka, India; and the Scientific Committee on Problems of the Environment (SCOPE), Delft, the Netherlands, organized an International Conference on **'Heat and Heatwave Trends and their Health Implications in the Global South'** from 6-7 November 2025 in Mysuru, Karnataka, India aiming to strengthen South–South cooperation and promote knowledge sharing on climate resilience, heatwave adaptation and public health preparedness. The Conference brought together over 130 participants including scientists, researchers, policymakers, academicians and students from **Egypt, India, Indonesia, Kenya, Malaysia, Mauritius, Nepal, Norway, South Africa** and **Sri Lanka.** The two-day event featured 7 thematic sessions, over 40 presentations and a panel discussion.

The Inaugural Ceremony commenced with a Welcome Address by **Dr. S.A. Dhanaraj**, Registrar, JSS STU, Mysuru, India.

The Convenor of the Conference, **Dr. V.N. Manjunath Aradhya**, Dean (Research), JSS STU provided an overview of the thematic sessions of the Conference.

Dr. C.G. Betsurmath, Executive Secretary, JSS Mahavidyapeetha, Mysuru, India, in his remarks, expressed gratitude to the dignitaries and warmly welcomed the participants. He highlighted the Karnataka Heat Action Plan and emphasized the adverse effects of heat stress on urban infrastructure and workforce productivity, calling for adaptive strategies aligned with sustainable development.

Lightning of the Lamp by the distinguished Dignitaries and Guests

The Chief Guest, **Dr. Jon Samseth**, President, SCOPE, the Netherlands conveyed heartfelt appreciation to the organizers and extended a warm welcome to all delegates. He pointed out that heatwaves act as 'stress sensors' within ecosystems and that the Global South, with its dense population, faces disproportionate impacts. He commended the collaborative efforts of the NAM S&T Centre, JSS STU and SCOPE in organizing the timely event.

Dr. Amitava Bandopadhyay, Director General, NAM S&T Centre, New Delhi, welcomed the delegates and outlined the Centre's mission to promote South-South cooperation in science and technology. He highlighted that extreme heat and heatwaves have become major climate-induced hazards, especially for developing nations and stressed the need for policy-relevant actions to strengthen public health systems and build climate resilience.

During the inaugural session, the Fact File titled "**Change Management in Higher Education: Perspectives from Developing Countries**" jointly prepared by the JSS Academy of Higher Education & Research, Mysuru, India and the NAM S&T Centre was released, marking an important contribution to discourse on higher education in developing countries.

Release of the Fact File "Change Management in Higher Education: Perspectives from Developing Countries"

Dr. Neville Sweijd, ACCESS Director; Associate Professor, School for Climate Studies, the University of Stellenbosch, South Africa; and Vice-President, SCOPE expressed appreciation to the dignitaries and encouraged young researchers to take proactive actions against climate-induced challenges.

Dr. A.N. Santosh Kumar, Vice Chancellor, JSS STU, Mysuru, in his inaugural address, welcomed the participants and extended heartfelt thanks to Dr. Jon Samseth and Dr. Amitava Bandopadhyay for their constant support in organizing this Conference.

The Conference was organised into 7 Technical Sessions, including 7 Keynote Lectures, 13 Paper Presentations and 28 Flash (brief) Presentations.

Technical Session I - *Climate Dynamics and Regional Heatwave Trends*, and Technical Session II - *Heat Islands and Built Environment Resilience* were respectively chaired and co-chaired by **Dr. Sadashiva Murthy BM** & **Dr. Shivaraju HP** and **Dr. Pushpa Tuppad** & **Dr. Pallavi N**. Two parallel sessions under Technical Session III - (a) *Climate Dynamics and Regional Heatwave Trends and Climate Finance and Policy for Heatwave Adaptation,* and (b) *Urban Heat Islands and Built Environment Resilience* were respectively chaired and co-chaired by **Dr. A. S. Unnikrishnan** & **Dr. Nagashree S** and **Dr. M. Govindaraju** & **Dr. Bindya S**. Technical Session IV - *Climate Finance and Policy for Heatwave Adaptation*, and Technical Session V - *Heatwave Preparedness, Early Warning and Public Health* were respectively chaired and co-chaired by **Dr. N. S. Raju** & **Dr. Nanjundasamy** and **Dr. Rachmawan Budiarto** & **Dr. Savitha U. Ulavi.** Two parallel sessions under Technical Session VI - (a) *Heatwave Preparedness, Early Warning and Public Health*, and (b) *Symposium on Environmental Change, Heat and Health* were respectively chaired by **Dr. N. Kumara Swamy** and **Dr. Vishishtta Nagaraj.** Technical Session VII - *Symposium on Environmental Change, Heat and Health* was respectively chaired and co-chaired by **Dr. Anil S Bilimale** & **Dr. Sawant Sushant Anil.**

Keynote Lecture I - *Climate and Health – The Integration of Concepts and Scales* was delivered by **Dr. Neville Sweijd**, ACCESS Director; Associate Professor, School for Climate Studies, the University of Stellenbosch, South Africa. Keynote Lecture II - *Heat Wave Trends and Climate Adaptive Heat Action Plans in South Asia* was delivered by **Mr. Rohit Magotra**, Director of Integrated Research and Action for Development (IRADe), New Delhi, India. Keynote Lecture III - *Marine Heatwaves, Sea Level Rise in the Indian Ocean* was delivered by **Dr. A. S Unnikrishnan**, Retired Chief Scientist, Physical Oceanography Division, CSIR-National Institute of Oceanography, Goa, India. Keynote Lecture IV - *India Will Bear the Brunt of Extreme Heat Conditions-How Can Media's Representations of this Issue Spur Climate Action?* was delivered by **Dr. Deepti Ganapathy**, Visiting Assistant Professor, Management Communication, IIM Bangalore, India. Keynote Lecture V - *Building Heat-Health Resilience in India* was delivered by **Mr. Abhiyant Tiwari**, Lead-Health & Climate Resilience, NRDC India Private Limited, New Delhi, India. Keynote Lecture VI - *Heatwave Early Warning System and Heat Action Plans in South Asia* was delivered by **Dr. Someshwar Das**, Secretary, South Asian Meteorological Association (SAMA), Former Scientist-G and Advisor, Ministry of Earth Sciences, New Delhi, India. Keynote Lecture VII - *Burning Inequity: The Unequal Burden of Rising Heat* was delivered by **Dr. Vidhya Venugopal**, Professor, Occupational and Environmental Health, Sri Ramachandra Institute of Higher Education and Research, Chennai, India..

In addition, 13 paper presentations were delivered by experts from 8 countries namely Egypt, India, Indonesia, Kenya, Malaysia, Mauritius, Nepal and Sri Lanka.

Dr. Nesrin Ahmed Abbas Abuzeid, Associate Professor, FinTech Program, Faculty of Administrative Sciences, Galala University (GU), Egypt presented a paper on *Bridging Climate Finance and Heatwave Adaptation: An Economic Resilience Framework for Health Systems in the Global South*.

Dr. Rachmawan Budiarto, Faculty of Engineering, Department of Nuclear Engineering and Engineering Physics, Universitas Gadjah Mada, Yogyakarta, Indonesia presented a paper on *Advancing Green Building Development in Tropical Regions to Mitigate the Impacts of Global Temperature Rise*.

Dr. Peter Tumwet Cherop, Associate Dean and Senior Lecturer, Masinde Muliro University of Science and Technology, Kakamega, Kenya delivered a lecture on *Assessing and Mitigating Urban Heat Island Intensity in the Global South: A Thermodynamic and Engineering Perspective.*

Ms. Siti Famida Binti Zulkifli, Assistant Secretary, Ministry of Science, Technology and Innovation (MOSTI), Putrajaya, Malaysia presented a paper on *Strengthening Science Policy and Research Funding to Address Heatwave Trends and Health Implications in Malaysia.*

Dr. Aruna Poteeram, Regional Public Health Superintendent, Ministry of Health and Wellness - SSRN Hospital, Ebene, Mauritius presented a paper on *Heat Wave and Health Impacts*.

Mr. Pawan Kumar Neupane, Senior Scientific Officer, Nepal Academy of Science and Technology (NAST), Kathmandu, Nepal presented a paper on *Heatwaves in Changing Climate: Emerging Trends, Impacts and Adaptation Needs in Nepal***.**

There were two presentations from Sri Lanka - (i) *A Study of Thermal Comfortability Trends in Colombo Metropolitan City, Sri Lanka* was delivered by **Mr. Hetti Arachchige Saumya Chathuranga Peiris**, Postgraduate Student, Department of Physics, University of Colombo; and (ii) *Public Health Impacts of Extreme Heat and Ayurvedic Prevention and Management of Heat-Related Health Effects* was delivered by **Dr. Kudakapuralalage Manaram Sameera Prasanna Perera**, Medical Officer, Department of Ayurveda, National Ayurveda Hospital.

There were five presentations from India - (i) *HEAT GUARD: Integrating Satellite-Derived Remote Sensing Data and Clinical Records for Machine Learning-Based Heatwave Prediction* was delivered by **Dr. U. Karthikeyan**, Assistant Professor, Department of Computing Technologies, School of Computing, SRM Institute of Science and Technology, Kattankulathur Campus, Chennai; (ii) *Association between Occupational Heat Exposure and Acute Kidney Injury* was delivered by **Dr. Somnath Panda**, Project Scientist-I, Sri Ramachandra Institute of Higher Education and Research, Chennai; (iii) *From Awareness to Action: Effectiveness of Audio-Visual Aids in Primary Health Centre to Reduce Heat-Related Risks in Pregnant Women* was delivered by **Dr. Rekha S**, Project Scientist-I, Sri Ramachandra Institute of Higher Education and Research, Chennai; (iv) *Heat Stress Awareness, Traditional Cooling Food Knowledge, and Health Impacts Among Rural Communities in Tamil Nadu: A Cross-sectional Study* was delivered by **Ms. Akshaya P**, Ph.D. Scholar, Sri Ramachandra Institute of Higher Education and Research, Chennai; and (v) *Migrant vs. Non-Migrant Outdoor Workers: A Comparative Multidimensional Assessment of Heat Vulnerability* was delivered by **Mr. Sajeeth Kumar S**, Research Scholar, Sri Ramachandra Institute of Higher Education and Research, Chennai.

A Panel Discussion was held on *Developing a Strategic Roadmap for Heatwave Resilience and Health Adaptation in the Global South*. The panel experts included were: **Dr. Neville Sweijd** (South Africa), **Dr. Jon Samseth** (Norway), **Dr. Someshwar Das** (Nepal), **Dr. Vidhya Venugopal** (India), **Dr. Deepti Ganapathy** (India) and **Mr. Abhiyant Tiwari** (India). The session was moderated by Dr. Sweijd.

The discussion featured extensive deliberations on the critical challenges and opportunities associated with heatwaves, chronic heat exposure, climate adaptation and resilience, particularly in vulnerable communities across the Global South. In conclusion, the panel collectively emphasized the urgent need for integrated and equitable approaches to heatwave governance, climate resilience and adaptation. Strengthening infrastructure, expanding early warning systems, enhancing observation networks, promoting clean energy transitions and ensuring climate justice emerged as key priorities. The discussion converged on the need for a science-policy-action interface to address heat resilience.

In the Concluding Session, **Dr. S. Suryanarayan**, **Dr. A.N. Santosh Kumar** and **Dr. Amitava Bandopadhyay** expressed their views on the proceedings of Conference and acknowledged the contributions of all participants . In the end, collaborative support of JSS STU, the NAM S&T Centre and SCOPE was gratefully acknowledged in making the Conference a big success.

(Contd. from Page 1 - Intl Workshop of Clean Water....., Mauritius)

Water and sanitation challenges are closely interconnected with social, economic and environmental dimensions of sustainability. In this context, Sustainable Development Goal 6 (SDG 6) - to ensure the availability and sustainable management of water and sanitation for all - provides a global framework for action. Aligning local and national initiatives with SDG 6 target facilitates measurable progress, strengthens resilience and supports the development of sustainable water and sanitation systems for the future.

Recognizing the importance of these issues, the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi in collaboration with the Indian Ocean Rim Association (IORA) Secretariat, Mauritius, organized an International Workshop on "**Clean Water and Sanitation in the Developing World: Perspectives, Best Practices and Future Challenges**" during **20-21 November 2025.** The Workshop was held in **Virtual Mode**.

The Workshop brought together experts, practitioners, researchers and policymakers from countries namely: **France/ Reunion, India, Indonesia, Iran, Mauritius, Myanmar, Sri Lanka, Russia** and **UK**, to deliberate on key challenges, share best practices and explore a way forward in the domain of clean water and sanitation.

The Master of Ceremony for the event was **Ms. Zelda Vrolick**, Director, IORA Secretariat, Mauritius. Ms. Zelda Vrolick delivered the **Welcome Remarks** and provided a brief overview of the Workshop. She outlined the key objectives of the Workshop, highlighting its focus on sharing knowledge, best practices and collaborative approaches to address challenges related to clean water access and sanitation, particularly in developing regions.

In his **Opening Remarks**, **H.E. Mr. Sanjiv Ranjan**, Secretary General, Indian Ocean Rim Association (IORA), warmly expressed appreciation to the NAM S&T Centre for its collaboration and highlighted IORA's strong partnership with the Centre in promoting science, technology and innovation towards sustainable development.

Dr. Amitava Bandopadhyay, Director General of the NAM S&T Centre, in his remarks, highlighted that the Workshop brought together researchers, policymakers, practitioners and other key stakeholders from developing countries to exchange knowledge and promote sustainable, affordable and inclusive water and sanitation solutions. He acknowledged the strong and growing partnership between the NAM S&T Centre and IORA, recalling previous successful joint workshops and expressing confidence in further collaboration in the coming years. Dr. Bandopadhyay also underlined the active participation of Mauritius, which is a member of both NAM S&T Centre and IORA and currently holds the Presidency of the NAM S&T Centre.

The Technical Sessions included 1 Special Invited Lecture, 1 Keynote Lecture, 13 Paper Presentations, and a Panel Discussion.

The **Special Invited** Lecture on *Water Reuse* was given by **Prof. Dr. Cecilia Tortajada**, Honorary Professor at the School of Social and Environmental Sustainability, University of Glasgow, UK, and Adjunct Senior Fellow at the Rajaratnam School of International Studies (RSIS), Nanyang Technological University, Singapore. Dr. Tortajada, in her lecture, highlighted that wastewater is an "undervalued resource" and it is highly essential for global water security. She emphasized that while modern technology can safely transform wastewater into treated water, energy, nutrients and biosolids. The transition to a "circular economy" is often delayed due to high costs, regulatory hurdles and psychological barriers related to public acceptance.

The **Keynote Lecture** on *Membrane Bioreactors: A Viable Option for Clean Water and Sanitation as Decentralised Solution* was delivered by **Mr. Swachchha Majumdar**, India. He highlighted how membrane bioreactor technology offers an efficient and sustainable approach to wastewater treatment, particularly in decentralized settings.

Technical Session I - *Innovative Water and Wastewater Treatment Technologies* was focused on novel water treatment methods, decentralized wastewater treatment systems and technological advances for sustainable sanitation. The session was chaired by **Prof. Dr. Cecilia Tortajada**, UK. Technical Session II - *Integrated Water Resource Management (IWRM) and Smart Solutions* was focused on AI, data-driven and integrated approaches for efficient water governance and management. The session was chaired by **Dr. Dominique Maison**, France. Technical Session III - *Water, Sanitation and Human Rights Perspectives* was focused on legal, policy and human rights approaches for equitable water and sanitation access. The session was chaired by **Mr. Mirnal Mungra**, Mauritius. Technical Session IV - *Sustainable Water Access, Energy and Climate Resilience* was focused on renewable energy, climate change adaptation and sustainable technologies for developing regions. The session was chaired by **Dr. S. Suriyanarayanan**, India.

During these technical sessions, 13 papers were presented by experts from 7 countries namely France, India, Indonesia, Iran, Mauritius, Russia and Sri Lanka.

Dr. Dominique Maison, France presented a paper on *Securing Safe Water Management in La Réunion: Challenges and Pathways Forward*.

Prof. Hossein Dehghanisanij, Iran presented a paper on *Climate-Smart Agriculture as a Pathway to Clean Water and Sustainable Livelihoods in Semi-Arid Water-Stressed Regions: Perspectives from Iranian Wetland and Lake Basins*.

Dr. Heni Masruroh, Indonesia delivered a lecture on *Water, Sanitation and Hygiene after Semeru Eruption*.

There were three presentations from Mauritius – (i) *The Right to Water, Sanitation and Hygiene and the Human Rights-Based Approach to Development* was delivered by **Mrs. Bhavna Mahadew**; (ii) *Decentralised Renewable Energy-Powered Water Purification Systems for Sustainable Clean Water Access in Developing Countries* was delivered by **Mr. Mirnal Mungra**; and (iii) *Integrated Approaches to Clean Water and Sanitation in Small Island Developing States: Lessons from The Republic of Mauritius* was delivered by **Dr. Vimi Dookhun**.

Dr. Sergey Belyaev, Russia delivered a talk on *Ecological Rehabilitation of Russian Water Bodies*.

Mrs. Yasoda Swarnapalee Jayasinghe Bandara, Sri Lanka presented a paper on *Water Quality of Selected Market Samples Tested against the Relevant Standard and Understanding of Interconnections between Water Resources, Public Health, Community Well-Being and Science Diplomacy*.

There were five presentations from India – (i) *Development of Robotic Inspection and Mechanized Sewage Cleaning System for Alleviating Manual Scavenging (MANAS)* was presented by **Dr. Partha Das**; (ii) *Innovative Decentralized Wastewater Treatment Systems for Sustainable Sanitation and Resource Recovery* was presented by **Dr. Krishnakumar Bhaskaran**; (iii) *Comprehensive Water Treatment Innovations for Rural, Coastal, and Disaster-Prone Regions* was presented by **Dr. Madhumala Madupathi**; (iv) *A Review of the Use of Artificial Intelligence for the Development of a Smart City through Integrated Water Resource Management and Circular Economy* was delivered by **Dr. Mohammad Usama**; and (v) *Understanding Coastal Biogeochemical Seasonality using INCOIS' Water Quality Nowcasting System* was presented by **Ms. Susmita Raulo.**

A **Panel Discussion** on *Access to Clean Water and Sanitation* was held to deliberate on key challenges, shared experiences and sustainable solutions related to clean water access and sanitation. The panel members included were: **Dr. Dominique Maison** (France); **Dr. Suriyanarayanan** (India); **Dr. Swachchha Majumdar** (India); **Dr. Krishnakumar Bhaskaran** (India); **Prof. Hossein Dehghanisanij** (Iran); and **Dr. Vimi Dookhun** (Mauritius). The Session was moderated by Ms. Zelda Vrolick.

The session concluded with **Closing Remarks** by **Ms. Zelda Vrolick**, IORA Secretariat, Mauritius and **Dr. Amitava Bandopadhyay**, NAM S&T Centre, New Delhi.

Release of the Book

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

The NAM S&T Centre's book on *"Severe Storms: Anatomy, Early Warning Systems and Aftermath in a Changing Climate Scenarios"* co-edited by **Dr. Someshwar Das** & **Dr. Wei-Kuo Tao** and published by Springer Nature, Singapore was formally released at the International Conference on Tropical Metrology (INTROMET 2025) held during 18-20 November 2025 in Pune, India. Prof. Someshwar Das is a Former Adviser, Ministry of Earth Sciences, Govt. of India, New Delhi & Former Chair Professor of Atmospheric Sciences, Central University of Rajasthan, India and Dr. Wei-Kuo Tao is an Emeritus Scientist, NASA/Goddard Space Flight Centre, Greenbelt, Maryland, USA & Chair Professor, National Central University, Taiwan.

The book, covering more than 700 pages, is structured into three parts comprising 26 chapters that presents the 'state-of-the-art' knowledge contributed by the leading experts from 11 countries. The first part of the book comprising 8 chapters provides information on the observational aspects of different types of severe storms. The second part of the book with 12 chapters discusses numerical modeling and data assimilation techniques aimed at development of early warning systems and finally the 6 chapters in the third part of the book provide an outlook of the severe storms in a changing climatic scenario, their socio-economic impacts and policies for disaster mitigation.

Release of the Book "Severe Storms: Anatomy, Early Warning Systems and Aftermath in Changing Climate Scenarios"

Visitor to the Centre

10 December 2025 — **Ms. Kritika N Nuckchady**, Senior Programme Officer, Academic, Science and Technology Cooperation/Tourism and Cultural Exchanges Directorate, Indian Ocean Rim Association (IORA), Republic of Mauritius.

The 8th International Energy Conference

ASTECHNOVA 2025

Beyond Net Zero: Pathways to Climate Positive Energy Systems

Yogyakarta, Indonesia, 8-9 October 2025

Report on Participation of NAM S&T Centre in ASTECHNOVA 2025

The International Conference on *"Beyond Net Zero: Pathways to Climate Positive Energy Systems (ASTECHNOVA 2025)"* was held in Yogakarta, Indonesia during 8-9 October 2025. The event was jointly organized by the Faculty of Engineering, Universitas Gadja Mada (UGM), Yogakarta with support from the International Atomic Energy Agency (IAEA); Thorcon Company; NAM – Centre for South-South Technical Cooperation (NAM – CSSTC), Jakarta, Indonesia and the NAM S&T Centre, New Delhi. The NAM S&T Centre joined the event as a Scientific Partner. The event focused on energy security, sustainability and innovation towards achieving net-zero targets.

NAM S&T Centre Delegation at ASTECHNOVA 2025

The NAM S&T Centre nominated and supported three delegates as Invited/Keynote Speakers – **Dr. Rabindra Prasad Dhakal**, Secretary, Nepal Academy of Science and Technology (NAST), Lalitpur, Nepal; **Dr. S. Suriyanarayanan**, Associate Dean of Research, JSS Science & Technology University (JSS STU), Mysuru, India and **Mr. Dinesh Kumar A. N.**, Joint Director, Energy Management Centre (EMC), Thiruvananthapuran, Kerala, India.

On the first day of the Conference, Panel Session 1 on "**The Role of Nuclear Energy in Net Zero Energy Systems**" was held. The session discussed nuclear technology, safety and policy pathways. It was followed by technical sessions, poster presentations and networking activities.

Second day, featured Panel Session 2 on "**Integrated Strategies for Climate-Positive Energy Transitions**". During the session, three presentations were delivered by the delegates nominated by the NAM S&T Centre: Dr. Rabindra Prasad Dhakal, Prof. Dr. S. Suriyanarayanan, and Dr. Dinesh Kumar A.N. (Online). The session highlighted strategies and case studies on climate-positive transitions and the circular economy, with discussions on waste management, renewable energy deployment, sustainable building technologies, policy frameworks, green industrial policy and community-level initiatives. The contributions of the NAM S&T Centre nominated delegates were well received and generated interest in future collaborations.

Alongside the main Conference, the Department of Nuclear Engineering and Engineering Physics, UGM (the host), held a side meeting to explore potential collaborations with the NAM S&T Centre, JSS STU and NAST. Dr. S. Suriyanarayanan and Dr. Rabindra Prasad Dhakal briefed the faculty on possible areas of cooperation. The Department expressed strong interest in establishing a MoU for academic and research cooperation, particularly in Medical Physics, and in co-developing a joint book on *"Nuclear Energy for Net Zero"* as well as exploring NAM S&T Centre fellowship opportunities.

The later sessions on Day 2 showcased emerging research through parallel technical presentations, followed by a closing ceremony that emphasized stronger university-industry-government partnerships, global research networks and technological innovation for sustainable energy security. Participation in ASTECHNOVA 2025 strengthened linkages with UGM and NAM-CSSTC Indonesia, identified collaboration opportunities in key energy and sustainability areas and enhanced the NAM S&T Centre's visibility in promoting South-South cooperation and future joint initiatives.

The delegates sincerely thanked the NAM S&T Centre, New Delhi, for sponsoring their participation, which provided a valuable platform for knowledge exchange and future collaboration.

Special Feature

COP30 UN CLIMATE CHANGE CONFERENCE - BELÉM, November 2025 - Summary Report

The Belém Climate Change Conference was convened from 10-22 November 2025 in Belém, Brazil. The Conference consisted of the 30th session of the Conference of the Parties (COP30) to the UN Framework Convention on Climate Change (UNFCCC), the 20th meeting of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (CMP 20), the 7th meeting of the Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement (CMA 7), and the 63rd sessions of the Subsidiary Body for Scientific and Technological Advice (SBSTA 63) and the Subsidiary Body for Implementation (SBI 63).

In total, 56,118 people were registered for on-site attendance, including 23,509 delegates from Parties, 13,402 observers, 3,920 members of the media, and 13,948 support and Secretariat staff. Of the observers, 1,007 were guests of the host country, Brazil. Another 5,141 people, comprising 277 delegates from Parties and 4,823 observers, registered for online participation.

During COP30, landmark outcomes emerged from negotiations despite unprecedented geopolitical tensions. The Conference in Belém consolidated political and technical advances. It projected Brazilian leadership and inaugurated a global **mutirão** (collective effort) against climate change. At a moment widely recognized as the most geopolitically challenging and fragile for the Paris Agreement since its adoption a decade ago, COP30 approved a robust package of decisions that fulfilled its three core objectives:

(i) strengthening multilateralism,

(ii) connecting climate multilateralism to people, and

(iii) accelerating the implementation of the Paris Agreement.

COP30 successfully balanced forces between North and South, developed and developing countries, energy and nature, technology and people, commitments and implementation, mitigation and adaptation.

1. Political breakthrough: Brazil elevates the debate on fossil fuels

On the political dimension, Brazil led an unprecedented global debate on the future of fossil fuels. Despite the absence of consensus, with more than 80 countries supporting explicit language and over 80 opposing it, the Brazilian Presidency announced, on its own initiative, processes to develop two key roadmaps:

- Transition to a fossil fuel-free economy in a just, orderly, and equitable manner;
- Forest and Climate Roadmap to halt and reverse deforestation.

2. Formal advances: Strengthening the Paris Agreement and protecting people

The Paris Agreement was strengthened through decisions on emission reduction, climate impact adaptation, and finance, as well as technology and capacity building for developing countries. These decisions reflected ambition gaps revealed by NDCs and a response to the escalating climate urgency.

The formal decisions expanded the rights and inclusion of women, indigenous peoples, and afro-descendant communities, in addition to recognizing the fundamental role of subnational governments in implementing climate solutions. Hosting COP30 in the Amazon region raised global awareness

about the link between nature and climate-with initiatives like the TFFF (Tropical Forests Forever Facility) and a heightened focus on oceans.

3. Turning Point: A global mutirão against climate change

The main formal decision of COP30 issued a historic call for humanity to unite in a global **mutirão** (collective efforts) against climate change, marking a new chapter for the climate regime. By consensus of almost 200 countries, COP30 reaffirmed the strong commitment to the Paris Agreement and formally endorsed a transition from a phase of over three decades, since 1992, centered on complex negotiations, to a new phase focused on real transformations in economies and societies.

4. In response to the climate urgency, COP30 adopted a series of measures to accelerate implementation and international cooperation:

i. Launch of a Global Implementation Accelerator: The Accelerator will prioritize actions with the best potential for scale and speed in the climate fight, including for methane emission reduction and carbon removal through nature-based solutions. Concurrently, it will prioritize interventions that can leverage positive tipping points, such as renewables, batteries, reducing the cost of capital, digitalization, and multilateral bank reform, for exponential and cascading transformations. The Accelerator will work synergistically with the Action Agenda, which reached a new level of actor mobilization, resources, processes, and solutions at COP30.

ii. Tripling of Adaptation Finance: A landmark to support the most vulnerable populations - those least responsible for climate change but most affected by its impacts.

iii. Creation of the Belém Mechanism for Just Global Transition: A new instrument to support countries in ensuring that the transition to sustainable economies is just and inclusive.

iv. Adoption of Voluntary Indicators to measure progress in building resilience, within the framework of the Global Goal on Adaptation.

v. Launch of the Technology Implementation Program (TIP), with a timeline and components to strengthen the implementation of technology priorities in developing countries.

vi. Adoption of the new Gender and Climate Action Plan, with activities to increase the influence of women in combating climate change.

vii. Launch of a sequence of dialogues on international trade and climate.

viii. Launch of a two-year work program on climate finance, focusing on the predictability of public resources from developed to developing countries.

ix. Recognition of the importance of the role of cities, states, and municipalities in climate action.

COP30 concluded with clear manifestations of renewed political commitment and the strengthening of climate multilateralism. The decisions adopted in Belém offer concrete instruments to intensify global action, reinforce the centrality of climate justice, and reaffirm the conviction that only through international cooperation, it will be possible to ensure a safe, resilient, and sustainable future for generations to come.

www.cop30.br/en/news, Nov 23, 2025
www.enb.iisd.org/belem-un-climate-change-conference-cop30

Science, Technology & Innovation News

HEALTH & MEDICINE

UNC Study Supports Wider Use of FDA-Approved Drug for Rare Muscle Disease

Generalized Myasthenia Gravis (gMG) is a rare neuromuscular disorder that causes moderate to severe muscle weakness, often accompanied by fatigue. The condition disrupts daily life, making it difficult for patients to work, socialize, or carry out routine tasks. In recent years, new FDA-approved treatments have become available for one of the most common forms of gMG. But until now, researchers knew little about how one of these therapies, efgartigimod, worked for patients with other subtypes. A new clinical trial led by researchers at the UNC School of Medicine shows that efgartigimod, an infusion therapy developed by argenx, is safe and effective for all subtypes of gMG. Results from the largest trial of its kind were presented at the Annual Scientific Session of the Myasthenia Gravis Foundation of America. The results of this study confirm that this medication now has the potential to be a targeted, effective, safe, and necessary treatment for patients, regardless of autoantibody status. At the end of the trial, 119 patients treated with efgartigimod experienced significant improvements in quality of life, measured by the Myasthenia Gravis Activities of Daily Living (MG-ADL) score, which tracks speaking, swallowing, breathing, and limb strength.

www.newswise.com, November 6, 2025

Cancer Treatments may get a Boost from mRNA COVID Vaccines

Lung cancer patients who received the vaccine within a few months of immunotherapy, which revs up the immune system, lived nearly twice as long as unvaccinated patients, researchers report October 22 in *Nature*. The team observed something similar in people with melanoma, says Elias Sayour, a Pediatric Oncologist at the University of Florida College of Medicine in Gainesville.

The correlation suggests that mRNA vaccines even those not designed for cancer could make tumors more sensitive to current therapies. That's an exciting finding, says Hua Wang, a cancer vaccine researcher at the University of Illinois Urbana-Champaign, who was not involved in the work.

Scientists already had clues about the anticancer effects of mRNA vaccines. An experimental mRNA vaccine given to tumor-bearing mice, for instance, made immunotherapy drugs work better, Sayour's team reported in July in *Nature Biomedical Engineering*. mRNA vaccines are typically thought of as the immune system's teachers. The body uses that mRNA to build the protein, which the immune system then learns to recognize. mRNA cancer vaccines operate similarly but encode snippets of tumor proteins rather than viral proteins. Sayour's experimental vaccine was entirely different. It didn't include tumor mRNA but still had antitumor powers. When paired with immunotherapy drugs, the mRNA itself not what it encoded rallied the immune system to fight cancer, his team discovered.

That finding inspired the new study. If the experimental mRNA vaccine could trigger an anticancer response, maybe other mRNA vaccines could, too. Millions of people, including cancer patients with electronic health records tracking their outcomes, have received the COVID-19 shots. The researchers analyzed the records of roughly 1,000 people with non-small cell lung cancer, all of whom had received a type of immunotherapy drug called a checkpoint inhibitor. Nearly 200 of these patients had also received an mRNA COVID vaccine within 100 days of their drug treatment. Three years after diagnosis, 56 percent of vaccinated patients were still alive, compared with 31 percent of unvaccinated patients, the researchers report. They saw largely the same story in patients with advanced melanoma.

Still, it's too early to say whether combining immunotherapy with nonspecific mRNA vaccines is beneficial for cancer patients. It's important for people to understand that this isn't proven yet. For that, they need a clinical trial, which his team is working on. They hope to start enrolling patients by year's end.

www.sciencenews.org, October 31, 2025

A New Immunotherapy Approach could work for many Types of Cancer

Researchers at MIT and Stanford University have developed a new way to stimulate the immune system to attack tumor cells, using a strategy that could make cancer immunotherapy work for many more patients. The key to their approach is reversing a “brake” that cancer cells engage to prevent immune cells from launching an attack. This brake is controlled by sugar molecules known as glycans that are found on the surface of cancer cells. By blocking those glycans with molecules called lectins, the researchers showed they could dramatically boost the

immune system's response to cancer cells. To achieve this, they created multifunctional molecules known as AbLecs, which combine a lectin with a tumor-targeting antibody. This animation of AbLec-treated macrophages and cancer cells show how cancer cell killing happens over a period of 5 hours. The red fluorescence indicates cancer cells that have been killed by the macrophages. "We created a new kind of protein therapeutic that can block glycan-based immune checkpoints and boost anti-cancer immune responses," says Jessica Stark, the Underwood-Prescott Career Development Professor in the MIT departments of Biological Engineering and Chemical Engineering. "Because glycans are known to restrain the immune response to cancer in multiple tumor types, we suspect our molecules could offer new and potentially more effective treatment options for many cancer patients."Stark, who is also a member of MIT's Koch Institute for Integrative Cancer Research, is the lead author of the paper. Carolyn Bertozzi, a Professor of chemistry at Stanford and director of the SarafanChEM Institute, is the senior author of the study, which appeared in *Nature Biotechnology*.

Drugs targeting the PD-1- PD-L1 checkpoint have been approved to treat several kinds of cancer. In some of these patients, checkpoint inhibitors can lead to long-lasting remission, but for many others, they don't work at all.In hopes of generating immune responses in a greater number of patients, researchers are now working on ways to target other immunosuppressive interactions between cancer cells and immune cells. One such interaction occurs between glycans on tumor cells and receptors found on immune cells.

Glycans are found on nearly all living cells, but tumor cells often express glycans that are not found on healthy cells, including glycans that contain a monosaccharide called sialic acid. When sialic acids bind to lectin receptors, located on immune cells, it turns on an immunosuppressive pathway in the immune cells. These lectins that bind to sialic acid are known as Siglecs. Currently, there aren't any approved therapies that target this Siglec-sialic acid interaction, despite a number of drug development approaches that have been tried. For example, researchers have tried to develop lectins that could bind to sialic acids and prevent them from interacting with immune cells, but so far, this approach hasn't worked well because lectins don't bind strongly enough to accumulate on the cancer cell surface in large numbers.

To overcome that, Stark and her colleagues developed a way to deliver larger quantities of lectins by attaching them to antibodies that target cancer cells. Once there, the lectins can bind to sialic acid, preventing sialic acid from interacting with Siglec receptors on immune cells. This lifts the brakes off the immune response, allowing immune cells such as macrophages and natural killer (NK) cells to launch an attack on the tumor.

In this study, the researchers designed an AbLec based on the antibody trastuzumab, which binds to HER2 and is approved as a cancer therapy to treat breast, stomach, and colorectal cancers. To form the AbLec, they replaced one arm of the antibody with a lectin, either Siglec-7 or Siglec-9. Tests using cells grown in the lab showed that this AbLec rewired immune cells to attack and destroy cancer cells.

The researchers tested their AbLecs in a mouse model that was engineered to express human Siglec receptors and antibody receptors. These mice were then injected with cancer cells that formed metastases in the lungs. When treated with the AbLec, these mice showed fewer lung metastases than mice treated with trastuzumab alone.

www.news.mit.edu, December 16, 2025

PALEONTOLOGY

Over 16,000 Dinosaur Footprints identified along a Bolivian shoreline

Bolivia is well known for its abundance of fossil sites preserving dinosaur footprints. These sites provide unique details into the behaviors of ancient species, but most such sites remain unpublished. In this study, by RaúlEsperante of the Geoscience Research Institute, California, U.S., and colleagues, report an unprecedented variety of dinosaur tracks at the Carreras Pampas tracksite in Torotoro National Park. Across nine study sites, the authors document more than 16,000 tracks left by three-toed theropod dinosaurs at the end of the Cretaceous Period. These tracks range in size from tiny (<10 cm) to large (>30 cm) and record a variety of dinosaur behaviors, including running, swimming, tail dragging, and even sharp turns. Most of these tracks are oriented roughly northwest-southeast, with ripple marks preserved in the sediment, suggesting these dinosaurs were roaming alongside the ancient shoreline. The Carreras Pampas tracksite sets new world records for the number of individual dinosaur footprints, continuous trackways, tail traces and swimming traces. This unprecedented abundance suggests this was a high-traffic area, and the parallel orientation of some footprints might indicate groups of dinosaurs travelling together. The authors note that many more footprints remain to be explored at this tracksite and others in Bolivia. This site is a stunning window into this area's past not just how many dinosaurs were moving through this area, but also what they were doing as they moved through.

www.phys.org/news, December 3, 2025

ARTIFICIAL INTELLIGENCE AND ENVIRONMENTAL SCIENCE & ENGINEERING

Increasing demand for Minerals used in Renewables could further worsen Mining-related Deforestation in Future

Growing emphasis on renewable energy could be an "underlying driver of intensified deforestation", according to a study published in the journal *Nature Communications* on December 21, 2025.Results indicated that between 2001 and 2012, 66.20 per cent of deforestation in mining areas occurred in regions where minerals were extracted, which could potentially be used for renewable energy production. After 2012, a higher percentage of deforestation (74.88 per cent) was observed in mines targeting minerals required for renewable energy production, compared to those for non-renewable energy production (25.11 per cent).

The researchers, led by Xiaoxin Zhang from the University of Hong Kong, overlaid the global high-resolution forest loss and loss year layers with mining areas during 2001-2023 and compared deforestation rates between recorded and unrecorded mines. The study encompasses 236,028 mining locations worldwide, including a substantial number of unrecorded mining operation sites and found significant deforestation linked to global mining activities in the 21st century. The findings indicated that mining-related deforestation is approximately twice as high as the estimates reported in recent studies, largely due to the omission of the unrecorded mining activities.

Throughout the 21st century (2001-2023), 175 countries worldwide experienced deforestation in mining areas, mining has led to a total loss of 19,765 sq km of deforestation, contributing to 0.75 Pg CO2 emissions from 2001 to 2023.Tropical forests were seriously affected, with 10,824 sq km of mining-driven deforestation accounting for 0.56 Pg CO_2 in forest carbon emissions, making them visible as hotspots. Cold and temperate regions also faced considerable deforestation, with 5,162 sq km and 3,470 sq km of mining-driven deforestation, respectively.

These mining activities, often characterised by artisanal small-scale practices with inadequate rehabilitation measures, also contribute to soil and water pollution posing threats to indigenous health. It is estimated that 40-150 million people in the low-and middle-income countries rely directly or indirectly on artificial small-scale mining for their livelihoods.

The study recommends that promoting forest-smart mining policies is critical in these low-income countries, enabling them to benefit from the increasing demand for minerals essential to transitioning to a decarbonised economy while minimising the environmental impacts of their extraction.

www.downtoearth.org.in, December 23, 2025

AI-Driven Transformation of Water Treatment Technology and Industry: Toward a New Era of Comprehensive Innovation

Researchers from Nanjing University, et al. have conducted a paper entitled "AI-Driven Transformation of Water Treatment Technology and Industry: Toward a New Era of Comprehensive Innovation".

The global water treatment industry is facing pressing challenges such as the need for improved efficiency, energy conservation, and resource recovery, along with issues like unstable water quality and quantity, high energy consumption, and inadequate resource reuse in traditional treatment methods. Artificial intelligence (AI) has emerged as a key driver for innovation in water treatment, yet it lacks a systematic theoretical framework and empirical research, with gaps in AI-driven process implementation and industry evaluation. The aim of this study was to sort out the transformative logic of AI-driven water treatment technology and industry. The researchers analyzed frontier topics from the perspectives of technology development paradigms, engineering application methods, and industry ecosystem models, and proposed a tri-axis roadmap for AI integration in water treatment. Key findings include AI's role in accelerating water treatment material design, enabling microbial intelligent regulation, facilitating self-regulating water ecosystems, optimizing equipment manufacturing and process control, supporting intelligent scheduling and full lifecycle management, and extending the water industry value chain. Additionally, the study identified current challenges such as disjointed application, data quality issues, and model brittleness, and put forward future research priorities focusing on foundational, engineering, and industrial axes. This study not only clarifies the transformative path of AI in water treatment but also provides empirical insights for the strategic deployment and execution of smart water management.

www.newswise.com, November 12, 2025

Joint NAM S&T Centre – ZMT Bremen Fellowship Programme 2025

Research Completion Report of Dr. Mohammad Atique Rahman,

Associate Professor, Department of International Relations, University of Dhaka, Bangladesh

"***Towards Building a Sustainable Ship Recycling Ecosystem: Exploring Policy Options for Europe Plus in Collaboration with Bangladesh and the Global South***"

Dr. Mohammad Atique Rahman undertook the research on the above project under the Supervision of Professor Dr. Raimund Bleischwitz, Scientific Director of ZMT, Germany. The fellowship offered him an exceptional opportunity to enhance interdisciplinary research and bolster policy engagement and collaboration between Europe and the Global South, supported by his robust academic and policy-oriented background in global governance, environmental politics, and North–South cooperation.

The study investigated the potential transformation of ship recycling - an industry pivotal to marine sustainability and global steel supply chains into a conduit for ecologically sustainable and socially responsible industrial advancement. A key discovery of the research indicated that Bangladesh's ship recycling industry is experiencing a substantial transformation subsequent to the nation's endorsement and execution of the "Hong Kong Convention (HKC)". Dr. Rahman's analysis revealed that regulatory reforms, investments in yard modernization, and enhancements in worker safety and environmental management had established the groundwork for a more sustainable industrial paradigm. The research concurrently found enduring problems, such as inconsistent enforcement, restricted access to green finance, technological deficiencies, and skill shortages. The study contended that sustainable ship recycling in Bangladesh is attainable when global environmental norms are harmonized with domestic development objectives and bolstered by international collaboration. A significant contribution of the research was the formulation of a **"Europe Plus" policy approach**, which transcends internal EU capacity-building to encompass organized partnership with compatible ship recycling nations in the Global South.

Dr. Rahman utilized Bangladesh as a case study to demonstrate how such collaboration could advance circular economy goals, improve secondary steel markets, and facilitate net-zero industrial transformations, while preventing the marginalization of developing nations from global value chains.

He presented his findings during a ZMT lunch seminar regarding the post-HKC change of Bangladesh's ship recycling business, inciting critical discourse among researchers and visiting scholars. He also presented a paper at the "Leibniz Environment and Development Symposium (LEADS)", where he critically evaluated the relevance of "Ecological Modernization Theory" to Bangladesh's ship recycling industry and its potential for achieving net-zero industrial transformation.

Furthermore, he participated in pedagogy and scholarly exchange via seminars at the University of Bremen and co-authored an op-ed with Professor Bleischwitz for the publication "Ocean for Life" (see: https://www.humandevelopmentforum.org/digital/ocean-for-life/index.html), released in conjunction with COP-30. The fellowship was a highly productive and intellectually enriching experience, allowing Dr. Rahman to do policy-relevant research, enhance South-North academic engagement, and provide a foundation for future collaboration on sustainable ship recycling and ocean governance.

Research Completion Report of Mr. Soumya Kanta Nayak,

Senior Research Fellow, Hydrogeology and Environmental Geochemistry Group,
School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India

"***Understanding the Spatial Heterogeneity of Mixing Processes within Subterranean Estuaries (STEs) and their Implications for Submarine Groundwater Discharge (SGD) and Associated Solute Fluxes***"

Mr. Soumya Kanta Nayak undertook his research under the supervision of Prof. Nils Moosdorf, Leibniz Centre for Tropical Marine Research (ZMT), Bremen, Germany. His work was a part of the broader collaborative efforts between JNU and ZMT through the INPA project funded by the AvH Foundation to advance process-based understanding of SGD across contrasting coastal systems.

The primary objective of the research was to investigate how hydrogeological and hydrodynamic drivers influence the spatial variability of pore water salinity and groundwater-seawater mixing in high-energy and low-energy or mid-energy beach environments. Fieldwork was conducted at Spiekeroog Island, a temperate barrier island located in the southern North Sea, Germany. This site represents a dynamic high-energy beach and well-studied coastal system, offering an ideal setting for comparative analysis with ongoing tropical field investigations along the Odisha coast, India.

At Spiekeroog, metre-scale, multi-transect porewater sampling was performed across the intertidal zone, collecting data at a depth of 50 cm to assess lateral salinity variability and from 10 cm to 1.25 m depth to assess vertical salinity gradients. The surveys revealed discrete low-salinity plumes, irregular mixing zones, and sharp transitions within the beach body, indicating patchy and spatially confined freshwater discharge pathways. When compared with the Odisha dataset, which exhibited similarly irregular mixing structures under post-monsoon recharge conditions, both sites demonstrated that STEs are far more heterogeneous than traditionally depicted through single shore-perpendicular transects.

Complementary data interpretation at ZMT involved the use of conceptual mapping to visualize the three-dimensional structure of the subterranean estuary. He also developed a conceptual 3D model that integrates the key physical and environmental drivers responsible for observed heterogeneity, including sedimentary layering, grain-size variation, permeability contrasts, tidal pumping, wave-driven infiltration, and episodic recharge dynamics. These processes were found to interact at fine spatial scales to produce the observed patchiness in SGD and solute transport.

The findings of this work led to the preparation of the first draft of a manuscript titled "*Heterogeneity in Subterranean Estuaries across Contrasting Coasts*," which synthesizes results from both tropical and temperate field settings. The manuscript emphasizes the need to re-conceptualize STEs as inherently three-dimensional and spatially variable systems and to adopt multi-transect, grid-based sampling designs in future field investigations. This conceptual advancement has important implications for improving the accuracy of SGD flux estimations and coastal biogeochemical modeling.

Overall, the fellowship period at ZMT was a highly productive and intellectually enriching experience, providing an excellent platform for scientific exchange, methodological refinement, and collaborative research. It strengthened his understanding of STE dynamics in contrasting coastal settings and contributed directly to his doctoral work in coastal hydrogeology. The experience also enhanced his capacity to integrate field-based observations with conceptual and modeling approaches, which will guide his future postdoctoral research on submarine groundwater discharge processes and their geochemical implications.

Research Completion Report of Dr. Lusita Meilana,

Researcher, Center for Coastal and Marine Resources Studies (CCRMS), International Research Institute for Maritime, Ocean and Fisheries (i-MAR), IPB University, Indonesia

"***Management Effectiveness of Marine Protected Areas: A Pathway to Supporting the Blue Economy***"

Dr. Lusita Meilana, during her fellowship at the Leibniz Centre for Tropical Marine Research (ZMT) in Bremen conducted a global systematic review titled "Management Effectiveness of Marine Protected Areas: A Pathway to Supporting the Blue Economy", under the supervision of Prof. Dr. Achim Schluter, Institutional and Behavioral Economics, ZMT, Germany. The research aimed to identify the key factors that determine whether Marine Protected Areas (MPAs) succeed or fail in achieving both ecological conservation and socio-economic objectives, and to clarify which Blue Economy sectors benefit most from well-managed MPAs.

Using a structured scoping review methodology guided by the PRISMA framework, she analyzed peer-reviewed literature from 2000 to 2025 to synthesize global evidence on MPA outcomes. The findings revealed that successful MPAs depend on an integrated framework of complementary factors rather than any single intervention. Critical enablers include adaptive and participatory governance with strong community involvement; ecologically robust design incorporating no-take zones and climate resilience; equitable socio-economic engagement that provides livelihood alternatives and shares benefits; and responsive monitoring and adaptive management backed by sustained funding and capacity. In contrast, MPAs often fail when they are poorly enforced "paper parks", exclude local communities, lack scientific and local knowledge input, or create unequal economic impacts.

In terms of Blue Economy linkages, effectively managed MPAs most clearly benefit sustainable fisheries - through spillover effects and stock recovery - and nature-based tourism, which generates income and jobs. However, these benefits only materialize when management is inclusive, transparent, and aligned with local well-being. Ultimately, the study concludes that MPAs can serve as powerful instruments for both ocean conservation and sustainable development, but this requires deliberate design as multi-objective, learning-oriented institutions that balance ecological integrity with social equity and economic opportunity.

She expressed her sincere gratitude to the NAM S&T Centre and ZMT Bremen for supporting this research, which strengthened her scholarly perspective on integrative marine governance and the practical pathways toward a sustainable Blue Economy. The full analysis of this study is currently in progress and being prepared for academic publication.

Research Completion Report of Ms. Abbie Akinyi Allela,
Ph.D Scholar/Adjunct Lecturer, Egerton University, Nakuru, Kenya

"***Pushing the Limits - Examining the Advancement of Assisted Evolution in Mangrove Ecosystems: A Systematic Review***"

Ms. Abbie Akinyi Allela undertook a ten-week research work at ZMT, under the supervision of Dr. Véronique Helfer, Senior Scientist/Mangrove Ecology. She worked in Programme Area 4, *Ecosystem Co-Design*, within the Mangrove Ecology Group at ZMT and was primarily engaged in activities related to: (a) preparing a review paper on assisted evolution in mangrove ecosystems, with a focus on the assessment of existing legal frameworks; and (b) developing a research proposal for a future short- or long-term research stay at ZMT, such as through a DAAD fellowship.

The systematic review titled *'Examining the Advancement of Assisted Evolution in Mangrove Ecosystems'* formed the core component of her fellowship activities. She followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to conduct the review. She learned to formulate appropriate search syntaxes for different databases and to refine keywords relevant to assisted-evolution applications in coastal ecosystems.

The review revealed that limited research has examined assisted evolution in coastal ecosystems, with existing studies focusing predominantly on coral reefs and not integrating these approaches specifically into mangrove systems. The findings emphasized the need for careful oversight, particularly regarding human - assisted interventions that alter species' evolutionary traits. Ms. Abbie identified the importance of inclusive governance frameworks that integrate stakeholder participation at national and regional levels, acknowledging mangroves as common-pool resources requiring coordinated management. A manuscript based on this systematic review is currently under preparation, with the intention to submit it by mid-2026 as a major scientific outcome of the fellowship.

Overall, the fellowship provided a significant learning opportunity, creating an enabling environment to engage with scientists from diverse disciplines, learn from their interdisciplinary approaches, and draw insights that are expected to enrich and strengthen ongoing and future research.

Joint NAM S&T Centre – JSS AHER, Mysuru, India Fellowship Programme 2025

Research Completion Report of Lieutenant Commander Anuruddha Heenatigala,
Chief Coordinator, Nano and Modern Technology Wing, Centre for
Defence Research and Development, Sri Lanka

"***Untargeted-to-Targeted Metabolomics and Mechanism-Guided Isolation of Anti-Pterygium Compounds from Double-Petal Hibiscus rosa-sinensis***"

Lt. Commander Anuruddha Heenatigala undertook his research under the supervision of Dr. Gurubasavaraj V Pujar, Professor, Department of Pharmaceutical Chemistry, JSS College of Pharmacy, Mysuru, Karnataka, India.

Pterygium is a common ocular surface disorder characterized by fibrovascular proliferation of conjunctival tissue extending onto the cornea, often associated with chronic ultraviolet exposure, oxidative stress, inflammation, and abnormal angiogenesis. Current management relies largely on surgical excision; however, recurrence and postoperative complications remain significant challenges, highlighting the need for effective pharmacological or preventive interventions.

This study investigated the phytochemical and bioactive potential of *Hibiscus rosa-sinensis*, a medicinal plant widely used in traditional medicine, with a focus on its relevance to pterygium management. Extracts prepared from selected plant parts were subjected to comprehensive phytochemical screening and advanced analytical techniques to identify key secondary metabolite. The analysis revealed the presence of polyphenols, flavonoids, anthocyanins, triterpenoids, and organic acids, compounds known for their antioxidant, anti-inflammatory, anti-angiogenic, and wound-healing properties.

Biological evaluations demonstrated significant antioxidant capacity and inhibitory effects on inflammatory mediators implicated in pterygium pathogenesis, including oxidative stress - induced cellular damage and fibroblast proliferation. The findings suggest that the synergistic action of identified phytochemicals may modulate critical pathways such as VEGF signaling, matrix metalloproteinase activity, and extracellular matrix remodeling, which are central to pterygium progression and recurrence.

Overall, the study supports the therapeutic potential of Hibiscus rosa-sinensis as a natural source of anti-pterygium bioactive compounds and provides a scientific foundation for further metabolomics-guided isolation, mechanistic studies, and formulation development of plant-based ocular therapeutics.

Brief News

Magnets could Revolutionise Kidney Stones Removal

A magnetic device may be able to remove kidney stones more efficiently than standard methods avoiding the need of repeated surgical procedures. Kidney stone occurs when minerals in urine crystalise. They can be painful when they become lodged inside the kidneys or enter the ureters, tubes that connect the kidneys to bladder. They are treated often breaking into smaller pieces. Surgeons can then remove the stone fragments using a wire basket that is led in and out of urethra. But this repeated retrieval can cause tissue damage. In search of an alternative approach, Joseph Liao at Stanford University in California and his colleagues have developed a magnetic gel, which coats kidney fragments and a magnetic wire they used to capture fragments in lab dish. They tested the approach in four pigs by inserting dozens of human kidney stone fragments into the animal's kidney before injecting the organs with magnetic gel. Using the magnetic wire inserted through the urethra, they were able to retrieve multiple stone fragments at once. This procedure will cause less tissue damage. It could even completely clear fragments from the kidneys as the device can catch pieces of any size, says Liao.

New Scientist, pg 7, November 8, 2025

'Gland in a Dish' Secretes Hormones like the Real Thing

For the first time scientists have developed a laboratory grown version of the adrenal cortex – the outer part of adrenal gland, which produces hormone for regulatory metabolism, stress and blood pressure. The 'órganoid' could one day be used to develop treatments for disorders of the adrenal gland. Qing Li at Nanchang University in China and colleagues grew the organoid- a 3D structure that reproduces some of the anatomy of a real organ-from human adrenal cortex cells collected alongside adrenal tumours. Although not identical in architecture to the adrenal cortex, the organoid was able to perform some of its function. Research study yielded a potential model for studying disease and testing drugs to inhibit the abnormal production of cortisol.

Nature, Volume 646, pg 1029, October 30, 2025

Safer Battery can be pierced without catching Fire

Changing just one of the materials used in lithium-ion batteries could prevent the uncontrollable fires that erupt if they are pierced or bent. Lithium-ion batteries used in smart phones and laptops contain a graphite electrode, a metal oxide electrode and an electrolyte of lithium salt dissolved in a solvent. The liquid electrolyte allows ions to flow in one direction to charge the battery and in the other direction to release energy and power devices. But if the design is punctured in such a way that it creates a short circuit, all the chemical energy stored is released rapidly, which can cause a fire explosion. Now, Yue Sun at the Chines University of Hong Kong and her colleagues have created a safe design that can be built exactly like existing batteries, thanks to change in electrolyte material. The researchers created a second solvent called lithium bis (flurosulfonyl) imide, that bonds with lithium from the existing solvent only at higher temperatures, when thermal runaway is beginning. When pierced with a nail, the temperature inside the battery rose by only 3.5 C , while conventional batteries can heat up by more than 500C. It is a big leap in battery safety says Gary Leeke at the University of Birmingham , UK.

New Scientist, pg 10, November 1, 2025

New Robotic Eyeball could Enhance Visual Perception of Embodied AI

Existing vision systems with fixed RGB-D cameras cannot handle fine-grained visual information across larger spatial extents. Researchers at Shanghai Jiao Tong University, the Chinese Academy of Sciences and Dalian University of Technology recently developed a new robotic system inspired by human eyeballs, which can rotate and zoom-in to acquire clearer images of objects without the need for additional sensors or more expensive cameras. This robotic eyeball, called EyeVLA, can perceive broader and finer grained visual information from a fixed position by rotating its viewpoint and zooming in on the target, according to instructions. According to Jiashu Yang, Yifan Han and their colleagues, existing vision models and fixed RGB-D camera systems fundamentally fail to reconcile wide-area coverage with fine-grained detail acquisition, severely limiting their efficacy in open-world robotic applications. To address this issue, researchers proposed EyeVLA, a robotic eyeball for active visual perception that can take proactive actions based on instructions, enabling clear observation of fine-grained target objects and detailed information across a wide spatial extent.

www.techxplore.com, December 3, 2025

New Lightweight Polymer Film can Prevent Corrosion

MIT researchers have developed a lightweight polymer film that is nearly impenetrable to gas molecules, raising the possibility that it could be used as a protective coating to prevent solar cells and other infrastructure from corrosion, and to slow the aging of packaged food and medicines. The polymer, which can be applied as a film mere nanometers thick, completely repels nitrogen and other gases, as far as can be detected by laboratory equipment, the researchers found. That degree of impermeability has never been seen before in any polymer, and rivals the impermeability of molecularly-thin crystalline materials such as graphene. “Our polymer is quite unusual. It's obviously produced from a solution-phase polymerization reaction, but the product behaves like graphene, which is gas-impermeable because it's a perfect crystal. However, when you examine this material, one would never confuse it with a perfect crystal,” says Michael Strano, the Carbon P. Dubbs Professor of Chemical Engineering at MIT.

www.technologynetworks.com, November 12, 2025

Scientists created Human Egg Cells from Skin Cells

Every human being starts with the fusion of two cells: an egg cell from one parent and a sperm cell from the other. But for a variety of reasons, two parents may not have both, the egg and sperm needed to make a baby. That has led some scientists to wonder if they could make an egg or a sperm cell with a parent's DNA from some other type of cell in their body. Now, a new study brings that one step closer to reality. In the experiment, researchers caused human skin cells to produce egg cells. Some of those eggs were able to give rise to early human embryos. Such tech may one day help women without healthy eggs to have children. Same-sex male couples may also be able to use the technique to have a child that's related to both of them, says Paula Amato. An expert in reproductive medicine, she works at Oregon Health & Science University in Portland. Researchers have already produced eggs and sperms for many types of animals. But producing human eggs and sperms has proven difficult.

www.snexplores.org, December 1, 2025

FACT FILE

Change Management in Higher Education: Perspectives from Developing Countries

Document No. STI-FF/10/2025

A Fact File on

CHANGE MANAGEMENT IN HIGHER EDUCATION

PERSPECTIVES FROM DEVELOPING COUNTRIES

(A Joint Publication of the NAM S&T Centre and JSS Academy of Higher Education & Research, Mysuru, India)

FROM THE DG'S DESK

Warmest Greetings to our Esteemed Readers!!

It is with great pleasure that I present another Fact File titled **"Change Management in Higher Education: Perspectives from Developing Countries"** brought out by the NAM S&T Centre. The document highlights the increasing importance of strategic, inclusive and adaptive change management in higher education institutions.

As countries face rapid technological advancements, evolving policy reforms, labour market dynamics and the impacts of globalisation, higher education systems must adapt to remain relevant, efficient and effective towards delivering excellence.

This Fact File provides a comprehensive overview of both planned and unplanned changes, showcasing diverse examples from across Africa, Asia and Latin America. From India's National Education Policy (NEP)- 2020 to South Africa's Decadal Plan for STI, and from Brazil's AI Strategy to Kenya's Emergency Digital Learning Response, the document captures a global mosaic of initiatives aimed at transforming higher education to meet the emerging challenges. It explores critical drivers of change such as digitalisation, policy shifts and international collaboration, while also addressing key challenges like limited resources and institutional resistance.

The document represents our contribution towards the achievement of the "*UN Sustainable Development Goal 4: Quality Education for All*", underscoring the pivotal role of higher education in promoting equitable, inclusive and sustainable development.

We extend our sincere thanks to Dr. C. G. Betsurmath, Executive Secretary, JSS Mahavidyapeetha, Mysuru, India, for serving as the Lead Author and Scientific Editor of this Fact File.

I am confident that this Fact File will be a valuable source of information and knowledge for policymakers, experts and other stakeholders interested in higher education systems in the Global South.

(Amitava Bandopadhyay)

INTRODUCTION

Change Management is the ongoing process of shifting an organization's capabilities, structure and direction to successfully meet the changing needs of both internal and external clients. Higher education is undergoing unprecedented transformation due to its fast expansion, changing expectations and growing complexity, especially in developing nations like India. Developing countries needs to find a balance between institutional inertia, cultural settings and limited financial resources. In developing countries, change management is driven by factors such as technological developments, government initiatives and policy reforms, demographic changes, globalization and internationalization, pressures on the labor market and employability and objectives for equity and inclusion. Hence, higher education institutions need to adapt and thrive, especially when external circumstances shift.

Need for a Change

According to UNESCO Institute for Statistics (2025), the gross enrollment ratio of countries in the Global South in 2023 ranged from 27.7% to 59.5% (Fig 1). This data demonstrates the necessity of strategic change management initiatives intended to improve higher education systems in the Global South.

According to the All India Higher Education Survey (2021-2022), India has over 34.2 million students in 1,168 universities and 42,825 colleges. Globally, the higher education sector is projected to reach USD 2,558 billion by 2034. Despite growth, challenges like outdated curricula, limited resources and leadership gaps persist, especially in developing nations. Institutions must adapt to global trends such as digitalization, employability and rankings. Resistance to change, driven by fear and uncertainty, affects all levels.

Gross enrolment ratio in tertiary education, 1970 to 2023

Fig.1 Gross Enrollment ratio in Global South

Without proper planning, change efforts fail—making systematic, coordinated strategies and a shared vision essential for success (Higher Education Change Management, 2024).

TYPES OF CHANGES IN HIGHER EDUCATION

Higher education can undergo two types of change: forced change and planned change.

1. **Forced or Unplanned Change:** The unplanned or forced changes are often outside-driven changes to which institutions must respond rapidly. Examples: Pandemics, Regulatory mandates such as National Education Policies or economic shocks.

2. **Planned Change:** Planned change is a forward-thinking, deliberate process in which organizations set goals and create strategies to improve policies, processes or systems. Examples: Reforming academic curricula, incorporating new

Change management is an ongoing process of shifting an organization's capabilities, structure, and direction to successfully meet the changing needs of both internal and external clients. Higher education is undergoing unprecedented transformation due to its fast expansion, changing expectations and growing complexity, especially in developing nations like India. The developing countries need to find a balance between institutional inertia, cultural settings and limited financial resources. In developing countries, Change Management is driven by factors such as: technological developments, government initiatives and policy reforms, demographic changes, internationalization and globalization, pressures on the labor market and employability, as well as objectives for equity and inclusion. Hence, higher education institutions need to adapt and thrive, especially when there is a shift in external circumstances.

Recognizing the growing importance of this issue, the NAM S&T Centre has published its **10th Fact File** on "**Change Management in Higher Education: Perspectives from Developing Countries**" in collaboration with JSS Academy of Higher Education & Research (JSS AHER), Mysuru, India.

The Fact File examines both planned and unplanned changes affecting higher education institutions, with a particular focus on developing and least-developing countries. The document highlights the increasing importance of strategic, inclusive and adaptive change management within higher education institutions, particularly across the Global South. It provides a comprehensive overview of both planned and unplanned changes, showcasing diverse examples from across Africa, Asia and Latin America. From India's National Education Policy (NEP) 2020 to South Africa's Decadal Plan for STI, and from Brazil's AI strategy to Kenya's emergency digital learning response, the document captures a global mosaic of initiatives aimed at transforming higher education. It explores critical drivers of change such as digitalization, policy shifts and international collaboration, while also addressing key challenges like limited resources and institutional resistance.

The Fact File aims to support policymakers, academic leaders and higher education administrators in designing effective strategies to manage transformation and strengthen higher education systems in an increasingly uncertain global environment.

The Scientific Editor of this Fact File is Dr. C.G. Betsurmath, Executive Secretary, JSS Mahavidyapeetha, Mysuru, India; and Mr. Madhusudan Bandyopadhyay, Senior Advisor, NAM S&T Centre, New Delhi served as Editorial Adviser.

FACT FILE

Bone Diseases and Disorders in Global South: Challenges and Prevention

Document No. STI-FF/11/2025

A Fact File on

BONE DISEASES AND DISORDERS IN GLOBAL SOUTH: CHALLENGES AND PREVENTION

[A Joint Publication of the NAM S&T Centre and JSS Academy of Higher Education and Research, Mauritius]

FROM THE DG'S DESK

Warmest Greetings to all our Esteemed Readers!!

It gives me great pleasure to present this Fact File on **"Bone Diseases and Disorders in the Global South: Challenges and Prevention"**, a subject of growing public health concern. This Fact File highlights the prevalence, causes, prevention and management of common bone-related disorders such as osteoporosis, arthritis, rickets, osteomalacia and fractures, while also emphasizing the socio-economic challenges linked with bone health.

Bone health is fundamental to overall well-being, mobility and productivity. Unfortunately, factors such as aging populations, nutritional deficiencies, sedentary lifestyles, long-term use of certain medications (such as corticosteroids) and comorbid conditions have contributed to a rising emergence of bone diseases worldwide. The challenges are even more pronounced in developing countries, where limited awareness, delayed diagnosis and inadequate access to treatment hinder effective management of bone related problems. This not only leads to reduced quality of life but also imposes considerable social and economic costs.

Adequate nutrition, preventive care strategies, optimum lifestyle management and advanced treatments can play a vital role in improving bone health. By strengthening policy frameworks, improving awareness, enhancing early detection mechanisms and making treatments more affordable, countries in the Global South can address the burden of bone diseases more effectively and efficiently.

We extend our sincere gratitude to **Dr. Khayati Moudgil**, Assistant Professor, Faculty of Health Sciences, School of Pharmacy, JSS Academy of Higher Education and Research, Mauritius, **Prof. Varsha Bangalee**, Associate Professor (Pharmacy Practice), Discipline of Pharmaceutical Sciences, College of Health Sciences, University of KwaZulu-Natal, South Africa and **Dr. Jhassu Varsha Naveena Mohadeb-Somar**, Chairperson of the Dental Council of Mauritius for their valuable contributions in preparing this publication. We also record our appreciation for **Dr. Praveen Mohadeb**, Vice Chancellor & CEO, JSS Academy of Higher Education and Research, Mauritius for his kind support and permission to bring out this joint publication as a collaborative scientific activity between our two institutions. I am confident that this Fact File will serve as an important resource for policymakers, researchers, healthcare professionals and the wider public in deepening their understanding of bone diseases and related disorders.

(Amitava Bandopadhyay)

1. Introduction

Bone diseases and disorders are among the most pressing global health challenges, characterized by impairments in bone density, strength, metabolism, and structural integrity. These disorders affect individuals across all age groups, with older adults, women, and undernourished populations at the greatest risk. Bone diseases not only impact mobility and quality of life but also lead to substantial economic costs through hospitalizations, surgeries, and long-term rehabilitation. The most common bone conditions include osteoporosis, osteomalacia, Paget's disease, and bone neoplasms. Their prevalence is driven by factors such as aging populations, poor nutrition, sedentary behavior, vitamin D deficiency, and reduced exposure to sunlight. The burden of these disorders is unevenly distributed across the globe, with low- and middle-income countries (LMICs) facing unique challenges in diagnosis, treatment, and prevention due to limited healthcare infrastructure and public awareness.

2. Trends in Global South

Osteoporosis is the most common bone disease worldwide, impacting an estimated 200 million individuals, with postmenopausal women and elderly men being the most vulnerable. It is estimated that one in three women and one in five men aged over 50 will sustain an osteoporotic fracture during their lifetime. Hip and vertebral fractures, in particular, are linked to significant increases in mortality, long-term disability, and loss of independence [1]. The global incidence of hip fractures is projected at approximately 9 million cases each year, with the highest age-adjusted rates seen in Northern Europe such as Sweden, where rates exceed 400 per 100,000 annually and rapidly rising numbers across Asia, especially in China and India [2]. In low- and middle-income settings, nutritional rickets and osteomalacia continue to pose substantial public health concerns, largely due to insufficient sun exposure, restrictive clothing customs, and diets low in vitamin D and calcium. In several regions of South Asia, Sub-Saharan Africa, and the Middle East, the prevalence of rickets in children can range between 10–40%, predisposing them to stunted growth, bone deformities, and an elevated lifetime fracture risk [3].

Paget's disease of bone, though far less prevalent, is concentrated in certain geographic clusters, predominantly in Europe, North America, and Australia, with older adult prevalence ranging from 1–5% in high-incidence areas. This condition is marked by abnormal and excessive bone turnover, which may result in skeletal deformities, persistent pain, and hearing impairment when the skull is affected. Its frequency appears to have declined in recent decades, likely due to improved awareness and earlier diagnosis [4]. Rare genetic disorders, such as osteogenesis imperfecta also known as brittle bone disease are characterised by impaired collagen production and occur in roughly 1 in 15,000 to 20,000 live births. Individuals with this condition often sustain multiple fractures from minimal trauma and may

Recognizing the importance of strengthening healthcare knowledge and cooperation in this domain, the NAM S&T Centre has published its **11th Fact File** on "**Bone Diseases and Disorders in Global South: Challenges and Prevention**" in collaboration with JSS Academy of Higher Education and Research (JSS AHER), Mauritius.

This Fact File highlights the prevalence, causes, prevention and management of common bone-related disorders such as osteoporosis, arthritis, rickets, osteomalacia and fractures, while emphasizing the socio-economic challenges linked with bone health.

The Scientific Editor of this Fact file is Dr. Khayati Moudgil, Assistant Professor, Faculty of Health Sciences, School of Pharmacy, JSS Academy of Higher Education and Research, Mauritius.

Prof. Varsha Bangalee, University of KwaZulu-Natal, South Africa, and Mr. Madhusudan Bandyopadhyay, Senior Advisor, NAM S&T Centre, New Delhi served as Editorial Advisers.

Centre Announces

Joint NAM S&T Centre - ZMT Bremen (Germany) Fellowship Programme 2026

The Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) is pleased to invite applications from suitable candidates for the "**Joint NAM S&T Centre - ZMT Bremen (Germany) Fellowship Programme 2026**" on Blue Economy in Tropical Coastal Marine Research.

This Fellowship Programme was initiated in January 2008 for the affiliation of scientists from developing countries with the Leibniz Centre for Tropical Marine Research (ZMT), Bremen, Germany for a period of up to 3 months to work with its senior researchers and faculty members for upgrading research skills in the fields related to Ecology, Biogeochemistry, Geology, Theoretical Ecology and Modelling, Social Sciences and Tropical Coastal Marine Systems, and undertaking short-term joint research projects at ZMT, Bremen.

The Fellowship will be awarded to the scientists only from the Member Countries of the NAM S&T Centre and NAM S&T–Industry Network Members and only one scientist may be selected from a particular Country/Network Member. The NAM S&T Centre sponsors up to 5 scientists each year for the Fellowship. While the Centre will cover the international airfare of the selected scientists from its eligible Member Countries and Network Members, ZMT will provide them a monthly subsistence allowance of 1250 Euros to meet the accommodation and other expenses in Bremen. The NAM S&T Centre will sponsor international airfare for applicants selected from the Member Countries and S&T-Industry Network Members who have paid all Membership dues to the Centre till date.

The last date for submission of applications for the Fellowship is 27 February 2026.

Joint NAM S&T Centre - UM, Malang, Indonesia Post-Doctoral Fellowship 2026

The NAM S&T Centre is pleased to invite applications, for the first time, from suitable candidates, for the "**Joint NAM S&T Centre–UM, Malang, Indonesia Post-Doctoral Fellowship 2026**".

The NAM S&T Centre in collaboration with the Universitas Negeri Malang (UM), Malang, Indonesia initiated this fellowship 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) to affiliate with Universitas Negeri Malang (UM), Malang, Indonesia [http://www. um.ac.id] and its constituent academic institutions, for a period of up to 12 weeks to work in the areas of Science, Technology, Engineering and Social Sciences.

The Fellowship aims to facilitate international research collaborations and strengthen scientific, technological and academic networking between the S&T institutions in the NAM S&T Centre's Member Countries, and Universitas Negeri Malang.

Under this programme, the NAM S&T Centre will provide return international airfare for up to 5 selected applicants, from their home countries to Malang/ Surabaya, Indonesia to conduct research at Universitas Negeri Malang and its constituent institutes under this Joint Fellowship Programme. UM, Malang will provide a monthly allowance equivalent to Indonesian Rupiahs (IDR) 15 million (~USD 900) for the duration of the Fellowship to each selected scientist.

Note: *Scientists from Indonesia are not eligible to apply for this Fellowship.*

The last date for submission of applications for the Fellowship is 27 February 2026.

Joint NAM S&T Centre – JSS AHER, Mysuru, India Fellowship Programme 2026

The NAM S&T Centre is pleased to invite applications from suitable candidates, for the "**Joint NAM S&T Centre – JSS AHER, Mysuru, India Fellowship Programme 2026**".

This Fellowship Programme was initiated in September 2022 for the affiliation of scientists and researchers from the Member Countries of the NAM S&T Centre and its S&T-Industry Network Members at the institutes under the JSS Academy of Higher Education & Research (JSS AHER), Mysuru, Karnataka, India [www.jssuni. edu.in] for a period of 6 weeks to work in the areas of Science, Technology, Engineering and Medicine including the areas of expertise available at JSS AHER such as Indian System of Medicine, and Medicinal and Herbal Plants in order to enhance research skills, facilitate the exchange of information and contacts, and create a network between scientists and researchers from India and other developing countries.

Under this programme, the NAM S&T Centre will provide return international airfare, up to 5 selected applicants during the year from their home countries to Bengaluru (Nearest International Airport to reach Mysuru), Karnataka, India - from those Member Countries or S&T – Industry Network Members of the NAM S&T Centre, which have no outstanding dues towards the annual membership subscription to the Centre. JSS AHER, Mysuru will provide free furnished accommodation and a pocket allowance equivalent to US$250 per month in local currency for the duration of the Fellowship to each selected scientist.

Selection will be made strictly based on the professional details of the applicant, statement of purpose/plan of work to be carried out and mutual research interests of the applicant and JSS AHER, Mysuru.

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

Details on guidelines of the Fellowship and the Application Form are available at the Centre's Website: www.namstct.org

Fellowship Awardees

JOINT NAM S&T CENTRE- JSS STU, MYSURU, INDIA FELLOWSHIP PROGRAMME 2025

The NAM S&T Centre announced the *"Joint NAM S&T Centre – JSS STU, Mysuru, India Fellowship Programme 2025"* in collaboration with JSS Science and Technology University (JSS STU), Mysuru, India.

The following five candidates have been selected to undertake research in diverse fields of Science, Technology, Engineering and Management for a period up to 6 weeks at affiliated institutes of JSS STU, Mysuru.

SL No.	Country	Name / Affiliation	Mentor
1.	**Egypt**	**Dr. Salma Tarek Abdelwahab Abdelazeem**, Researcher, Central Metallurgical Research and Development Institute (CMRDI), El Tebbin, Helwin Cairo Governorate, **Egypt**	**Dr. B.S. Madhukar**, Associate Professor, Department of Chemistry, Sri Jayachamarajendra College of Engineering, JSS STU, Mysuru, Karnataka, India
2.	**Kenya**	**Mr. Simon Muhiu**, Tutorial Fellow, Department of Mechanical Engineering, Dedan Kimathi University of Technology (DeKUT), **Kenya**	**Dr. G. Mallesh**, Professor, Department of Mechanical Engineering, Sri Jayachamarajendra College of Engineering, JSS STU, Mysuru, Karnataka, India
3.	**Mauritius**	**Dr. Vedendranand Sharma Chummun**, Scientific Officer, Ministry of Environment, Solid Waste Management and Climate Change – National Environmental Laboratory, National Laboratories Complex, Reduit, **Mauritius**	**Dr. Pushpa Tuppad**, Professor, Department of Environmental Engineering, JSS STU, Mysuru, Karnataka, India; and **Prof. Dr. S. Suriyanarayanan,** Associate Dean (Research), JSS STU, Mysuru, Karnataka, India
4.	**Myanmar**	**Dr. Zin Mar Nyo**, Associate Professor, Government Technical Institute (Kyaukse), **Myanmar**	**Dr. Mohan N**, Department of Electrical and Electronics Engineering, Sri Jayachamarajendra College of Engineering, JSS STU, Mysuru, Karnataka, India
5.	**Nepal**	**Mr. Damodar Neupane**, Assistant Research Fellow, Nepal Academy of Science and Technology (NAST), Kathmandu, **Nepal**	**Dr. N. Kumara Swamy**, Professor, Department of Chemistry, Sri Jayachamarajendra College of Engineering, JSS STU, Mysuru, Karnataka, India

Centre Announces

International Workshop on

PROMOTING BLUE ECONOMY AND OVERCOMING ITS IMPLEMENTATION CHALLENGES

26-27 March 2026, Mauritius

The oceans provide a major source of income for many coastal nations, particularly in the developing world. Economic benefits derived from the oceans depend on the wise management of resources, based on scientific understanding and appropriate application of technologies. The intersection of science, technology and economy is most evident in nations' coastal zones. Because of their immense economic potential, ocean resources have increasingly been recognized as vital national assets, particularly in developing countries. This recognition has led to the development of national strategies and action plans aimed at harnessing ocean resources to support and strengthen national economies - an approach integrated in the concept of Blue Economy. The ability to derive economic benefits from the ocean while safeguarding its ecological integrity lies at the core of SDG 14.

In view of the significant economic potential of Blue Economy in the developing countries, especially in the Small Island Developing States such as Mauritius, Sri Lanka, Seychelles etc., the Centre for Science and 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, is pleased to announce the organisation of a joint International Workshop on *"***Promoting Blue Economy and Overcoming its Implementation Challenges**" during 26-27 March 2026 in Mauritius. The Workshop will be hosted by the MoTESR, Republic of Mauritius.

The Workshop seeks to bring together researchers, academicians, ocean scientists, technologists, policymakers, industry experts, environmental consultants and others concerned from various member countries of the NAM S&T Centre and other developing countries to exchange knowledge, share best practices and research findings relevant to the development and sustainable management of ocean resources.

Scientists and experts desirous of participating in the Workshop, **except those from Mauritius**, should submit their applications **electronically** to the Director General, NAM S&T Centre, New Delhi at Email: namstcentre@gmail.com. However, applicants from Mauritius should submit their requests directly to Director – Tertiary Education and Scientific Research, Ministry of Tertiary Education, Science and Research, Govt. of Mauritius at Email: Director.Tertiary@govmu.org.

Centre Announces

International Workshop on

GENERIC DRUGS: SCIENCE, TECHNOLOGY, REGULATORY ISSUES AND SOCIETAL DIMENSIONS IN THE DEVELOPING WORLD

23-24 April 2026, Mysuru, Karnataka, India

Generic drugs are pharmaceutical products that are therapeutically equivalent to their corresponding branded medicines, containing the same active pharmaceutical ingredients, dosage form, strength, route of administration and intended therapeutic use. By reducing treatment costs and enhancing medicine availability, generic drugs play a vital role in promoting equitable access to affordable, safe and effective healthcare, particularly in the developing countries.

Despite their importance, the development, manufacturing, regulation and widespread adoption of generic drugs present complex scientific, technological, regulatory and societal challenges. Addressing these multifaceted issues requires an interdisciplinary and collaborative approach among pharmaceutical scientists, regulatory authorities, policymakers, industry stakeholders, healthcare professionals and social science experts.

In this context, 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 JSS Academy of Higher Education & Research (JSS AHER), Mysuru, Karnataka, India and the Indian Association of Colleges of Pharmacy (IACP), Chennai, Tamilnadu, India, announces the organization of an International Workshop on "**Generic Drugs: Science, Technology, Regulatory Issues and Societal Dimensions in the Developing World**" during 23-24 April 2026 in Mysuru, Karnataka, India.

Researchers, academicians, pharmaceutical scientists, regulators, policymakers, healthcare professionals, representatives of the generic pharmaceutical industry and experts from international and regional organisations from member countries of the NAM S&T Centre and other developing countries are invited to participate in the Workshop.

Scientists and experts desirous of 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 as early as possible, but latest by 9 March 2026. However, applicants from India should submit their requests directly to the JSS AHER, Mysuru at E -mail: vishalkumargupta@jssuni.edu.in.

International Conference on

LIFESTYLE DISEASES IN THE DEVELOPING WORLD: PERSPECTIVES, CURRENT STATUS AND FUTURE CHALLENGES

14-15 May 2026, Mauritius [Hybrid Mode]

In recent decades, *Lifestyle Diseases,* also known as *Non-communicable Diseases (NCDs)* have emerged as the leading cause of morbidity and mortality across the globe, including in the developing world. These diseases, including diabetes, cardiovascular diseases, cancer, chronic respiratory illnesses and obesity are closely linked to changing lifestyles, urbanization, sedentary behavior, poor dietary patterns and increasing stress levels. The rapid epidemiological transition in developing countries, particularly in Africa, Asia and Latin America continuously grapple with infectious diseases and simultaneously face a surge in NCDs. The lack of robust health infrastructure, inadequate surveillance systems, limited access to early diagnosis and care, and socio-economic disparities make lifestyle diseases even more formidable challenge in these settings.

The growing burden of lifestyle diseases poses a significant threat to achieving the United Nations Sustainable Development Goals (SDGs), particularly: SDG 3: Good Health and Well-being that explicitly aims to reduce premature mortality from NCDs by one-third by 2030 through prevention and treatment; SDG 10: Reduced Inequalities – Lifestyle diseases disproportionately affect marginalized communities with limited access to care; SDG 1: No Poverty – NCDs often push families into poverty due to long-term health expenditures and productivity losses; and SDG 17: Partnerships for the Goals – addressing lifestyle diseases requires robust collaborations across governments, academia, industries and civil society, especially in South-South cooperation scenarios.

In this context, the Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi in partnership with the JSS Academy of Higher Education and Research, Mauritius (JSS AHERM) is pleased to organise a joint International Conference on "***Lifestyle Diseases in the Developing World: Perspectives, Current Status and Future Challenges***" during 14-15 May 2026 in Mauritius. The Conference will be hosted by JSSAHER, Mauritius.

Researchers, scientists, government officials and policymakers, representatives from non-government organizations, pharmaceutical associations, research and academic organizations from the member countries of the NAM S&T Centre and other developing countries, who are engaged in the field of health, pharmaceuticals, environment and any related experts, are invited to participate in this Conference.

Experts and scientists desirous of participating in the Conference, **except those from Mauritius**, should submit their application **electronically** to the Director General, NAM S&T Centre, New Delhi at namstcentre@gmail.com as early as possible, but latest by 26 March 2026. However, applicants from Mauritius should submit their requests directly to the Head, Faculty of Health Sciences, JSSAHER, Mauritius at E-mail: dradwadhwani@jssuni.edu.in; ashishwadhwani@jssaher.edu.mu.

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

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