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PICTURE CREDIT:
MANAS RANJAN NAYAK

MoU signed to establish “Centre of Excellence on Low Carbon Construction Materials and Sustainable Development”



The Housing & Urban Development Department, Government of Odisha, through the Odisha Urban Academy (OUA), signed a Memorandum of Understanding (MoU) with IIT Bhubaneswar and Development Alternatives (DA) on 11th July 2026 for establishing a Centre of Excellence on Low Carbon Construction Materials and Sustainable Development.



The MoU signing ceremony was held at the Odisha Urban Academy on in the presence of the Hon'ble Minister, Dr. Krushna Chandra Mahapatra and Additional Chief Secretary, Smt. Usha Padhee (Housing & Urban Development Department), Prof. Dinakar Pasla, IIT Bhubaneswar and Mr. Shrashtant Patara, Chief Executive Officer, Development Alternatives and senior government officials, representatives from IIT Bhubaneswar, Development Alternatives, Urban Local Bodies and other stakeholders.

Speaking on this occasion, Prof. Dinakar Pasla, IIT Bhubaneswar, reaffirmed the institute's commitment to supporting the Government of Odisha through cutting-edge research, technology development and innovation. He stated that through the Centre of Excellence, IIT Bhubaneswar will work closely with DA and the State to develop low-carbon construction materials, promote scientific waste management technologies and provide technical solutions that address Odisha's long-term urban development needs.



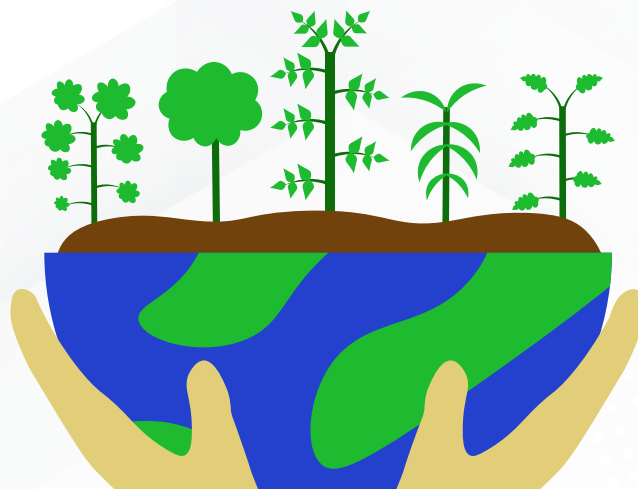
IIT Bhubaneswar receives 'Prakruti Mitra Award 2025-26' for Environmental Conservation

IIT Bhubaneswar has been conferred with the prestigious 'Prakruti Mitra Award 2025-26' by the Khordha Forest Division in recognition of its exemplary contribution towards environmental conservation, afforestation, and sustainable campus development. The Institute was nominated for the award under the Jatni Block category as part of the Van Mahotsava 2026 celebrations.



The award was received on behalf of the Institute by Shri Bamadev Acharya, Registrar, from Shri Prasanta Kumar Jagadev, Hon'ble MLA, Khordha, in the presence of Shri Manoj Mahapatra, Divisional Forest Officer (DFO), Khordha on 7th July 2026 .

Also present on the occasion were Shri K. Rabin Kumar Dora, Superintending Engineer, IIT Bhubaneswar, and Shri Kamireddy Visweswara Reddy, Horticulturist, IIT Bhubaneswar, who have played a significant role in the Institute's green campus initiatives.



IITBBS REP holds Programme on 'Communicating Your Business Idea'

IIT Bhubaneswar Research & Entrepreneurship Park (REP), organized a special capacity-building program titled "Communicating Your Business Idea" on 11th July 2026. The session was delivered by Prof. Shreepad Karmalkar, Director, IIT Bhubaneswar, who shared valuable insights on the art and science of effective communication, particularly in the context of startup pitching, stakeholder engagement, and entrepreneurial leadership. The programme focused on helping founders effectively articulate their business ideas, communicate their value proposition, and present their ventures with clarity and confidence.



During the session, Prof. Karmalkar highlighted the Principles of Effective Communication and emphasized that communication should be based on experience, demonstrations, visual aids, and clear, concise language. Founders were advised to use pictures and diagrams wherever possible, tell stories and anecdotes to connect with audiences, place ideas in the right context, and ensure that presentations remain engaging and audience-focused. The importance of being audible, visible, enthusiastic, and avoiding long uninterrupted speeches was also discussed.

A total of 18 incubated startups from IIT Bhubaneswar Research and Entrepreneurship Park participated in the program. Through interactive discussions and practical examples, participants gained a deeper understanding of presentation skills, storytelling, audience engagement, and the key elements of successful business communication.

A key takeaway from the session was the widely recognized communication effectiveness model, wherein 55% of communication effectiveness is influenced by body language, 37% by the manner of speaking, and 8% by the choice of words. The Director elaborated on critical aspects of body language such as eye contact, gestures, facial expressions, orientation, and professional attire, while also emphasizing vocal elements including pause, pace, volume, tone, and accent.



The session further underscored that communication is primarily a skill that can be learned and improved through practice. Participants were introduced to different communication hierarchies, including vertical, horizontal, formal, informal, and casual communication, and were guided on selecting the most appropriate communication style based on the audience and context.

Special emphasis was also placed on written communication, where participants were advised on the effective use of formatting techniques such as bold text, italics, capitalization, underlining, colour schemes, and appropriate font selection (serif and sans-serif fonts) to enhance readability and impact.

Overall, the programme reinforced that effective communication depends not only on the words used but largely on delivery, presentation, and non-verbal behaviour. The session equipped startup founders with practical techniques to communicate their business ideas more persuasively to investors, customers, partners, and other stakeholders, thereby strengthening their ability to build and scale successful ventures.

IIT Bhubaneswar Study Maps Odisha's Rising Thermal Hotspots, Calls for Region-Specific Climate Action

A new study by researchers from the School of Earth, Ocean and Climate Sciences, IIT Bhubaneswar has revealed a significant rise in land surface thermal hotspots across Odisha, highlighting the growing impact of rapid urbanization and land-use changes on the state's climate. The research has been published in the prestigious *Environmental Science: Advances*, a journal of the Royal Society of Chemistry.



IIT BHUBANESWAR
Research | Innovation | Impact

MAPPING THE HEAT. SECURING OUR FUTURE.

A new study by IIT Bhubaneswar reveals a significant rise in **thermal hotspots** across Odisha—driven by rapid urbanization and land-use changes.



20 YEARS OF SATELLITE DATA.
30 DISTRICTS OF ODISHA.



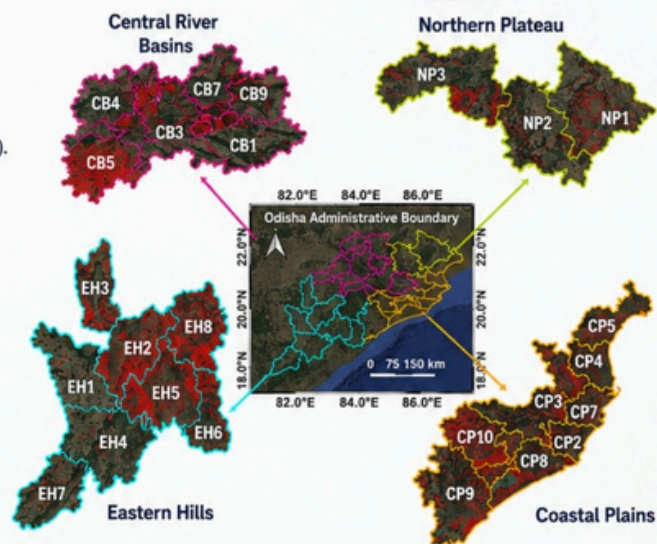
✓ Urban & industrial hubs like **Khordha, Ganjam, Cuttack & Sundargarh** show rising surface heat (2% to 9% annual increase).



✓ Rural & hilly regions like **Balangir, Kalahandi, Rayagada & Gajapati** are also under severe thermal stress due to vegetation loss and land degradation.



✓ Rising heat impacts public health, air quality, energy demand and climate resilience.



A ROADMAP FOR ACTION



Cool infrastructure & urban green spaces for our cities



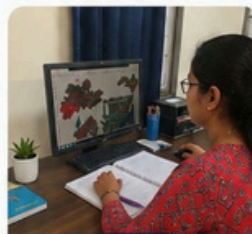
Restore mangroves along our coasts



Protect rivers, revive vegetation in rural belts



Use satellite data for smarter, climate-resilient planning



“Extreme heat is no longer just a city issue—it's a statewide challenge that needs **region-specific solutions.**”



Ms. Dikshika Mahapatra
Research Scholar
IIT Bhubaneswar



Dr. Debadatta Swain
School of Earth, Ocean and
Climate Sciences
IIT Bhubaneswar



Published in
Environmental Science: Advances
Royal Society of Chemistry



DOI: 10.1039/d6va00012f
www.bhusagar.in



SCIENCE FOR A SUSTAINABLE ODISHA. Together, let's build a cooler, healthier future!



The study, conducted by Ms. Dikshika Mahapatra and Dr. Debadatta Swain, analysed 20 years of satellite data to understand how thermal hotspots have evolved across all 30 districts of Odisha. The findings show that rapidly growing urban and industrial areas, particularly Khordha, Ganjam, Cuttack, and Sundargarh, are witnessing a steady increase in extreme surface temperatures, with thermal hotspot coverage expanding by 2% to 9% annually in several coastal districts.

Interestingly, the research also found that rising heat is no longer confined to cities. Several interior and hilly districts, including Balangir, Kalahandi, Rayagada, and Gajapati, are experiencing persistent thermal stress due to vegetation loss, forest degradation, and increasing stretches of barren land.

The researchers note that prolonged exposure to such thermal hotspots can have serious implications for public health, energy demand, and environmental sustainability. The study demonstrates how satellite-based monitoring can help identify vulnerable regions and support evidence-based planning for climate resilience.

To address the challenge, the study recommends region-specific solutions, including expanding urban green spaces, adopting heat-resilient infrastructure, restoring mangroves and riverbank vegetation, and integrating high-resolution satellite data into urban planning and environmental management.

This publication reflects IIT Bhubaneswar's continued commitment to research that addresses pressing environmental challenges and contributes to sustainable development through science and technology.

Link of the Paper:

<https://pubs.rsc.org/va/article/5/7/1774/1259099/Rising-urban-land-surface-thermal-extremes-in-a>



IIT Bhubaneswar Scientist Achieves Major Breakthrough Towards Faster, Smarter and Energy-Efficient Computing

Imagine computers that can solve difficult problems much faster while consuming only a fraction of the energy used by today's machines. A major step toward that future has now been achieved by an international team of scientists, including researchers from the Indian Institute of Technology (IIT) Bhubaneswar.

The team has reported a landmark discovery in the prestigious journal *Nature Nanotechnology*, demonstrating the world's largest synchronized network of more than 100,000 nanoscale spintronic oscillators—tiny magnetic devices that can work together like a perfectly coordinated orchestra.

Unlike conventional computer chips that process information sequentially, these miniature devices naturally synchronize with one another within only 45 billionths of a second (45 nanoseconds). Working together, they can process information extremely quickly while consuming far less energy than today's electronic technologies.

This achievement represents a giant leap in the development of next-generation computing hardware. The synchronized network is nearly 1,000 times larger than previously demonstrated coherent spintronic systems, proving that such technology can be scaled up for practical applications.

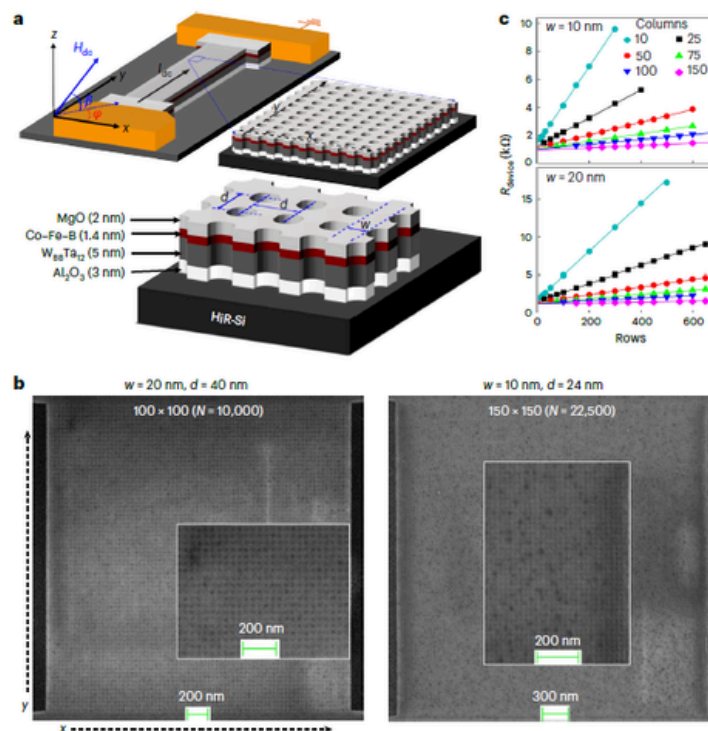


Fig. 1 | The SHNO arrays. **a**, Schematic of the SHNO arrays and their material stack, showing consecutive zoom-ins. The top cartoon shows a small part of the thick Cu/Pt contact pads (orange), the remaining part of the mesa without any nanoconstrictions (light grey) and the actual nanoconstriction array (darker grey). The directions of the drive current and the applied field are indicated. The bottom cartoon shows the material stack and the nanoconstriction width

(*w*) and centre-to-centre separation (*d*). **b**, SEM images of a 100 × 100 array made from 20-nm nanoconstrictions, and a 150 × 150 array made from 10-nm nanoconstrictions. **c**, Device resistance versus number of rows for different number of columns. The solid lines are fits to equation (1) (10 nm) and equation (2) (20 nm) in the Supplementary Information.

scales. From an applications perspective, the total number of mutually synchronized oscillators *N* is critical because both microwave output power and coherence scale linearly with *N*, and sparse Ising-machine mappings typically require very large interacting networks to encode

of 100 SHNOs to reaching ~45 ns for the largest lattices, consistent with Kuramoto-type collective phase-ordering dynamics in a large two-dimensional oscillator lattice.



Researchers used advanced microwave and optical microscopy techniques to directly observe how thousands of these tiny devices spontaneously organized into a single synchronized state. The study confirms that even extremely large networks can coordinate remarkably fast, opening exciting possibilities for future computing systems.

Although the technology is still at the research stage, it has the potential to transform many areas of everyday life. Future applications may include (i) Faster and energy-efficient artificial intelligence (AI), (ii) Smarter communication networks, (iii) Real-time data analysis, (iv) Financial modelling and optimization, (v) Intelligent transportation systems, and (vi) Scientific simulations that require enormous computing power.

Dr. Nilamani Behera, Assistant Professor in the Department of Physics at IIT Bhubaneswar and one of the lead authors of the study, said: "The demand for computing power is growing rapidly, especially with the rise of artificial intelligence. Our work demonstrates that very large networks of nanoscale magnetic devices can naturally synchronize in just a few billionths of a second. This opens exciting possibilities for developing future computing technologies that are both faster and far more energy-efficient."

The research was carried out through an international collaboration involving the University of Gothenburg (Sweden), IIT Bhubaneswar (India), and Tohoku University (Japan).

The findings not only advance the fundamental understanding of how large networks of interacting nanoscale devices behave but also provide an important foundation for developing future computing technologies inspired by the human brain. Such hardware could help overcome the growing energy and performance limitations of conventional computers, paving the way for the next generation of intelligent computing systems.

The research paper, titled "Nanosecond Phase Ordering in Ultra-large Spin Hall Nanoscillator Lattices for Unconventional Computing," has been published in Nature Nanotechnology, one of the world's leading journals in nanoscience and nanotechnology.

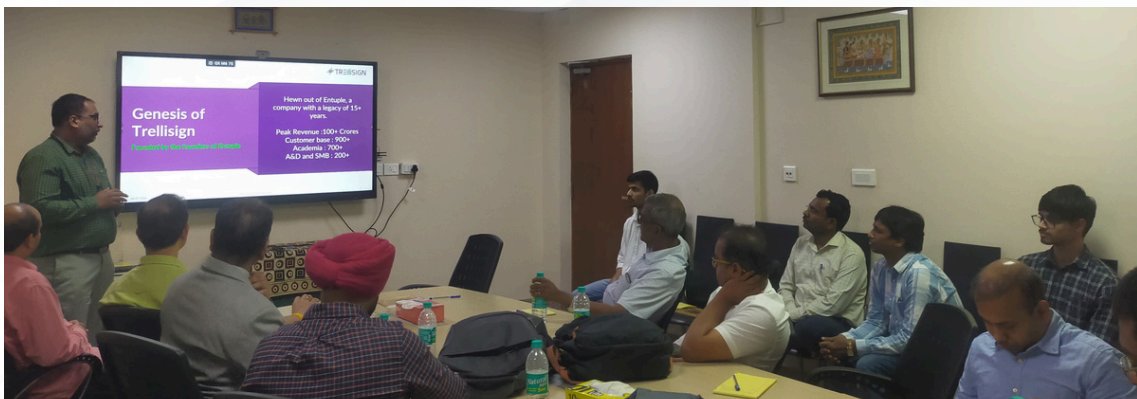
Link of the Paper: <https://www.nature.com/articles/s41565-026-02216-y>



3rd Stakeholders' Meeting of the MAHA EV Project

The 3rd Stakeholders' Meeting of the MAHA EV Project was held at IIT Bhubaneswar on 6th and 7th July 2026. The previous two editions of the meeting were hosted by IIT Kharagpur and BIT Mesra, respectively.

The meeting commenced with a welcome address by Dr. Dipankar De, PI, IIT Bhubaneswar, followed by an introductory session by Prof. D. Kastha, Lead PI, who presented an overview of the project, its objectives, timelines, participating PIs, and the meeting agenda.



During the programme, the progress of various e-nodes was reviewed. IIT Bhubaneswar's industry partners, SFO Technologies and Trellisign Technologies, shared their contributions and future plans. SFO Technologies, Kerala, will work alongside IIT Bhubaneswar to commercialize a high-power conductive EV charger. Mr. Thomas Davis presented the company's profile and development roadmap.

The power converter configurations and design approaches for different EV chargers were presented by Dr. Suman Maiti (IIT Kharagpur), Dr. Jiwanjit Singh (NIT Hamirpur), Dr. Pradyumn Chaturvedi (VNIT Nagpur), and Dr. Dipankar De (IIT Bhubaneswar). Dr. Heeralal Gargama highlighted reliability aspects in charger design, while Prof. T. K. Saha (NIT Durgapur) discussed the integration of renewable energy with novel converter-controller interfaces. The economic and operational impacts of power system integration were presented by Dr. A. Hota and the research team from IIT Kharagpur.

A major focus of the project is the development and experimental validation of high-power wireless EV chargers. Dr. Aftab Alam and Dr. Siva Kumar (BIT Mesra) presented the design of transmitting and receiving coils and discussed the challenges in developing the PCB and tripolar coil pad.

A laboratory visit was organised on the evening of 6 July, during which the delegates interacted with research scholars and visited various laboratories of the Department of Electrical Engineering. Around 28 participants, including faculty members, industry representatives, research scholars, project staff, and external guests, attended the meeting. The programme concluded with discussions on the targets and deliverables for the next quarter. The 4th Stakeholders' Meeting is scheduled to be hosted by NIT Durgapur.



Workshop on “Effective and Practical Measures for Adopting Simple Hindi in Official Work”

The Rajbhasha Cell, IIT Bhubaneswar, organized a Hindi Workshop on 1st July 2026 on the theme “Effective and Practical Measures for Adopting Simple Hindi in Official Work” (“कार्यालयीन कार्य में सरल हिन्दी अपनाने के प्रभावी एवं व्यावहारिक उपाय”). The workshop aimed to encourage the use of simple, effective, and practical Hindi in official correspondence and administrative communication.

The session was addressed by the Chief Guest, Shri Fateh Bahadur Singh, Assistant Director (Rajbhasha), Central Hindi Training Institute, Ministry of Home Affairs, Government of India. In his address, he spoke about the history and evolution of the Hindi language. During the session, Shri Singh explained the evolution of various languages in India and discussed how languages naturally evolve from complex to simpler forms over time.



He further explained that Hindi has evolved from Sanskrit and has been enriched by incorporating elements from several Indian languages. Concluding his address, Shri Singh encouraged all participants to adopt simple and practical Hindi in official work and administrative communication.

Shri Bamdev Acharya, Registrar and Dr. Avijit Kumar, Professor-in-Charge (Raj Bhasha Ekak), along with faculty and staff members, attended the workshop and benefited from the insightful session. The programme also featured an interactive discussion, during which faculty and staff members raised queries on various aspects of Hindi usage, grammar, and its evolution. Shri Hemant Kumar Yadav, Hindi Translator, coordinated the programme.





Picture Credit:
Dr. Manas Jyoti Kashyop

सशीकराम्भोधरमत्तकुञ्जरस्
तडित्पताकोऽशनिशब्दमर्दलः ।
समागतो राजवदुद्धतद्युतिर् घनागमः कामिजनप्रियः प्रिये ॥

saśīkarāmbhodhara-matta-kuñjaraḥ
taḍit-patāko'sani-śabda-mardalaḥ ।
samāgato rājavad uddhata-dyutir
ghanāgamaḥ kāmijana-priyaḥ priye ॥

"O beloved! The rainy season has arrived in regal splendour like a mighty king. Its rain-bearing clouds are like rutting elephants dripping with water; lightning is its fluttering banner, thunder its resounding drum. Glorious in its majesty, this season of clouds is especially dear to lovers."

Rutusamhara by Kalidasa